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SCHRIFTENREIHE DER WITTGENSTEIN-GESELLSCHAFT

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23th to 30th AUGUST 1981
KIRCHBERG AM WECHSEL (AUSTRIA)

EDITORS

WERNER LEINFELLNER, ERIC KRAEMER, and JEFFREY SCHANK

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AKTEN DES
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INHALTSVERZEICHNIS
TABLE OF CONTENTS

Abkürzungen der Titel von Wittgensteins Schriften / Abbreviations of the Titles of Wittgenstein's Writings 11
Vorwort 13
Preface 18
G. E. M. ANSCOMBE: Eröffnungsrede 22
G. E. M. ANSCOMBE: Opening Address 26

1. Traditionelle und moderne ontologische Systeme
1. Traditional and Contemporary Ontological Systems

NELSON GOODMAN: Notes on the Well-Made World 31
GUIDO KÜNG: Die Schwierigkeit mit der logischen Form ontologischer Aussagen 37
V. PLUMWOOD / R. ROUTLEY: The Inadequacy of the Actual and the Real: Beyond Empiricism, Idealism, and Mysticism 49
ZOTSCHO BOJADSHIEFF: Über die Möglichkeit, Platons ontologisches System monistisch zu deuten 68
HERMANN OETJENS: Descartes' Konzept einer allgemeinen Methodologie als Alternative zur traditionellen Ontologie 71
MARGARETE MÖLLMANN: Cantor's Ontology 75
T. E. BURKE: Leaving Everything as it is? 79
OTTO NEUMAIER: Poppers Ontologie 83
RÜDIGER BENDER: Marginalien zu Adornos Kritik an Heideggers Existenzialontologie und dessen späterer Konzeption der „Seinsgeschichte" 87
KLAUS K. OBERMEIER: Die Bedeutung des Zweifels als Grundlage des Wissens in der Existenzphilosophie 92

2. Ontologische Probleme
2. Ontological Problems

KIT FINE: Acts, Events, and Things 97
MYLES BRAND: Physical Objects and Events 106
RODERICK M. CHISHOLM: Properties Intentionally Considered 117
KURT WEINKE: Der ‚Universalienstreit': Ein sprachphilosophisches Problem in ontologischer Maske 122
A. Z. BAR-ON: Propositions, Facts, and Events 125
WINFRIED FRANZEN: Sätze, Sachverhalte, Tatsachen und das Problem der ‚Wahrheitsträger' 130
WILLEM G. J. IEMHOFF: Action, Description, and Ontology 133
JAAKKO HINTIKKA/MERRILL HINTIKKA: Towards a General Theory of Individuation and Identification 137
ERIC RUSSERT KRAEMER: Minds, Bodies, and Universals: A Meta-Ontological Approach 151
JOHN TROYER: Sorites "Paradoxes" and Ontology 156
PETER M. SIMONS: Moments as Truth Makers 159
LAURENCE GOLDSTEIN: Why the Liar Cannot be Said 162
ALBERT CASULLO: Particulars Without Substrata 166

3. Formale Ontologien
3. Formal Ontologies

CZESŁAW LEJEWSKI: Ontology: What Next? 173
B. SMITH: Some Formal Moments of Truth 186
CHRISTINE PÜHRINGER: Model-Theoretic Investigations in the Theory of Algebras of Individuals 191
MIECZYSŁAW OMYŁA: The Logic of Situations 195

4. Erkenntnis und Ontologie
4. Knowledge and Ontology

KEITH LEHRER: Knowledge, Truth, and Ontology 201
G. E. M. ANSCOMBE: On Private Ostensive Definition 212
WOLFGANG GRASSL: Thinking, Picturing, and Story Telling 218
STEWART CANDLISH: What Makes my Image of him an Image of *him*? 222
HAROLD MORICK: Do Wittgenstein and Quine Disagree about Certainty? 227
NEWTON GARVER: Wittgenstein's Legacy to Epistemology 230
GEORGE PAPPAS: Posits and Epistemology 235
GERHARD FREY: Identität: Ontologische Voraussetzungen heuristischen Denkens 240
GABRIEL FALKENBERG: Mutual Propositional Attitudes 245

5. Ontologie und Semantik
5. Ontology and Semantics

LOFTI ZADEH: Possibility Theory as a Basis for Representation of Meaning 253
RUDOLF HALLER: Fiktive Gegenstände 265
KLAUS MUDERSBACH: Dividuensemantik 270
ECKEHARD WÜST: Bemerkungen über Designation und Ontologie 274
EDWARD F. BECKER: Ontological Objectivity 278
PETER BOSCH: The Role of Propositions in Natural Language Semantics 282
EDMUND RUNGGALDIER: Identifizierungsfunktion und Referenz 286
HANS-JÜRGEN EIKMEYER: Principles of Procedural Semantics 289
ROBERT TRAPPL/ELISABETH LEINFELLNER/HARALD TROST/INGEBORG STEINACKER: Ontology and Semantics in the Computer 292
MICHAEL LOSONSKY: How we Can Believe that the Meter Might not Have Been a Meter Long 300
JOHAN VAN DER AUWERA: Minimal Ontology and the Theory of Meaning 303
C. DOUGLAS McGEE: Beyond Semantics and Ontology 306

6. Ontologische Grundlagen der Naturwissenschaften
6. Ontological Foundations of the Natural Sciences

JULES VUILLEMIN: Internal Translation and Reality in Science 313
ULRICH GÄHDE: T-Theoretizität und Holismus 327
MANFRED STÖCKLER: Erzwingt die Quantenmechanik die Annahme holistischer Effekte? 331
RAINER BORN: Ontologie und Semantik: Von Wheeler zu Gödel 335
FELIX MÜHLHÖLZER: Die Konventionalität der Gleichzeitigkeit und die ontologischen Grundlagen der speziellen Relativitätstheorie 339
FRIEDRICH WALLNER: Die Rolle der Physik in Wittgensteins philosophischen Bemühungen 343
ADOLF HÜBNER: On the Logic of Being 346

MLADEN PAVIĆIĆ: A Demarcation in the Ontology of the Naturalistic World-View 354
KWANG-SAE LEE: Methodology and Ontology of Kant's Conception of Scientific Progress 358
BRIAN BAIGRIE: The Draughtsman Reconsidered: Popper and the Ontology of Natural Science 361

7. Ontologische Grundlagen der Sozialwissenschaften
7. Ontological Foundations of the Social Sciences

WERNER LEINFELLNER: Ontology of Evolution: Ontology of Becoming or Becoming of an Ontology? 367
FRANZ M. WUKETITS: Die Organisation des Lebendigen: Aspekte zu einer „Bio-Ontologie" 377
JEFFREY C. SCHANK: Intelligent Neural Networks 381
JANOS ÁCS: Zur Entwicklung der Managementlehre aus evolutionstheoretischer Sicht 387
FRANCO BIANCO: Probleme der Kontrolle des Deutungsvorgangs in der verstehenden Soziologie Max Webers 391
CHHATRAPATI SINGH: The Ontology of Law 394
RONALD L. BURR: Strategies in Philosophical Psychotherapies 399
HUGH GALLACHER: Wittgenstein and the Foundation of Social Sciences 403
RICHARD ROSENBLUTH: Learning to Speak and Learning to Think 408
MOSTAFA FAGHFOURY: Wittgenstein and Frazer on Religious Practices 412

8. Die frühe Philosophie Wittgensteins
8. Wittgenstein's Early Philosophy

A. J. AYER: The Elementary Propositions of the *Tractatus* 419
MERRILL B. HINTIKKA: The Objects of Wittgenstein's *Tractatus* 429
HANS-JOACHIM DAHMS: Die „Gedanken" Wittgensteins und anderer 435
PETER BACHMAIER: Vom Unsinn der Rede von einer ‚Ontologie der Gegenstände' 442
HERBERT HRACHOVEC: Richard Montague: Früher Wittgenstein 1971 445
JOSEPH E. MARTIRE: The Ontological Implications of Wittgenstein's 'Picture Theory' 449
THOMAS T. TOMINAGA: Wittgenstein's Linguistic Ontology and Rejection of Substance Ontology 453
WILLIAM GODWIN: Analysis, Indiscernibles, and the 'Augustinian Picture' of Language 458

9. Die späte Philosophie Wittgensteins
9. Wittgenstein's Late Philosophy

ROSARIA EGIDI: Bemerkungen über Wittgensteins Grammatik der Hypothesen 465
R. ROUTLEY / V. PLUMWOOD: Negation and Contradiction in Wittgenstein 471
LORRAINE B. CODE: Wittgenstein's *On Certainty* Position: An Elaboration 475
HANS RUDI FISCHER: Wahrheit, grammatischer Satz und Lebensform: Der epistemologische Aspekt in Wittgensteins Privatsprachenargumentation 479
C. J. B. MACMILLAN: Wittgenstein and the Problems of Teaching and Learning 483
PIERANNA GARAVASO: The Notion of Convention in Wittgenstein's *Remarks on the Foundations of Mathematics* 487
JESSE BOHL: Paradigms and Ideals 491

WOLFGANG WENNING: Wittgensteins „Logik der Farbbegriffe" und die Geometrie des Farbraums 494
HEDA FESTINI: Is Wittgenstein's Concept of Proposition in *Philosophical Grammar* Intensional, Extensional, or Something Else 498
CHARLES VERHAREN: Wittgenstein's Failure to Transcendend the Obvious 501

10. Wittgenstein im historischen Kontext
10. Wittgenstein in Historical Context

HERMANN WEIDEMANN: Aussagesatz und Sachverhalt: Ein Versuch zur Neubestimmung ihres Verhältnisses im Anschluß an Aristoteles, Wittgenstein und Frege 507
ALDO GARGANI: Wittgenstein and Freud: Epistemology and Primal Scene 511
ARNO ROS: Philosophie und Metaphilosophie: Wittgensteins Auflösung des „Reflexionsproblems" der Philosophie 517
ARMIN BURKHARDT: Wittgenstein und Humboldt: Terminologische und methodologische Probleme in Wittgensteins Spätphilosophie 520
ANNEGRET STOPCZYK: Wittgenstein: Die deutschsprachige Tradition der Sprachkritik in Gegnerschaft zu Immanuel Kant 524
WILHELM LÜTTERFELDS: Wittgensteins transzendentale These über das Sein 530
ELENA PANOVA: Wittgenstein's Influence on Strawson's „Descriptive Metaphysics" 534
FRIEDRICH STADLER: Kundmanngasse 19: Architektur als Symbol ohne Ornament 537

Liste und Index der Vortragenden / List and Index of Speakers 543

ABKÜRZUNGEN DER TITEL VON WITTGENSTEINS SCHRIFTEN
ABBREVIATIONS OF THE TITLES OF WITTGENSTEIN'S WRITINGS

BBB = *Blue and Brown Books*

BLB = *Blue Book*

BRB = *Brown Book*

BFGB = *Bemerkungen über Frazers „The Golden Bough"*

BGM = *Bemerkungen über die Grundlagen der Mathematik*

LCA = *Lectures and Conversations on Aesthetics, Psychology and Religious Belief*

LE = *Lecture on Ethics*

LFM = *Lectures on the Foundations of Mathematics*

LO = *Letters to Ogden*

LRKM = *Letters to Russell, Keynes and Moore*

NB = *Notebooks 1914—1916*

OC = *On Certainty*

PB = *Philosophische Bemerkungen*

PG = *Philosophische Grammatik / Philosophical Grammar*

PI = *Philosophical Investigations*

PR = *Philosophical Remarks*

PT = *Prototractatus*

PU = *Philosophische Untersuchungen*

RC = *Remarks on Color*

RFM = *Remarks on the Foundations of Mathematics*

TLP = *Tractatus Logico-Philosophicus*

TB = *Tagebücher 1914—1916*

ÜG = *Über Gewißheit*

VB = *Vermischte Bemerkungen*

WV = *Wörterbuch für Volksschulen*

WWK = *Wittgenstein und der Wiener Kreis*

Z = *Zettel*

VORWORT

Die Ontologie, in den lexikalischen Definitionen als „Seinswissenschaft", als „Metaphysik des Seins" etc. bezeichnet, wird heute vielfach als eine traditionelle, ja antiquierte Disziplin der Philosophie angesehen, von der man sagt, daß sie den Anschluß an das 20. Jahrhundert und die rasante Entwicklung der Wissenschaften verloren hat.

Daß dem nicht so ist, zeigt der vorliegende Band, „Sprache und Ontologie", welcher das gedruckte Ergebnis des 6. Internationalen Wittgenstein Symposiums (23.—30. August 1981, Kirchberg am Wechsel, Österreich) ist.

Den ins einzelne gehenden und ausführlichen Beiträgen soll eine allgemeine Einleitung vorangestellt werden, in der der Bedeutungswandel in den Definitionen von „Ontologie" und ihre bedeutende historische Rolle, die gegenwärtig vielfach ganz vergessen worden ist, kurz beleuchtet werden.

Gleich eingangs sei festgestellt, daß man die Ontologie heute nur mehr als eine Interdisziplin zwischen Philosophie und Wissenschaft ansehen kann, als eine Disziplin, die uns Grundlagenprobleme und Grenzfragen vor Augen führt und diese zu lösen versucht. Die Ontologie ist dann nicht eine separate Disziplin, die unabhängig von allen anderen Disziplinen der Wissenschaft oder auch der Philosophie existiert, sondern sie leitet die allgemeinen Strukturen der Welt, die Strukturen der Welt, wie sie wirklich ist, aus dem Wissen, wie es sich in den vorhandenen Disziplinen darstellt, ab.

Geht man nun in der Geschichte der Philosophie zurück, dann findet man, daß die Ontologie die Frage nach den Strukturen unserer Welt nie im Alleingang, also neben den anderen philosophischen Disziplinen oder neben den Wissenschaften, gelöst oder zu lösen versucht hat. Wie es das Thema des Symposiums, „Sprache und Ontologie", ausdrückt, hat sie die Strukturen der Welt, wie sie „wirklich" ist, immer aus anderen Disziplinen, die die Welt beschreiben, d.h. den — meistens kognitiven — Sprachen anderer Disziplinen hergeleitet. Diese Herleitung der allerallgemeinsten Strukturen unserer Welt aus dem Wissen anderer Disziplinen ist vielfach als die einzige Aufgabe der Ontologie angesehen worden. Man vergißt dabei aber, daß die Ontologie unter den Gesetzmäßigkeiten, die ihr das jeweilige Wissen bietet, stets die wichtigsten und allgemeinsten auswählt, und daß sie diese Gesetzmäßigkeiten interpretiert, generalisiert und als die grundlegenden und allgemeinsten Strukturen unserer Welt erweisen muß.

Die Geschichte der Ontologie beginnt daher nicht erst mit Goclenius und Wolff; beide haben aber zur Systematisierung der Ontologie entscheidend beigetragen. Wenn nun die Ontologie eine Disziplin ist, die das jeweilige Wissen in verschiedenen Disziplinen — seien diese nun philosophisch, philosophisch-logisch, natur- oder sozialwissenschaftlich — zu ihren Zwecken verwendet, dann muß sie im Verlaufe der Geschichte der Philosophie eine der dramatischsten Entwicklungen durchgemacht haben. Denn sie spiegelt ja sozusagen den jeweiligen Stand unseres Wissens und unserer Erkenntnis der Welt. Betrachten wir die tatsächliche Geschichte der Ontologie, dann finden wir diese Auffassung bestätigt.

Z.B. haben Platon und der Platonismus angenommen, daß man aus einer intuitiv erfahrbaren und apriorisch vorausgesetzten idealen Ideenwelt die allgemeinsten empirischen Strukturen unserer Welt herleiten könne. Dazu benötige man bloß zwei Relationen, die Relation *methexis* und die Relation *parousia*. „*Methexis*" bedeutet „Teilnahme" — heute würden wir sagen: „Repräsentation"; und „*parousia*" meint „Aufscheinen (der Ideen in der Welt)" — heute würden wir sagen: Interpretation. Besonders in den Positionen des platonischen „Parmenides"-Dialogs findet man diese ontologischen Verfahren erläutert.

Aristoteles sah nicht die Erfassung der Ideenwelt, sondern die Erfahrung und Erkenntnis unserer wirklichen Welt als die Hauptaufgabe der Philosophie an (Met., Kap. 9); er schuf die erste systematische Ontologie in der Form seiner Substanzontologie. Die Frage, was die

wahren Strukturen der Welt seien, beantwortete er gerade umgekehrt, wenn wir ihn mit Plato vergleichen: die generellen Eigenschaften der Dinge, d.h. die Eigenschaften der Dinge, die ihre invariante Form ausmachen, müssen durch einen kognitiven Prozeß herausgefunden werden; diese generellen Eigenschaften der Dinge sind die universalen Muster (die Strukturen). In einem zweiten Schritt müsse man die universalen Muster, die Universalien, definieren und axiomatisieren; dazu benützt man als Hilfsmittel die Logik. Dann werden die Universalien allgemein verständlich.

Hier erhebt sich ganz allgemein die Frage, was Universalien (allgemeine Strukturen) eigentlich seien: platonische Ideen, (aristotelische) Substanzen in den Dingen, Gedanken, Begriffe oder Vorstellungen im menschlichen Geist (Konzeptualismus), Terme oder Prädikate in unserer Sprache (Nominalismus) oder mathematisch-theoretische Begriffe der wissenschaftlichen Sprachen der heutigen Theorien. Die Frage nach der eigentlichen Natur der Universalien (allgemeinen Strukturen) hat die Philosophie und die Wissenschaft bis heute beschäftigt. Man braucht nur Heisenbergs Gespräche mit Schrödinger zu lesen, wo dies Seite um Seite diskutiert wird.

Es würde zu weit führen, wollte man hier auf den Universalienstreit im Mittelalter und die Suppositionssemantik, die damals zur Lösung ontologischer (und theologischer) Fragen herangezogen wurde, eingehen. Eine entscheidende Wendung in der Geschichte der Ontologie ist mit den Werken von Goclenius, Wolff und Leibniz verbunden. Wie alle Ontologien, so muß auch die Ontologie Wolffs auf den Wissensstand seiner Zeit relativiert werden; und Wisssen ist hier logisches Wissen. Denn Wolff hat den interdisziplinären Charakter der Ontologie damit begründet, daß er die allerallgemeinsten Gesetzmäßigkeiten alles Seienden, aller Dinge aus den Prinzipien einer an Leibniz orientierten Logik herleitete. Daß das Nicht-Widerspruchsprinzip und der Satz vom zureichenden Grunde in allen möglichen und auch in der wirklichen Welt gültig sein müssen, ist nach ihm eine der ontologischen Grundstrukturen alles Seienden, oder, einfacher, der Welt.

Kant verwarf die Wolffsche Logik: sie sei metaphysisch und platonistisch. Daher lehnte er auch die Wolffsche Ontologie als zu traditionell ab. Anstelle der traditionellen Logik führte Kant seine eigene, die transzendentale Logik ein; man kann diese transzendentale Logik als eine konzeptuell begründete, kognitiv orientierte Methode ansehen. Zur Erkenntnisgewinnung ließ Kant nur diejenigen Kategorien (allgemeine Begriffe) zu, die bei ihrer Anwendung raum-zeitlichen Bedingungen genügen; die Kategorien sind außerdem subjektiven Ursprungs, d.h. durch das menschliche Denken erzeugt. Es ist eine wissenschaftliche Theorie, die Newtonsche Physik, die die Gesetzmäßigkeiten liefert, auf denen die Kantsche Ontologie fußt. In Kants Erkenntnistheorie, wie sie sich in der „Kritik der reinen Vernunft" findet und die die „Hilfsdisziplin" seiner Ontologie ist, wird diese Newtonsche Physik methodisch erläutert.

Was für Wolffs Ontologie die Leibnizsche Logik war, war also für die Ontologie Kants die Gesetzmäßigkeiten (Naturgesetze) der Newtonschen Physik und seine eigene Erkenntnistheorie.

Aber bei Kant ist es nicht die Welt der Dinge an sich, die seine Ontologie bestimmt, sondern es sind die raum-zeitlichen kategorialen Zusammenhänge der Phänomene. Zum ersten Mal scheidet sich hier die Ontologie klar von der Erkenntnistheorie. Die Kantsche Erkenntnistheorie ist die Metatheorie der kognitiven Voraussetzungen und Methoden der klassischen Physik; die Kantsche kategoriale Ontologie leitet aus den von der Empirie gestützten und bestätigten Naturgesetzen die allgemeinen Strukturen der Welt — der klassisch-physikalischen Welt, wie man heute sagen würde — ab. Damit wurde die Ontologie eine Interdisziplin im heutigen, strengeren Sinn; denn hier werden zum ersten Mal in der Geschichte der Philosophie und Wissenschaft wissenschaftliche Ergebnisse philosophisch verallgemeinert. Dies ist der Beginn der Wissenschaftsontologie, die im 20. Jahrhundert einen so großen Aufschwung genommen hat; denn erst im 20. Jahrhundert entstehen die bedeutendsten wissenschaftlichen Theorien mit ihren speziellen, kognitiv orientierten Sprachen und ihren speziellen mathematischen Methoden. Die Wissenschaftsontologie ist bis jetzt das letzte Kapitel der Geschichte der Ontologie.

Nach Kant entwickelte sich die Ontologie zumindestens in zwei Richtungen. Die Wissenschaftsontologie entfaltete sich im Neukantianismus, im Positivismus und Neupositivismus, im Wiener Kreis und in der gegenwärtigen Wissenschaftstheorie (philosophy of science). Auf der anderen Seite haben wir die phänomenologische Ontologie. Sie baute Kants phänomenologische „Reduzierung der Welt" weiter aus; ihr Höhepunkt ist Husserls Phänomenologie, in der die Welt selbst zum (Welt-) Phänomen wird. Die Grundstrukturen der Welt sind so, wie sie sich der jeweiligen Erfahrung des phänomenologisch eingestellten Menschen darbieten. Der Aufbau und die Struktur der Welt „ereignen" sich im sinngebenden, reinen Bewußtseinserleben des Menschen vis-à-vis der Welt. Bei Husserl sind auch Logik und Mathematik an der semantischen, aber dennoch „sprachlosen", Konstitution der Welt aus Phänomenen beteiligt; Heideggers Fundamentalontologie hingegen spricht von einer anti-logischen und anti-wissenschaftlichen Grunderfahrung, die jeder wissenschaftlichen Erkenntnis vorgelagert sein soll.

Der nächste entscheidende Schritt in der Entwicklung der Ontologie war sozusagen eine Folge einer anderen Entwicklung, die ihren Höhepunkt im 20. Jahrhundert hatte, der Entwicklung der Formalen Logik. Die Formale Logik, und im Verein mit ihr die Analytische Philosophie, zeigten die Tendenz, die Erkenntnistheorie in Syntax und Semantik, und auch Pragmatik, aufzulösen. Die syntaktischen und semantischen Funktionen, die Relation der Referenz etc. konnten wiederum in den entsprechenden Funktionen der Sprache, sei es nun der Alltagssprache oder der wissenschaftlichen Sprachen, begründet werden. Wittgensteins Reduktion des Denkens auf das Medium der Sprache, in dem sich das menschliche Denken objektiviert und damit zum Objekt einer Philosophie wird, die den Gebrauch der Sprache erklärt und klärt, hat entscheidend zu dieser Entwicklung beigetragen. Die Wissenschaftsontologie nimmt dadurch Züge an, die man am besten durch „regionale Sprach-Ontologie" kennzeichnet. Ein Nebenprodukt der Wittgensteinschen Reduktion des Denkens auf die Sprache war, daß dies zur Auflösung der konzeptualistischen Ontologie beitrug.

Die Sprache in ihrer Gesamtheit, sei es nun die Alltagssprache oder die Wissenschaftssprachen, wird „analytisch" auf Teildisziplinen, z.B. Syntax, Semantik und Pragmatik, aufgeteilt. Man kann sagen, daß nun Syntax, Semantik und Pragmatik, aber auch z.B. die Deontik, Teildisziplinen einer Sprachphilosophie sind; aus diesen Teildisziplinen werden nun konsequent die Ontologien der diversen Sprachen oder Teilsprachen hergeleitet. Daß nunmehr solche formale Herleitungen — oder Rekonstruktionen — möglich waren, z.B. von kognitiven Sprachen des Alltags und von wissenschaftlich-theoretischen Sprachen, war für die Entwicklung der Ontologie äußerst vorteilhaft. Zum ersten Mal in der Geschichte der Ontologie konnte man sowohl platonistische als auch nominalistische Ontologien systematisch erforschen und in Modellen darstellen. Wie nahezu zu erwarten, tauchte dabei das Universalienproblem, wenn auch in modernisierter Form, wieder auf. Formale Ontologien z.B. verwenden Prädikat- und Individuenvariable, für die man nach den Prinzipien der Semantik und Lehre von der Referenz Wertbereiche in der Welt festlegen kann, auf die sie sich beziehen. So kann der Nominalismus nur gebundene Individuenvariable zulassen, die sich auf raumzeitliche, konkrete Objekte beziehen. Der Platonist hingegen muß auch mit Relations-, Klassen- und Zahlenvariablen arbeiten, die sich dann auf abstrakte Gegenstände, nämlich Relationen, Klassen und Zahlen, beziehen. Ontologische Untersuchungen im Rahmen der neueren analytischen Richtungen und der Sprachphilosophie (Quine) brachten ein Ergebnis, das man als einen Abschluß des Universalienstreites ansehen kann. Extrem nominalistische ontologische Modelle können nämlich in Wissenschaftssprachen nicht verwendet werden, da sie zu ausdrucksarm sind. Andererseits führen extrem platonistische Modelle in der Mengenlehre, welche das mathematische oder mathematisch-logische Gerüst wissenschaftlicher Theorien ist, zu Antinomien.

Eine Sprach-Ontologie hat für alle Disziplinen, die sich mit der Sprache beschäftigen, sei dies nun die Linguistik, die Sprachpsychologie oder die Sprachphilosophie selbst, zu außerordentlich brauchbaren Ergebnissen geführt. Dies gilt z.B. auch für das Zwei-Komponenten-Modell wissenschaftlicher Theorien, d.h. wissenschaftlicher Sprachen. Dieses Modell vermeidet die Schwierigkeiten, die entstehen, wenn man in einer Theorie sowohl eine nominalistische, als

auch eine platonistische Ontologie verwendet; denn in diesem Modell werden beide Ontologien strikt und gegenseitig voneinander abhängig gemacht, wodurch es zu einem „Kompromiß" kommt. Wir können die beiden Komponenten kurz folgendermaßen charakterisieren: Die Beschreibung eines Teiles der Welt in einer Theorie fordert eine empiristische und nominalistische Sprache; dies ist die eine Komponente einer Theorie. Die andere Komponente besteht in einer platonistischen theoretischen Sprache, welche die in der Theorie nominalistisch und empiristisch beschriebenen empirischen Strukturen mathematisch repräsentiert. Der Kompromiß setzt voraus, daß die betreffende Theorie gut bestätigt ist. Eine systemtheoretisch aufgefaßte Mengenlehre spielt die Rolle einer weiteren „Hilfsdisziplin" bei der Interpretation der im Anwendungsbereich der betreffenden Theorien gültigen mathematischen Strukturen.

Die Ontologie ist also tatsächlich eine Interdisziplin geworden, die die Logik mit ihren Teildisziplinen, die Systemtheorie, die Sprachphilosophie eingeschlossen einer sprachphilosophischen Semantik etc. und schließlich und endlich die kognitiven Sprachen des Alltags und der wissenschaftlichen Theorien verwendet, um aus ihnen die Strukturen der Welt, wie sie wirklich — oder auch bloß möglich — sind, zu erschließen.

Der vorliegende Band greift aus der hier einleitend zusammengefaßten Entwicklung der Ontologie folgende Schwerpunkte heraus.

Der erste Teil, „Traditionelle und moderne ontologische Systeme", setzt die im Vorwort ausgedrückten Gedanken weiter fort, natürlich ausführlicher, und zwar mit der Darstellung einer Vielzahl ontologischer Systeme. Obwohl einige ontologische Systeme der Vergangenheit gründlich diskutiert werden, so befassen sich doch die meisten Arbeiten dieses Teiles mit modernen ontologischen Systemen, d.h. solchen, die gegenwärtig entwickelt und verteidigt werden. In diesem Teil finden wir auch eine Art kritischer Durchleuchtung gewisser moderner ontologischer Systeme, welche ein notwendiger Bestandteil in der Entwicklung der Ontologie sind.

Der Wert eines ontologischen Systems zeigt sich darin, wie es mit verschiedenen ontologischen Problemen fertig wird. Der zweite Teil, „Ontologische Probleme", beschäftigt sich mit wichtigen Beispielen solcher Probleme. Es ist nicht überraschend, das hier die Frage nach der Natur der Universalien wieder auftaucht. Daneben werden problematische „Objekte" der Ontologie, wie Ereignisse, Propositionen, Handlungen, Momente (u.a.) besonders diskutiert. Für den Philosophen, der sich mit Ontologie beschäftigt, werfen diese „Objekte" bestimmte Fragen auf, erstens: Wie kann man sie zu anderen „Objekten" in einem ontologischen System in Beziehung bringen? Zweitens: Wie kann man diese „Objekte" interpretieren und individuieren? Im zweiten Kapitel werden auch allgemeine Fragen der Interpretation und Individuation erörtert.

Der dritte Teil beschäftigt sich mit verschiedenen Aspekten der formalen Ontologien. Dem Leser wird bei diesen Diskussionen klar werden, daß es die Techniken der Formalen Logik sind, welche es ermöglicht haben, Ontologie strenger, genauer und klarer zu betreiben.

Der vierte Teil handelt von Erkenntnis und Ontologie. Alle diejenigen, die sich ernsthaft mit Philosophie beschäftigen, stimmen vermutlich darin überein, daß Erkenntnistheorie und Ontologie eng miteinander verknüpft sind. Aber wie diese Verknüpfungen aussehen, darüber sind sie sich nicht einig. Die Artikel dieses vierten Teiles beschäftigen sich mit verschiedenen philosophischen Anliegen in diesem Gebiet, wobei bestimmte Beziehungen zwischen Erkenntnistheorie und Ontologie geklärt werden.

Der Titel des fünften Teiles ist „Ontologie und Semantik". Vielen Philosophen ist es klar geworden, daß man einen umfassenden Einblick in die Semantik haben muß, will man ein brauchbares ontologisches System errichten. Die Artikel des fünften Teiles handeln entweder von speziellen semantischen Problemen als solchen oder sie diskutieren, wie die verschiedenen semantischen Erwägungen die Behandlung wichtiger ontologischer Probleme beeinflussen.

Der sechste Teil betrifft die ontologische Fundierung der Naturwissenschaften, der siebente die der Sozialwissenschaften. In diesen beiden Teilen wird der Leser eine genaue Bestätigung

des Hauptthemas des Vorwortes finden, nämlich, daß die Ontologie eine Interdisziplin zwischen der Philosophie und den Wissenschaften ist.

Die letzten drei Teile befassen sich mit Wittgensteins Philosophie. Der achte Teil trägt den Titel „Die frühe Philosophie Wittgensteins" und beschäftigt sich mit verschiedenen Aspekten des wichtigsten frühen Werkes dieses bedeutenden Philosophen, nämlich des „Tractatus logico-philosophicus". Die Erörterungen drehen sich z.B. um die Frage, was die umstrittenen „Objekte" des „Tractatus" seien und um die wichtige „Bildtheorie" der Bedeutung. Der neunte Teil, „Die späte Philosophie Wittgensteins", enthält viele verschiedene Diskussionen von Wittgensteins späteren philosophischen Schriften, z.B. seiner Ansichten über Gewißheit, Mathematik, Lernen und die Privatsprache. Der zehnte Teil, „Wittgenstein im historischen Kontext", befaßt sich mit einer Reihe von philosophischen Erörterungen, die Wittgensteins Werk mit dem anderer Philosophen in Verbindung setzen.

Zum Schluß möchten wir allen jenen danken, die zum Gelingen dieses Bandes beigetragen haben: dem Philosophie-Department der Universität Nebraska und besonders dem Chairman, Nelson Potter, für seine tatkräftige Unterstützung, Elisabeth Leinfellner, der verantwortlichen Herausgeberin der Schriftenreihe der Wittgenstein-Gesellschaft, für ihre Hilfe, und dem Verlag Hölder-Pichler-Tempsky, und besonders Erich Péhm, für die Sorgfalt bei der Herstellung dieses Bandes.

Die Herausgeber

PREFACE

Ontology is typically defined as the theory of being *qua* being, or the science of the essence of things. Today ontology is often perceived as a traditional, even antiquated, philosophical discipline and many philosophers contend that it has lost touch with the twentieth century and the rapid development of the sciences.

This volume, entitled *Language and Ontology*, shows that this is not the case. *Language and Ontology* is the printed result of the Sixth International Wittgenstein Symposium, held August 23—30, 1981, in Kirchberg am Wechsel, Austria.

The papers of this volume thoroughly explore and develop the problems of ontology; we want to precede them with a general introduction in which we will briefly illustrate the change of meaning in the definitions of "ontology" and ontology's important historical role which is too often entirely forgotten.

To begin with we want to state that ontology should be seen only as an interdiscipline involving both philosophy and science. It is a discipline which points out the problems of the foundations of the sciences as well as the borderline questions, and which further attempts to solve these problems and questions. Ontology is not a discipline which exists separately and independently from all the other scientific disciplines and also from other branches of philosophy. Rather, ontology derives the general structure of the world; it obtains the structure of the world as it really is from knowledge embodied in other disciplines. If one examines the history of philosophy one sees that ontology has never solved or attempted to solve the questions about the structures of our world independently, apart from the other philosophical disciplines or apart from the sciences. As is expressed by this symposium's topic, "Language and Ontology", ontology has derived the world's structure from other disciplines which describe reality, and has thus relied upon the languages of other disciplines. A common belief is that this derivation of the world's most general structures from the knowledge of other disciplines is ontology's only task. But now the belief is that in doing ontology one always selects the most important and most general laws from among all the laws which the various disciplines have to offer at any given time. Further, the ontologist interpretes and generalizes those laws and must endeavor to establish certain of them as the most fundamental and general structures of our world.

If ontology is a discipline which uses knowledge from various other disciplines then it is obvious that, in the course of the history of philosophy, ontology must have developed in a most dramatic fashion. If we look at the actual history of ontology we find confirmation of our claim. Ontology mirrors, so to speak, the level of our knowledge of the world at any given time. For instance, Plato and the Platonists have assumed that one could derive our world's most general empirical structures from an ideal world of Platonic Forms. Of this world of Forms it is said that one can experience it intuitively and that its existence has to be presupposed *a priori*. For this derivation, one needs only two relations, *methexis* and *parousia*. "*Methexis*" means "participation" or what we would call "representation"; "*parousia*" means "manifestation" (of the ideas in the world) or what we would call "interpretation". These ontological procedures are explained in Plato's *Parmenides*.

For Aristotle, the main task of philosophy was not to perceive the world of ideas, but to experience the empirical world and acquire knowledge about it (*Metaphysics*, Chapter 9). He created the first system of ontology in the form of an ontology of substances. Aristotle's search for the world's true structures is interestingly opposed to Plato's. For Aristotle the general properties of things, that is, those properties of things which constitute their invariant form, have to be found through a cognitive process. These general properties of things are universal structures or patterns. These universal patterns are to be defined and axiomatized.

For this task one calls on logic for help. The end result is that universals become generally comprehensible.

Here one may ask as Porphyry did what universals really are. The answers that have been proposed are numerous. They include: Platonic ideas, substances residing in things, concepts or representations in the human mind (conceptualism), terms or predicates contained in our language (nominalism), and mathematical-theoretical constructs in the languages of present-day theories. The question about the very nature of universals (general structures) has occupied philosophy and the sciences up to the present day as one can see in reading Heisenberg's dialogues with Schrödinger where this question is discussed at length.

In the Middle Ages the concern with universals continued. Various elaborate systems evolved, including, importantly, varieties of conceptualism and nominalism. A decisive turn in the history of ontology is connected with the writings of Goclenius, Wolff, and Leibniz. Goclenius needs to be mentioned for he is credited with the first use of the term 'ontology'. Like all ontologies, so also Wolff's, has to be made dependent upon the level of knowledge existing at his time. Knowledge for Wolff is logical knowledge. He established the inter-disciplinary character of his ontology by deriving the most general laws of nature and of all things from the principles of a logic derived from Leibniz. According to Wolff, it is one of the basic ontological structures of everything that exists, that the principle of non-contradiction and the principle of sufficient reason are valid in all merely possible worlds in addition to the real world.

Kant rejected Wolff's logic as metaphysical and Platonistic. Therefore Kant rejected also Wolff's ontology. Instead of traditional logic, Kant introduced his own *transcendental* logic. This transcendental logic may be seen as a cognitively oriented method which is founded on concepts. If one wants to gain knowledge, then, according to Kant, only those *categories* (or most general concepts) may be used which fulfill certain spatio-temporal conditions when they are applied. These categories are of subjective origin, that is, created by the human mind. It is a scientific theory, namely, Newton's physics, which furnishes the natural laws which are the basis of Kant's ontology. In his epistemology (an "auxiliary discipline" of his ontology which is contained in the *Critique of Pure Reason*), Kant methodologically explains Newton's physics.

Leibniz's logic stands in the same relationship to Wolff's ontology, as the natural laws of Newton's physics and Kant's own epistemology stands to Kant's ontology. But for Kant it is not the world of things-in-themselves which determines his ontology but the spatio-temporal-categorial system of relations of the phenomena. It is important that here ontology can be clearly separated from epistemology. Kant's epistemology is a metatheory of the cognitive presuppositions and methods of classical physics. Kant's categorial ontology derives from natural laws which are supported and confirmed by empirical evidence of the general structures of the world—the classical physical world, as we would say today. With this, ontology became an interdiscipline, since it is here that for the first time in the history of philosophy and science that scientific results were thoroughly (philosophically) generalized. This is also an important point in the development of the ontology of the sciences. The ontology of the sciences has progressed enormously in the twentieth century, since many scientific theories with their specialized, cognitively oriented languages and with their specialized mathematical methods did not originate before the twentieth century. Up to now, the ontology of the sciences is the last chapter of the history of ontology.

After Kant, ontology developed in several directions. Ontology of the sciences evolved in Neo-Kantianism, Positivism and Neo-positivism, the philosophy of the Vienna Circle, and in contemporary philosophy of science. On the other side stands phenomenological ontology. Phenomenological ontology expanded Kant's phenomenological "reduction" of the world. Its climax is Husserl's phenomenology in which the world itself becomes the (world) phenomenon. The world's basic structures exist exactly in that way in which they are experienced (phenomenologically) by human beings. The construction and the structure of the world "happen" in man's pure intentional consciousness *vis-à-vis* reality. According

to Husserl, mathematics and logic also participate in the constitution of the world out of the phenomena. This constitution has a semantical character but happens, nevertheless, without language. Heidegger's fundamental ontology, on the other hand, speaks of an anti-logical and anti-scientific basic experience, which is said to be paramount to all scientific knowledge.

The next decisive step in the development of ontology was the result of another development, which had reached its *climax* in the twentieth century, the development of formal logic. Formal logic, and, in union with it, analytic philosophy, often show the tendency to dissolve epistemology into syntax and semantics, and even pragmatics. The syntactical semantic functions, the reference relation, etc., could, in turn, be based upon the respective functions of language, be it ordinary language or the language of the sciences. Wittgenstein's reduction of thinking to the linguistic medium became an object of a philosophical position whose task was to explain and clarify language. As a result, the ontology of the sciences acquires features which are best characterized by "regional linguistic ontology". An important result of Wittgenstein's reduction of thinking to language was the dissolution of conceptualistic ontology.

Language in its entirety, be it ordinary language or the language of the sciences, is "analytically" parceled out to sub-disciplines, e.g. syntax, semantics, and pragmatics. One can now say that syntax, semantics, and pragmatics (but also, e.g., deontic logic) are sub-disciplines of a philosophy of language; and from those subdisciplines one can derive the ontologies of the various languages or sub-languages.

It was extremely fortuitous for the development of ontology that such formal derivations —or reconstructions—became possible, that is, derivations or reconstructions of everyday and scientific theoretical cognitive languages. For the first time in the history of ontology, one was now able to systematically investigate and to represent in models Platonistic as well as nominalistic ontologies. As almost to be expected, on this occasion the problem of universals appeared again, even though it appeared in a modernized form. Formal ontologies use predicates and individual variables. According to the principles of semantics and the philosophy of reference, one can define ranges of values in this world to which they relate. In this manner, nominalism can permit only bound individual variables which refer to spatio-temporal concrete objects. The Platonist, on the other hand, must work with variables for relations, classes, and numbers which, then, refer to abstract entities, namely, relations, classes, and numbers. Ontological inquires in the framework of modern analytic and linguistic philosophy had a result which some have considered as the conclusion of the discussion of the problem of the universals.

Extremely nominalistic ontological models cannot be used in scientific languages, since they are semantically too limited. Extremely Platonistic models on the other hand lead to antinomies in set theory. This is a serious problem as set theory is the mathematical-logical skeleton of scientific theories.

In all disciplines which concern themselves with language, be it linguistics, psycholinguistics, or philosophy of language itself, linguistic ontology has yielded extremely useful results. This is also true of the two-components model of scientific theories, that is, languages. This model avoids the difficulties which result if one uses in a theory both a nominalistic and a Platonistic ontology, since in this model both ontologies will be formulated in such a way as to be strictly dependent on one another. Thus a "compromise" arises. In brief one may characterize both components in the following way: the description of a part of the world in a theory demands an empiricist and nominalistic language; this is one of the theory's components. The other component consists in a Platonistic theoretical language which mathematically represents those empirical structures. The compromise presupposes that the respective theory is well confirmed. Set theory, viewed system-theoretically, plays the role of yet another "auxiliary" discipline when we interpret those mathematical structures which are valid in the empirical domain of the respective theory.

Thus ontology has really become an interdiscipline which uses logic and its sub-disciplines, systems theory, philosophy of language including semantics etc., and, finally, the cognitive

languages of everyday life and of scientific theories in order to derive from them the world's structures.

This volume singles out the following main points from the development of ontology, a development which has been summarized in this preface.

The first section, *Traditional and Contemporary Ontological Systems*, continues in the spirit of this preface but, of course, with detailed presentations of a variety of ontological systems. Although there is some important discussion of the systems of non-modern thinkers, most of the presentations in this category are concerned with contemporary ontological systems which are currently being developed and defended. There is also to be found in this section presentations of the sort of critical scrutiny of certain modern ontological systems that is a necessary part of advancement in this area.

The mark of the success of an ontological system is how well it deals with various ontological problems. The second section, *Ontological Problems*, is devoted to an important sampling of such topics. Not surprisingly, the topic of universals reappears. In addition, problematic entities such as events, propositions, actions, and moments (among others) are also specifically discussed. What makes these sorts of entities a concern for the ontologist is, firstly, how to relate them to other entities in one's ontology and, secondly, how to individuate and interpret them. General considerations about individuation and interpretation itself are also discussed in this section.

The third section considers various aspects of *Formal Ontologies*. What these discussions should make obvious to the reader are the advances in rigor, precision, and clarity that the application of formal logical techniques to ontology has made possible.

The fourth section addresses the topic of *Knowledge and Ontology*. That there are important interconnections between epistemology and ontology is a point on which all serious philosophers will agree. But the exact nature of these interconnections is a matter of some controversy. The articles in this section present a variety of philosophical concerns in which a number of the relations between epistemology and ontology are clarified.

Ontology and Semantics is the title of the fifth section. In order to construct an adequate ontological system it has become apparent to many philosophers that it is necessary to have a comprehensive grasp of semantics. The articles in this section either directly consider specific fields of semantic inquiry or discuss how various semantic considerations bear on serious ontological issues.

The sixth section concerns the *Ontological Foundations of the Natural Sciences*. And the seventh section examines the *Ontological Foundations of the Social Sciences*. In these two sections the reader will find ample evidence for the main theme of this preface, that ontology is an interdiscipline between philosophy and the different sciences.

The last three sections are devoted to the work of Ludwig Wittgenstein. The eighth section is entitled *Wittgenstein's Early Philosophy* and considers various aspects of the most significant early work of this important philosopher, namely, the *Tractatus Logico-Philosophicus*. Discussions deal with such topics as the controversial "objects" of the *Tractatus* as well as the important "picture-theory" of meaning. The ninth section, *Wittgenstein's Late Philosophy*, presents a wide variety of specific discussions of aspects of Wittgenstein's later philosophical writings, including, among others, his views on certainty, mathematics, learning, and private languages. The tenth section, *Wittgenstein in Historical Context*, presents a series of scholarly discussions relating the work of Wittgenstein to other important historical figures.

Finally, we would like to thank all those who have contributed to the success of this volume: the Department of Philosophy of the University of Nebraska and especially its chairman, Nelson Potter, for unflagging support; Elisabeth Leinfellner, managing editor of the *Schriftenreihe der Wittgenstein-Gesellschaft*, for her help; and the publishing firm, Hölder-Pichler-Tempsky, and especially Erich Péhm, for their care in the production of this volume.

The Editors

ERÖFFNUNGSREDE

G. E. M. Anscombe

Unter den Philosophen ist Wittgenstein eine außerordentliche Erscheinung: Er hat zwei historisch bedeutende philosophische Ereignisse hervorgerufen, zwei Einschnitte in die Geschichte der Philosophie gemacht. Die Vorstellung vom Einschnitt habe ich von Wolniewicz. Er erklärt ihn so: Ein Philosoph macht einen Einschnitt, wenn er die Art und Weise, in der philosophiert wird, verändert. Die Philosophie nach dem Einschnitt kann dann nicht mehr dieselbe wie die zuvor sein. So genommen war — wie mir ein österreichischer Philosoph einmal erzählt hat — die Wirkung von Wittgensteins *Tractatus* die eines Umsturzes. Wohlbestallte Philosophie-Professoren warfen ihre alten Bücher fort; die Aufgabe bestand nun darin, in der Art des *Tractatus* zu philosophieren. Und natürlich war es der allererste Teil dieser Aufgabe, das Buch selbst zu verstehen. Denn die Tatsache, daß man von einem Buch — oder einem gedanklichen Ansatz — vollkommen überzeugt worden ist, heißt noch nicht, daß man es oder seine Folgen wirklich verstanden hat. Und hier muß man einen Unterschied machen: Demnach gibt es einerseits Dinge, von denen man weiß, daß man sie noch nicht versteht; und es gibt andererseits Dinge, die man nicht versteht, aber wo man nicht weiß, daß man sie nicht versteht. Man geht mit seinen Vorurteilen an das Studium der neuen Sache heran, aber man merkt nicht, daß sie Vorurteile sind, und daß der Philosoph, den man studiert, diese Vorurteile nicht mit einem teilt. Ein Beispiel, den *Tractatus* betreffend, ist folgendes: Um Wittgensteins Begriff der Elementarsätze zu interpretieren, benützte man die Annahme von Basissätzen, welche von Carnap „Protokollsätze" genannt wurden. Dieses Wunschdenken verlieh der Wittgenstein'schen Philosophie den Charakter einer Art Russell'schen oder sogar Hume'schen Epistemologie, derselben Epistemologie, welche die Philosophie des Logischen Positivismus durchzog, auch wenn sie dort nicht immer ihre Gestalt beibehielt. Damit möchte ich nicht sagen, daß es absolut keine Gründe dafür gibt, diesen Weg der Interpretation einzuschlagen. Denn was für Sätze sind die Erläuterungen, welche im *Tractatus* erwähnt werden? „Die Bedeutungen von Urzeichen können durch Erläuterungen erklärt werden. Erläuterungen sind Sätze, welche die Urzeichen enthalten. Sie können aber nur verstanden werden, wenn die Bedeutungen dieser Zeichen bereits bekannt sind." (*TLP* 3.263) Man möchte meinen, daß dies aussieht wie eine Form des Unterschiedes, den Russell zwischen dem ‚knowledge by acquaintance' — Wissen, welches man durch Bekannt-Werden mit einem Gegenstand erworben hat — und dem ‚knowledge by description' — Wissen, das man durch Beschreibung erworben hat — macht, und zwar so, daß man den Unterschied zwischen den elementaren und den komplexen Sätzen im *Tractatus* dem Unterschied zwischen dem ‚knowledge by acquaintance' und dem ‚knowledge by description' gleichstellen kann. Und hatte nicht Wittgenstein selbst von den Urelementen im *Theätet* — wo es von einem Urelement heißt: „. . . für dieses gebe es nichts als die bloße Benennung; es habe ja nur seinen Namen" — gesagt: „Diese Urelemente waren auch Russells ‚individuals', und auch meine ‚Gegenstände'"? (*PU* 1, § 46) Hier gibt es bestimmt ein Interpretationsproblem. Ich weiß nicht, ob jemand dieses Problem erfolgreich angegangen ist. Aber die bloße Annahme, die ich schon erwähnt habe, hielt einen davon ab, die Lösung des Problems auch nur zu versuchen. Achten Sie darauf, daß die Stelle aus Platon nicht davon spricht, daß die Urelemente ‚gegeben' seien: die Urelemente werden als diejenigen Elemente charakterisiert, „aus denen wir und alles übrige zusammengesetzt sind".

Wenn man mit Vorurteilen an das Studium eines Philosophen herangeht, ohne daß die Vorurteile als solche erkannt werden, dann führt das oft dazu, daß man den Philosophen entweder mißversteht, oder daß man ihn schrecklich schwierig findet. Obwohl also an der

Interpretation des *Tractatus* immer noch gearbeitet werden muß, so bleibt doch die Tatsache bestehen, daß dieses Buch einen Einschnitt gemacht und einen außerordentlichen Einfluß gehabt hat. Viele Philosophen, welche vielleicht nicht ernsthaft versuchen würden, den *Tractatus* zu lesen, haben ihn doch im Blut. Ein interessantes Zeugnis davon ist der amerikanische Philosoph Wilfried Sellars, der sich dauernd auf Ansichten, Haltungen und Vorstellungen bezieht, welche er als dem *Tractat* zugehörig kennzeichnet. Er sagt nichts, das auf einer richtigen Auslegung des *Tractatus* beruht; es beruht eher darauf, was den Philosophen aus dem *Tractatus* in ihren philosophischen Blutstrom übergegangen ist.

Es gibt jedoch einen Prozeß der Auslegung und der Erklärung dessen, was wir jenem Buch entnommen haben, und dieser Prozeß ist manchmal dumm und manchmal interessant verlaufen.

Was den zweiten „Einschnitt" betrifft, den, der durch die *Philosophischen Untersuchungen* hervorgerufen wurde, so glaube ich, daß hier der analoge Prozeß kaum begonnen hat. Obwohl durch den Einfluß dieser Philosophie sehr viel verändert wurde, so glaube ich doch, daß dies mit viel mehr Ablehnung verbunden ist. Wenn mein Informant recht gehabt hat, dann warfen die etablierten Professoren mit Freuden ihre alten Bücher weg, als sie den *Tractatus* in die Hände bekamen. Aber außer den afficionados, die einfach den Wittgenstein der *Philosophischen Untersuchungen* nachahmen wollen, gibt es nur wenige Philosophen, die die Wirkungen jenes Werkes begrüßen, oder deren Entwicklung zeigt, daß die Probleme ihre Gestalt verändert haben, oder daß gewisse traditionelle philosophische Positionen nicht mehr eingenommen werden können.

Dies stammt, meiner Ansicht nach, von der außerordentlichen, aber nichtsdestoweniger noch nicht erkannten Schwierigkeit des Werkes. Der *Tractatus* sah schwierig aus, wo er schwierig war. Bei den *Philosophischen Untersuchungen* sind wir eher in der Lage von jemandem, der einem Vortragenden zuhört und der alles versteht, was gesagt wird, aber nicht weiß, worauf der Vortrag hinaus will. Aber hier ist eine Falle, in welche man leicht hineinfällt. Wenn man an den Text eines Autors mit Voraussetzungen herangeht, welche dieser Autor *nicht* teilt, ja Voraussetzungen, welche er sogar angreift, dann legt man eine rohe Interpretation über das, was er sagt; und dann befindet man sich offensichtlich entweder in weiter Ferne von diesem Autor, oder man gerät in Schwierigkeiten. So ist der berühmte Satz, „Ein ‚innerer Vorgang' bedarf äußerer Kriterien" (*PU* 1, § 58), als Beweis dafür herangezogen worden, daß nach Wittgensteins Auffassung zumindest kein geistiger Vorgang existieren *könne*, welcher nicht durch irgendwelche äußere Phänomene angezeigt werde. Auf ähnliche Weise entfernt man sich sehr schnell von gerade denjenigen Fragen, mit denen Wittgenstein sich beschäftigt, wenn man annimmt, daß die *Philosophischen Untersuchungen* uns eine Sprachtheorie lieferten — eine Theorie z.B., wie Laute zu bedeutungsvoller Rede werden. Etwa: „Ist der Ruf ‚Platte' im Beispiel (2) ein Satz oder ein Wort?" Wenn ich z.B. „Feuer!" rufe, ist das wirklich eine Abkürzung für „Etwas brennt, das nicht brennen soll!" Soll mein Ruf analysiert, auseinandergewickelt oder vielleicht erweitert werden, sodaß er eine Beschreibung wird? „Eine Beschreibung ist eine Abbildung einer Verteilung in einem Raum" sagt Wittgenstein im zweiten Teil der *Philosophischen Untersuchungen* (IX). Demnach ist es schwierig, den Ruf „Feuer!" eine Beschreibung zu nennen — oder ist dieser Ausspruch nicht wahr? Oder hält uns der Begriff der Beschreibung zum Narren?

Wenn wir uns die Fragen, die Wittgenstein tatsächlich stellt, sorgfältig überlegen, dann werden wir uns schnell dabei finden, daß wir über Dinge nachdenken, von denen wir glaubten, sie seien für die Philosophie *gänzlich* uninteressant. Und dies ist tatsächlich *eine* der bekannten Reaktionen auf die *Philosophischen Untersuchungen*, und nicht eine der dümmsten. Zumindest werden diese Gedanken dadurch nicht in eine Form gepreßt, in welche sie überhaupt nicht passen.

Ich weiß nicht, ob jemand durch das Studium von Wittgenstein wirklich von der folgenden Neigung geheilt wurde: dem Wunsch nach notwendigen Erklärungen, notwendigen Zusammenhängen. Dies wird durch Erörterungen des Problems der persönlichen Identität illustriert. Manche meinen, daß die Identität des Menschen als Person in der Identität des

lebendigen menschlichen Körpers besteht. Das ist vernünftig. Aber sie glauben auch, daß das Kriterium der Identität des lebendigen menschlichen Körpers nur die ‚raum-zeitliche Kontinuität' sein kann. Vielleicht kann man sie dazu überreden, daß sie in Wirklichkeit die raum-zeitliche Kontinuität der Form des Menschen im Fluß der Materie meinen. Aber sogar dann bleibt alles unbefriedigend. Wie kann dieses, oder jedes andere Kriterium, das man vorschlägt, der Forderung genügen, *daß es nicht logisch möglich sein darf*, daß zu einem späteren Zeitpunkt *zwei* Personen beide dem Kriterium genügen? In Wirklichkeit ist es so, daß diese Untersuchung die Sache am falschen Ende anfaßt: In diesem Leben ist die Identität das Kriterium der relevanten raum-zeitlichen Kontinuität, und nicht umgekehrt. In den meisten Fällen *erkennen* wir Leute, die wir kennen. Aber könnte es nicht zwei Personen geben, die sich vollkommen ähnlich sind? Ja, das ist *möglich*; aber dann greifen wir auf andere Dinge zurück — was diese Person weiß, woran sie sich erinnert, was andere Leute von ihr behaupten, usw. — Aber ist es nicht immer noch *logisch* möglich, daß zwei Personen jedes beliebige Kriterium, das wir vorschlagen, erfüllen? Wie steht es damit? Warum wollen wir etwas, zu dem es kein Gegenbeispiel geben *kann*, und nicht bloß etwas, zu dem es kein — oder gewöhnlich kein — Gegenbeispiel gegeben hat? Was sollen wir davon halten?

Wir sagen, daß ein Bild das Bild eines alten Mannes ist, der einen Hügel mit einem Stock erklimmt. Wir können sagen, daß wir beim kurzen, beim flüchtigen Hinschauen so etwas *gesehen haben*. In einer ganz anderen Umgebung könnte das Bild jemanden darstellen, der den Hügel herunterrutscht. Wie *wissen* wir, was wir sehen? — Wenn wir in dieser Weise gefragt werden, dann enthüllt die Frage eine Forderung, welche wir genau untersuchen sollten. Und etwas, das in dieser Forderung implizit enthalten ist, ist die Forderung nach etwas, das uns Notwendigkeitsbedingungen liefert. Die akademische Philosophie ist zu einem großen Maße eine riesige Fabrik zur Erzeugung von Notwendigkeiten — nur Notwendigkeiten geben uns den Seelenfrieden. Es ist kein Wunder, daß Wittgenstein unter uns einen gewissen Haß hervorruft: er ist darauf aus, uns unsere Posten in der Fabrik wegzunehmen.

Die genaue Beschreibung der Verteilung von Farbflecken auf einer Leinwand enthüllt uns nicht das Bild, das auf der Leinwand ist. Jedoch, wenn man sagt, ,,Aber das Bild ist doch *auch* da; *Woraus besteht es*?; Da *muß* es neben der Farbe auf der Leinwand noch etwas anderes geben", dann läßt man sich auf eine trügerische Suche ein. Die ungeheure Zahl der Dinge, die wir kennen, die wir tun, und an denen wir Anteil nehmen, sind wie die Bilder auf der Leinwand. Die Tatsachen über unser Wissen, unser Tun und unsere Anteilnahme sind außerordentlich interessant; aber wir können keine Notwendigkeiten von der absoluten ‚a priori'-Art finden, welche unsere Behauptungen rechtfertigen. Und diejenigen Gebiete, wo eine harmlosere Art von Notwendigkeit eine Rolle spielt, z.B. die Notwendigkeit, daß das Dreieck eine ebene, geradlinige Figur mit der kleinsten Seitenanzahl ist, sind Spezialgebiete.

Der Kontrast zwischen einem harmlosen und einem täuschenden Begriff der Notwendigkeit ist außerordentlich bemerkenswert — und vielleicht schwer zu verstehen — im Falle der Entwicklung einer Reihe oder beim Berechnen des Wertes von y, gegeben x, in einer Formel. Tatsächlich gebrauchen wir den Ausdruck ,,die Schritte sind durch die Formel determiniert . . ." Wir gebrauchen ihn zum Beispiel, wenn wir zwischen einer Formel, die genau einen Wert von y, gegeben x, determiniert, und einer solchen, die nicht derart determiniert, unterscheiden wollen. Schon im Anfängerstadium des Algebra-Unterrichtes lernen wir, mit solchen Formeln umzugehen und solch einen Unterschied zu erkennen. Aber, wenn eine Formel gegeben ist, die tatsächlich und offensichtlich den Wert von y, gegeben x, determiniert, oder wenn eine Formel gegeben ist, für die wir beweisen können, daß sie eine solche Formel ist, dann möchten wir vielleicht sagen: ,,Sie *determiniert* in der Tat; sie determiniert die ganze Reihe, die Reihe ist tatsächlich da, sie ist determiniert, und wenn wir rechnen, dann gehen wir gewissermaßen mit Tinte über denjenigen Teil der Reihe, den wir berechnen." Hier fabrizieren wir nicht gerade eine Notwendigkeit, sondern wir versuchen, das Ideal einer Notwendigkeit, welche durch die Berechnungen nachgeahmt wird, zu formulieren, wenn diese Berechnungen zu Ergebnissen führen, die im harmlosen Sinne determiniert sind. Und hier gibt es

in der Tat tiefe Probleme, Probleme, welche von der Natur der Mathematik handeln. Herauszufinden, worin sie überhaupt bestehen, ist die erste Aufgabe desjenigen, der Wittgenstein oder die Grundlagen der Mathematik verstehen will.

Aber er hat auch gesagt, daß die Frage nach der richtigen Art und Weise, die Reihe 2, 4, 6, 8, 10, . . . usw., oder sogar die Reihe 2, 2, 2, 2, 2, 2, . . . usw. fortzusetzen, dieselbe sei wie die Frage, wie man mit dem Wort „rot" fortfahren solle. Und diese Forderung ist nicht allzu schwierig zu verstehen. Denn auch hier liegt die Vorstellung auf der Lauer, daß es ein ‚Muß', welches die zukünftige Anwendung betrifft, gibt, und daß man dieses ‚Muß' erfaßt, wenn man die Bedeutung dieses Wortes erfaßt. Hier werden wir nicht so sehr in die Versuchung geführt, Notwendigkeiten zu erfinden oder zu fabrizieren, sondern in die Versuchung, uns mit denen zufrieden zu geben, welche wir glauben, schon erfaßt zu haben — bis uns jemand mit der Frage beunruhigt: „Und wenn du glaubst, daß du das Wort auf dieselbe Sache anwendest — mußt du recht haben?" Nur für diejenigen, die annehmen, daß *ihre eigenen* Annahmen unwiderleglich richtig und die Grundlage von Bedeutung und Wahrheit sind, ist dies eine skeptische Frage. Sie sind böse darüber, daß man sie beunruhigt hat — wenn sie die Beunruhigung überhaupt fühlen.

Was ich jedoch sagen möchte, kann ich nur mit großen Schwierigkeiten ausdrücken. Die Dinge, die Wittgenstein angreift — da gibt es Hindernisse für eine wahre Ansicht oder wahre Ansichten. Es ist ein Hindernis beim Betrachten eines Bildes, wenn man auf der Überzeugung beharrt, daß man entweder das Bild aus der Beschreibung der Farbe jedes Farbfleckens in einem feinen darübergelegten Raster gewinnen muß, oder daß man, abgesehen davon, was diese Beschreibung beschreibt, eine Theorie darüber, was das Bild *ist*, haben muß. Wenn man beiden Neigungen abschwört, dann darf man vielleicht das Bild ansehen, und wenn man das tut, dann wird man bemerken, daß man voll Erstaunen ist. Oder, wie Wittgenstein einmal gesagt hat, es kann geschehen, daß man auf einem „mountain of wonders" herumgeht.[1]

Noch etwas möchte ich sagen: Es war für mich sehr anregend, eine Stimme aus der Gegenwart zu hören, die die Stimme eines großen Philosophen war. Das hatte die Wirkung, daß damit auch die großen Philosophen der Vergangenheit nahezu zu Zeitgenossen wurden. Vorher waren die bedeutenden philosophischen Lehrer der Vergangenheit etwas, das für uns in der Wirklichkeit nicht erreichbar war. Sie — die großen Philosophen der Vergangenheit — waren wie schöne Statuen. Plötzlich gab es da nun einen lebendigen Menschen, der ihnen in einer gewissen Art und Weise glich. Und sofort wurden auch sie lebendig, zu Fleisch und Blut. Und die erste Reaktion, die ich damals hatte, war die des Bedauerns darüber, daß ich nicht solche bedeutende philosophische Vorbilder gehabt hatte. Ich glaube, man braucht immer eine lebendige Verkörperung des Großartigen, damit man ein Beispiel davon vor sich hat, was möglich ist und was sein soll. In typischen Zeitschriftenartikeln wird Wittgenstein als ‚herzlos' kritisiert. Er hat auch gesagt: Bei Platon sieht man, daß die Fragen, die er diskutiert, für ihn um Leben oder Tod — ‚matters of life and death' — gingen. Wittgenstein machte denselben Eindruck. Wenn wir nicht solche Beispiele vor uns haben, dann wird die Philosophie immer trivialer werden.

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ANMERKUNG

1 Der ganze folgende Absatz fehlt im englischen Original (d. Ü.).

Übersetzt von E. L.

OPENING ADDRESS

G. E. M. Anscombe

Wittgenstein is extraordinary among philosophers for having made two epochs, or cuts in the history of philosophy. I take the idea of a cut from Wolniewicz. He explained it like this: a philosopher makes a cut if he makes a difference to the way philosophy is done: Philosophy after the cut cannot be the same as before. Thus, as I was told once by an Austrian philosopher, the effect of Wittgenstein's *Tractatus* was cataclysmic. Long established professors of philosophy threw away their old books. The task now was to do philosophy in the manner indicated by the *Tractatus*. And of course the first task was to understand that book. For the fact that you have been overwhelmingly convinced by a book or an approach does not mean that you have really grasped it and its implications. And here you have to make a distinction. The distinction is between the things you know you don't understand yet, and the things that you don't understand, but without realising that that is so. You bring prejudices to the new study, without realising that they are prejudices and that the philosopher you are studying does not share them. One instance of this for the *Tractatus* was the assumption of 'basic propositions'—what Carnap called "Protokollsätze"—used to interpret Wittgenstein's concept of elementary propositions. This wished upon Wittgenstein a kind of Russellian or even Humean epistemology, which pervaded the philosophy of logical positivism, though it didn't always take the same form. I do not mean that there was absolutely no ground that could be offered for taking this line. What sentences were the Erläuterungen mentioned in the *Tractatus*? "Die Bedeutungen von Urzeichen können durch Erläuterungen erklärt werden. Erläuterungen sind Sätze, welche die Urzeichen enthalten. Sie können also nur verstanden werden, wenn die Bedeutungen dieser Zeichen bereits bekannt sind." (*TPL* 3.263) Someone might think this looks very like a form of Russell's 'knowledge by acquaintance', which contrasts with 'knowledge by description' in a way to which one might want to assimilate the contrast between elementary and complex propositions in the *Tractatus*. And didn't Wittgenstein himself say of the 'simples' of the *Theaetetus*, which "can only be named: their names are all they have": "these simples were my 'objects' and Russell's 'individuals'?" (*PI* I, § 46) There is certainly a problem of interpretation here. I don't know if anyone has tackled it successfully. But the mere assumption which I have mentioned did prevent people from trying. Note that the passage in Plato does not speak of the primary elements as 'given': they are characterised as the elements "out of which we and everything else are composed".

Bringing prejudices, unrecognised as such, to the study of a philosopher often leads either to misunderstandings or to finding the philosopher dreadfully difficult. However, although the interpretation of the *Tractatus* is still work to do, yet the fact remains that it made a 'cut' and that it has had an enormeous influence. A lot of philosophers who perhaps would not seriously try to read it nevertheless have it in their bloodstream. This is interestingly attested by the constant reference of the American philosopher Wilfred Sellars to "Tractarian" views, attitudes and conceptions: He is not saying anything that depends on a correct exegesis of the *Tractatus*; it depends rather on what has got into people's philosophical bloodstream because of the *Tractatus*.

There is a process of exegesis, however, and of making clear what we got out of that book, which has gone on, sometimes stupidly and sometimes interestingly.

With the second 'cut', effected by *Philosophical Investigations*, the analogous process has, I think, barely began. Although things were very much changed by the impact of this philosophy, there is, I think, more resentment about that fact. If my informant was correct,

the old professors joyfully threw away their old books when they got hold of the *Tractatus*. But except for the afficionados who want simply to imitate Wittgenstein of the *Investigations*, there are rather few philosophers who welcome the effect of that work, or who manifest in their way of going on that problems have changed their aspects, or that some rather standard positions in philosophy can no longer be taken.

This arises, I think, from the immense and yet unperceived difficulty of the work. The *Tractatus* looked difficult where it was difficult. With the *Investigations* we are rather in the situation of one who listens to a lecturer and can understand each thing that is said, but does not know where it is getting to. But there is a trap which it is easy to fall into. Bringing to the text assumptions which your author does *not* share, assumptions indeed which he attacks, you put crude interpretations on what he says, and then you either are obviously at a great distance from him, or you get into difficulties. Thus the famous sentence: "Ein 'innerer Vorgang' bedarf äußerer Kriterien" (*PI* I, § 580) has been cited as proof that Wittgenstein's theory was that at least there *could not* be any mental occurrence without any outward phenomena to mark it. Similarly the assumption that the *Philosophical Investigations* presents us with a theory of language—a theory, say, of how sounds become significant speech—will quickly place us at a distance from the very questions which Wittgenstein is occupied with. E.g., "Ist der Ruf 'Platte' im Beispiel (2) ein Satz oder ein Wort?" When, for example, I shout "Fire!" is that really short for "Something's on fire that ought not to be!" Ought my shout to be analysed, unpacked, or rather expanded so as to be a description? "Eine Beschreibung ist eine Abbildung einer Verteilung in einem Raum" Wittgenstein says in Part II of *Philosophical Investigations* (IX). That makes it difficult to call the shout "Fire!" a description—or is that dictum not true? Or does the concept of description hoax us?

If we consider carefully the questions which Wittgenstein does ask we may quickly find ourselves considering things which we have not thought were the interest of philosophy *at all.* And that indeed is *one* of the known reactions to *Philosophical Investigations* and not one of the most stupid ones. At least it doesn't involve forcing this thinking into a mould which it doesn't fit at all.

I dont know if anyone has really been cured, by studying Wittgenstein, of the following inclination: the desire for necessary explanations, necessary connexions. This is illustrated by discussions of personal identity. Some people think that the identity of a human person is the identity of a living human body. That's reasonable. But they also think that the identity of the living human body must have its criterion in 'spatio-temporal continuity'. Perhaps they can be persuaded that they must mean the spatio-temporal continuity of a human form in the flow of matter. But even so, things are unsatisfactory. How can this or any other suggested criterion meet the demand *that it not be logically possible* for *two* later people both to satisfy the criterion? In fact, this enquiry has got things the wrong way round: in this life, identity is our criterion for the relevant spatio-temporal continuity, and not vice versa. We *recognise* people we know, for the most part. But mightn't there be two alike? Yes, there *can* be; and then we fall back on other things—what this person knows, what his memories are, and other people's claims about him, and so on.—But isn't it still *logically* possible that two might satisfy whatever criteria we propose? Well, and what of it? Why do we want something that there *could* not be a counter-example to, and not merely something that there has not, or not normally, been any counter-example to? In a different world, things might be different. What of it?

We say a picture is a picture of an old man climbing a hill with a stick. We may say we *saw* such a thing in a brief, a momentary, glimpse. In quite other surroundings the picture might be that of someone sliding downhill. How do we *know* what we see?—Asked in that fashion, the question reveals a demand which we ought to scrutinize. And one thing that is implicit in the demand is the demand for something that gives us necessities. Professional philosophy is to a great extent a huge factory for the manufacture of necessities—only necessities give us mental peace. It is no wonder that Wittgenstein arouses a certain hatred among us. He's out to deprive us of our factory jobs.

The detailed description of the distribution of colour-patches on a canvas does not reveal to us the picture that is on it, though if you say: "But there is *also* the picture. *What does it consist in*? There *must* be something else besides paint on canvas—you are embarking on an illusory search. The vast number of things that we know and do and are concerned with are like the picture on the canvas. The facts about our knowing, our doing, and our concerns are enormeously interesting; but necessities of an absolute 'a priori' kind cannot be found to justify our assertions. And the regions where necessity of a more harmless kind does play a part are specialised, like the necessity that the triangle is the plane rectilinear figure with the smallest number of sides.

The contrast between a harmless and a delusive concept of necessity is especially noteworthy —and, perhaps, difficult to grasp—in the case of the development of a series or working out the value of y for a given value of x in a formula. We do use the expression "The steps are determined by the formula . . ." We use it for example in distinguishing between a formula that does and one that does not determine just one value of y for a given value of x. Learning to handle such formulae and recognising such a distinction comes into learning algebra, at an elementary stage. But, given a formula which does determine the value of y for a given value of x, obviously, or one for which we can prove it is such a formula, we may then want to say "It does *determine* it; it does determine the whole series, the series is actually there, determined, and in calculating we are only as it were inking over the part of the series which we calculate." Here we are not exactly manufacturing a necessity, but trying to formulate the ideal of a necessity which is being imitated by the calculations when they are of results which in the harmless sense are determined. And here there are indeed deep problems, problems about the nature of mathematics. Just what they are is the first task for someone who wants to understand Wittgenstein or the foundation of mathematics.

But he also said that the question about the right way to continue the series 2, 4, 6, 8, 10, . . . and so on, or indeed 2, 2, 2, 2, 2, 2, . . . and so on, was the same as the question about going on with the word "red". And this claim is not too difficult to understand. For here too there lurks the idea that there is a 'must' about the future application and that you grasp this 'must' in grasping the meaning of the word. Here we are not so much tempted to invent or manufacture necessities, as to rest content with the ones we think we have already in our grasp—until someone disturbs us with the question: "And when you think you are applying the word to the same thing—must you be right?" This is a sceptical question only to those who assume that *their* assumptions are irrefragably correct and are the basis of meaning and truth. They are angry at being disturbed—if they feel the disturbance at all.

What I would like to say, however, is something that I find it very difficult to express. The things which Wittgenstein attacks—these are impediments to a true conception, or to true conceptions. It is an impediment to looking at the picture, if you are struck with the conviction that you must either extract the picture from the description of the colour of each colour patch in a fine grid laid upon it, or that you must have a theory of what the picture *is* apart from what that description describes. If you forswear both inclinations you may get to look at the picture, and doing so you may find yourself full of amazement. Or, as Wittgenstein once put it, you may find yourself "walking on a mountain of wonders".

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1. Traditionelle und moderne ontologische Systeme

1. Traditional and Contemporary Ontological Systems

NOTES ON THE WELL-MADE WORLD

Nelson Goodman

Since it seems obvious that words are usually different from what they refer to, that we cannot in general make anything by merely describing or picturing it, and that not all descriptions or pictures are right, how can I talk of worldmaking, find facts fluid, acknowledge conflicting truths, and suggest that the distinction between world and version is elusive? In this paper, I want to review and clarify some themes of *Ways of Worldmaking*, discuss some common objections to it, and reaffirm some of its paradoxes.[1]

1. *Monism, Pluralism, Nihilism*

Some truths conflict. The earth stands still, revolves about the sun, and runs many another course all at the same time. Yet nothing moves while at rest. We flinch at recognition of conflicting truths; for since all statements follow from a contradiction, acceptance of a statement and its negate erases the difference between truth and falsity.

Usually we seek refuge in simple-minded relativization: according to a geocentric system the earth stands still while according to a heliocentric system it moves. But there is no solid comfort here. Merely that a given version says something does not make what it says true; after all, some versions say the earth is flat or that it rests on the back of a tortoise. That the earth is at rest according to one system and moves according to another says nothing about how the earth behaves but only something about what these versions say. What must be added is that these versions are true. But then the contradiction reappears, and our escape is blocked.

Should we rather consider "The earth is at rest" and "The earth moves" as incomplete fragments of statements, true or false only when completed in one way or another, e.g. "The earth moves relative to the sun" or "The earth is at rest relative to Sirius"? This does not work either; for what can these statements mean? Perhaps, in the former case, "If the sun is at rest, the earth moves". But then the antecedent and consequent are themselves fragments of statements, without truth-value until completed; and so on *ad infinitum*. Or should we translate to "If the sun's position is plotted as a point, the earth's positions will be plotted as a path"? Then, since the diagrams are simply (nonverbal) versions, we are back to simpleminded relativization.

How, then, are we to accommodate conflicting truths without sacrificing the difference between truth and falsity? Perhaps by treating these versions as true in different worlds. Versions not applying in the same world no longer conflict; contradiction is avoided by segregation. A true version is true in some worlds, a false version in none. Thus the multiple worlds of conflicting true versions are actual worlds, not the merely possible worlds or nonworlds of false versions.

So if there is any actual world, there are many. For there are conflicting true versions and they cannot be true in the same world. If the notion of a multiplicity of actual worlds is odd and unpalatable, we nevertheless seem forced to it by the intolerable alternative of a world in which contradictory and therefore all versions are true.

But where are these many actual worlds? How are they related to one another? Are there many earths all going along different routes at the same time and risking collision? Of course not; the several worlds are not distributed in any literal space-time. Their positions are distinguished by conflicts among their versions, and might be said to belong somehow to a sort of quasi logical

quasi space-time. In any world there is only one Earth. The worlds of conflicting versions do not intrude upon one another; their several space-times lie in a hyper-space-time.

Yet however intricately and plausibly this idea may be developed, how can there really be many worlds? There may be many stars, many planets, many chairs, many things, many events; and truths about them may conflict and contrast in all sorts of ways. But "world" is all-inclusive, covers all there is. A world is a totality, and there can hardly be a multiplicity of totalities, more than one all-inclusive whole. By assigning conflicting versions to different worlds, we preclude composition of these totalities into one. Whatever we may mean by saying that the motion of the earth, or of different earths, differs in different worlds, we rule out any more comprehensive whole comprised of these. For a totality cannot be partial; a world cannot be a piece of something bigger.

So if there is any world, there are many, and if many, none. And if none, what becomes of truth and the relationship of a version to what it describes? Parmenides ran into this trouble long ago: because truths conflict we cannot describe the world. Even when he said "It is" he went too far. "It is" gives way to "They are"; and "They are" to "None is". Monism, pluralism, nihilism coalesce.

Part of the trouble comes, as in the Kantian antinomies, from stretching some terms or notions beyond their reach. So long as we keep within a version, "world" or "totality" is clear enough, but when we consider conflicting true versions and their several worlds, paradox enters. This sometimes leads to utter resignation, sometimes to an irresponsible relativism that takes all statements as equally true. Neither attitude is very productive. More serviceable is a policy common in daily life and impressively endorsed by modern science: namely, judicious vacillation. After all, we shift point of view and frame of reference for motion frequently from sun to earth to train to plane, and so on. The physicist flits back and forth between a world of waves and a world of particles as suits his purpose. We usually think and work within one world-version at a time—hence Hilary Putnam's term "internal realism"[2]—but we shift from one to another often. When we undertake to relate different versions, we introduce multiple worlds. When that becomes awkward, we drop the worlds for the time being and consider only the versions. We are monists, pluralists, or nihilists not quite as the wind blows but as befits the context.

According to one variety of solipsism, only I exist but this holds for each of the many people in the world. Somewhat analogously, one might say that there is only one world but this holds for each of the many worlds. In both cases, the equivocation is stark—yet perhaps negotiable.

2. *Ontology Evanescent*

Or have we gone too far too fast? May the conflicts we encounter among truths turn out on closer examination to amount less to genuine differences in what is said than to differences in manner of saying? Rather than disagreements on objective fact, are these merely superficial differences, chargeable to the varying perspectives and languages of our versions, with the real world to be sought beneath such surface disturbances?

Consider again, for example, the true statements that the earth is at rest, that it revolves around the sun, that it dances a jig, and so on. The suggestion is that the conflicts between these have no more to do with the earth, sun, or other heavenly bodies than do the different orders in which these objects may be described, but arise from the differing biases of the several versions; and that statements concerning the direction, speed, and acceleration of motion are different ways of describing the neutral facts of variation in distance between objects at different times. If all features responsible for disagreements among versions are thus dismissed as artificial, truths will no longer conflict in a way that calls for different worlds.

But once we recognize that some supposed features of the world derive from—are made

and imposed by—versions, 'the world' rapidly evaporates. For there is no version-independent feature, no true version compatible with all true versions. Our socalled neutral version of motion is as prejudiced as any other; for if direction and speed and acceleration are relative to observer and frame of reference, so also is distance between objects. And, as I shall argue below, the objects themselves and the time and space they occupy are version-dependent. No organization into units is unique or mandatory, nor is there any featureless raw material underlying different organizations. Any raw stuff is as much the creature of a version as is what is made out of that stuff.

Yet if all features of a world are creatures of a version, are generated and imposed by the version, what can they be imposed upon? The question is pertinent but slightly awry. The world of a true version is a construct; the features are not conferred upon something independent of the version but combined with one another to make the world of that version. The world is not the version itself; the version may have features, such as being in English or consisting of words, that its world does not. But the world depends upon the version.

Some inkling of what I mean by saying we make worlds may begin to glimmer here: we make versions, and true versions make worlds. This calls for further explanation on more than one score. How can we be said to make worlds by making versions, when making a true description of a chair, for example, falls for short of making a chair? And while we make versions, and we hope some true versions, we can hardly make versions true. Indeed, if there is no independent world to match a version against, what constitutes truth and what are the tests for it?

3. *How to Make Things with Words*[3]

That we can make the stars dance, as Galileo and Bruno made the earth move and the sun stop, not by physical force but by verbal invention, is plain enough. That we by like means also make things what they are in respects other than motion has now begun to be clear. From here a short step leads to the conclusion that we make the things themselves. But that, on the face of it, seems silly. Downright refutations are ready at hand in the form of challenge to produce forthwith, by means of a potent description, an extra planet, a chair to sit in, or a tender beefsteak. Inevitable failure is taken to prove the point.

But I have not said we can make a steak or a chair or a world at will and as we like by constructing a version. Only true descriptions make things; and making a true version can be hard work. But isn't that begging the question? Doesn't that amount to saying that versions can make only what is already there? And how can that properly be said to be making at all? If versions can make neither what is nor what is not already there, that seems a closed case against their making anything at all.

Yet I am not ready to give up; 'being already there' needs further examination and finding what is already there may turn out to be very much a matter of making.

I sit in a cluttered waiting room, unaware of any stereo system. Gradually, I make out two speakers built into the bookcase, a receiver and turntable in a corner cabinet, and a remote control switch on the mantel. I find a system that was already there. But see what this finding involves: distinguishing the several components from the surroundings, categorizing them by function, and uniting them into a single whole. A good deal of making, with complex conceptual equipment, has gone into finding what is already there. Another visitor, fresh from a lifetime in the deepest jungle, will not find, because he has not the means of making, any stereo system in that room. Nor will he find books there; but in the books and plants I find he may find fuel and food that I do not. Not only does he not know that the stereo set is one; he does not recognize as a thing at all that which I know to be a stereo system—that is, he does not make out or make any such object.

Now you may complain that all I am doing is applying a different term to a familiar process to bring out the constructive aspect of cognition. And you may ask, as Scheffler

has,[4] how we can reasonably say that we, or versions, make the stars, which existed long before us and all versions. Let me put off that question for a moment to look at a slightly different case.

Has a constellation been there as long as the stars that compose it, and or did it come into being only when selected and designated? In the latter case, the constellation was created by a version. And what could be meant by saying that the constellation was always there, before any version? Does this mean that all configurations of stars whatever are always constellations whether or not picked out and designated as such? I suggest that to say that all configurations are constellations is in effect to say that none are: that a constellation becomes such only through being chosen from among all configurations, much as a class becomes a kind[5] only through being distinguished, according to some principle, from other classes.

Now as we thus make constellations by picking out and putting together certain stars rather than others, so we make stars by drawing certain boundaries rather than others. Nothing dictates whether the skies shall be marked off into constellations or other objects. We have to make what we find, be it the Great Dipper, Sirius, food, fuel, or a stereo system.[6]

Still, if stars like constellations are made by versions, how can the stars have been there eons before all versions? Plainly, through being made by a version that puts the stars much earlier than itself in its own space-time. As the physicist J. R. Wheeler writes:[7]

> The universe does not exist "out there" independent of us. We are inescapably involved in bringing about that which appears to be happening. We are not only observers. We are participators . . . in making [the] past as well as the present and the future.

4. *Truthmaking*

Yet our making by means of versions is subject to severe constraints; and if nothing stands apart from all versions, what can be the basis and nature of these constraints? How can a version be wrong about a world it makes? We must obviously look for truth not in the relation of a version to something outside that it refers to but in characteristics of the version itself and its relationships to other versions. Could a version perhaps be false somewhat in the way a jigsaw puzzle can be wrongly put together, or a motor fail to run, a poster to attract attention, or a camouflage to conceal?

When the world is lost and correspondence along with it, the first thought is usually coherence. But the answer cannot lie in coherence alone; for a false or otherwise wrong version can hold together as well as a right one. Nor do we have any self-evident truths, absolute axioms, unlimited warranties, to serve as touchstones in distinguishing right from among coherent versions; other considerations must enter into that choice. Let us begin by looking at some of these that have to do with varieties of rightness other than truth.

Validity of inductive inference, though a property of a relation among statements, requires truth neither of premisses nor of conclusion; a valid inductive argument may even yield a false conclusion from true premisses. What, then, is required for inductive validity? Certain formal relationships among the sentences in question *plus* what I shall call right categorization. Now a category or system of categories—a way of sorting—is not sentential, is not true or false; but use of wrong categories will make an induction invalid no matter how true the conclusion. As I have pointed out elsewhere,[8] the same formal rules that lead from evidence statements about green emeralds to the hypothesis "All emeralds are green" will also lead from evidence-statements about "grue emeralds" to the hypothesis "All emeralds are grue"; but the former inference is valid, the latter not. For although the evidence-statements are true in both cases, and the truth of both hypotheses is as yet undetermined, "grue" picks out a category wrong in this context, an irrelevant kind. Valid induction runs within—is constrained by—right categories; and only through distinguishing

right categories from among classes in general can we distinguish valid from invalid induction. But what makes a category right? Very briefly, and oversimply, its adoption in inductive practice, its entrenchment, resulting from inertia modified by invention.[9] Why some categories rather than others have become entrenched—a subject of avid philosophical debate—does not matter here; the entrenchment, however achieved, provides the required distinction. Rightness of categorization, in my view, derives from rather than underlies entrenchment.

Inductive validity is not only an example of rightness other than truth but is also one of the criteria applied in the search for truth: a hypothesis validly inferred is favored over an alternative invalidly inferred from the same evidence. Yet how is acceptability as determined by such considerations related to truth, and does this help us answer the question what constitutes truth? Obviously we cannot equate truth with acceptability; for we take truth to be constant while acceptability is transient. Even what is maximally acceptable at one moment may become inacceptable later. Nevertheless, something might be done about construing truth as *ultimate* acceptability: as acceptability that is not subsequently lost. Although we may seldom if ever know when or whether that stability will be achieved, truth as thus derived from wavering acceptability is steadfast. And since acceptability involves inductive validity, which involves right categorization, which involves entrenchment, habit must be recognized as an integral ingredient of truth. Though that may give pause, it follows as the day the night. For if we make worlds, the meaning of truth lies not in these worlds but in ourselves—or better, in our versions and what we do with them.

So far, for simplicity, I have been speaking as if all versions consisted of statements, but of course many versions are in symbols of other kinds and in nonverbal media. Since any version may be right or wrong, though only statements are true or false, truth as rightness of what is said is a narrow species of rightness. Moreover, it is a species of but one aspect of rightness; for symbols, verbal or not, may refer not only by denotation but by exemplification or expression or by complex chains made up of homogeneous or heterogeneous referential steps, or in two or more of these ways. And a version may be right or wrong in any of these respects. A nonrepresentational painting, for instance, may exemplify certain forms and patterns, many show a way of seeing that is tested in further seeing somewhat as a proposed hypothesis is tested in further cases. The painting does not say anything, cannot be true or false, yet may be right or wrong. I cannot go into all this here, but I am convinced that philosophy must take into account all the ways and means of world-making.[10]

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NOTES

1 Read at the Sixth International Wittgenstein Symposium in Kirchberg, Austria, in August 1981. This paper covers some of the same ground as the last chapter of: N. Goodman, *Ways of Worldmaking* (Indianapolis 1978), but supplements rather than duplicating or replacing that chapter.

2 See, e.g., H. Putnam, *Meaning and the Moral Sciences* (London 1978), pp. 123—140.

3 With apologies to J. L. Austin, who did not explicitly include making things in what we do with words.

4 See I. Scheffler, "The Wonderful Worlds of Goodman", *Synthese* Vol. 45 (1980), pp. 201—209, and my reply, N. Goodman, *Synthese* Vol. 45 (1980), pp. 211—215.

5 That is, a *relevant*—sometimes miscalled *natural*—kind.

[6] And this, as I have mentioned earlier, goes all the way down. Not all differences between true versions can be thought of as differences in grouping or marking off within something common to all. For there are no absolute elements, no space-time or other stuff common to all, no entity that is under all guises or under none.

[7] J. R. Wheeler, *Science 81* (1981), p. 67.

[8] N. Goodman, *Fact, Fiction, and Forecast* (Indianapolis 1977).

[9] Of course the whole matter is more complex than can be made clear here. Some outlines are offered in Goodman (1977), Chap. IV.

[10] Sometimes I have characterized the lines of thought sketched here as *irrealism*. Irrealism does not hold that everything or even anything is irreal, but sees the world melting into versions and versions making worlds, finds ontology evanescent, and asks after what makes a version right and a world well-made.

* * *

DIE SCHWIERIGKEIT MIT DER LOGISCHEN FORM ONTOLOGISCHER AUSSAGEN

Guido Küng

In diesem Papier möchte ich eine Gedankenkette verfolgen, die bei der neorealistischen Ontologie von Bertrand Russell einsetzt und auf dem Weg über Wittgenstein, Carnap und Tarski schließlich zu einer der interessanten Eigentümlichkeiten des logischen Systems von Stanislaw Leśniewski hinführen wird. Es handelt sich hier zwar nur um *eine* Linie, *einen* Faden unter vielen, den man im komplexen Gewebe der zeitgenössischen Entwicklung von Logik und Philosophie unterscheiden kann. Auch erhebe ich nicht den Anspruch, eine detaillierte historische Untersuchung vorgenommen zu haben. Aber es scheint mir doch lohnend, diese relativ einfache Linie herauszuheben, und zwar aus zwei Gründen. Zum einen, weil sie eine gewisse Folgerichtigkeit der geschichtlichen Entwicklung ins Licht zu rücken vermag und dabei auch der leider noch allzu wenig bekannten Logik von Leśniewski einen Platz anweist; zum anderen, weil sie zu grundlegenden Fragen der philosophischen Logik, bezüglich der ontologischen Annahmen (commitment) und bezüglich der intuitiven Verstehbarkeit künstlicher Sprachen, hinführt.

1. *Die neorealistische Ontologie von Russell*

Wie allgemein bekannt sein dürfte, basiert der Neorealismus von Russell auf dem klassischen Wahrheitsbegriff, dem zufolge die Wahrheit einer Aussage in der Korrespondenz zwischen dem Ausgesagten und dem in der Wirklichkeit tatsächlich Bestehenden besteht. Dabei wird die Korrespondenz als eine isomorphe Abbildung zwischen den Elementen der Aussage und Elementen der Wirklichkeit aufgefaßt. Nach der Lehre des sogenannten logischen Atomismus müssen allen atomaren Ausdrücken in wahren Aussagen der idealen Sprache ontologische Grundelemente in der realen Wirklichkeit entsprechen. Russell kommt so zu einem ontologischen Pluralismus von klar abgegrenzten Entitäten, den er emphatisch dem alle Grenzen verwischenden Monismus der Idealisten entgegenstellt.

Im Rahmen dieser Ansicht stellt Russell wichtige ontologische Behauptungen auf, wie zum Beispiel „Es gibt Universalien“ (wenn man einen unendlichen Regreß vermeiden will, so muß man annehmen, daß wenigstens das Prädikat ‚ist ähnlich mit‘ eine allgemeine Entität abbildet), „Es gibt nicht nur positive, sondern auch negative Tatsachen“ (auch negative Aussagen können wahr sein, es muß also auch ihnen etwas entsprechen). Man gelangt so zu ontologischen Aussagen wie

Die Relation *R* ist eine Universale
aRb ist eine Tatsache.

2. *Der Tractatus von Wittgenstein*

Russell hat seine ontologischen Aussagen auf Englisch, bzw. in einem der englischen Sprache nahestehenden Logiker-Englisch formuliert, aber er hat sie nicht in seine Idealsprache übersetzt. Die Erkenntnis, daß eine solche Übersetzung auf grundlegende Schwierigkeiten stößt, ist aber, wie mir scheint, eine der wesentlichen Einsichten, welche dem „Tractatus“ von Wittgenstein zugrunde liegen.

Die Behauptung ‚*R* ist eine Universale' scheint zunächst von der logischen Form ‚$\varphi(R)$' und die Behauptung ‚*aRb* ist eine Tatsache' von der logischen Form ‚$\varphi(aRb)$' zu sein. Doch man sieht sofort, daß dies grammatikalisch nicht stimmt, denn ein Prädikat ‚φ' (wie ‚ist ein Universale' oder ‚ist eine Tatsache') verlangt als Argument einen nominalen Ausdruck; ‚*R*' ist jedoch ein verbaler und ‚*aRb*' ein propositionaler Ausdruck. Die gleiche Schwierigkeit ergibt sich, wenn man zu sagen versucht ‚φ ist eine Eigenschaft', auch dies ist eine grammatikalisch fehlerhafte Formulierung, da man hier den Prädikatausdruck ‚φ' zum Argument eines Prädikates macht, welches einen Namen als Argument verlangt. Einzig ‚*a* ist ein individueller Gegenstand' ist eine ontologische Aussage, wo diese Schwierigkeit nicht auftritt.

Was wir für eine grammatikalisch korrekte Bildung von ontologischen Aussagen zu benötigen scheinen, das sind *Namen* von Tatsachen, *Namen* von Eigenschaften, *Namen* von Beziehungen usw. In der Umgangssprache sagen wir ja auch nicht:

Albert liebt Brigitte ist eine Tatsache
Liebt ist eine Beziehung

sondern:

Daß der Albert die Brigitte liebt, ist eine Tatsache
Die Liebe ist eine Beziehung.

Das deutsche ‚daß' kann hier als eine Funktor aufgefaßt werden, welcher eine Aussage in einen Namen verwandelt. Die russellsche Idealsprache enthält aber keine solchen nominalisierenden Funktoren, die Tatsachenaussagen, Eigenschaftsausdrücke und Beziehungsausdrücke in *Namen* von Tatsachen, *Namen* von Eigenschaften und *Namen* von Beziehungen transformieren. Zudem — und diese Überlegung ist hier wichtig — scheint es auch gar nicht wünschenswert, weil sachlich nicht richtig, in eine ideale Sprache Namen von Tatsachen, Eigenschaften und Beziehungen einzuführen. Denn Namen benennen normalerweise individuelle Gegenstände (Dinge), und Tatsachen, Eigenschaften, Beziehungen sind, wie wir alle wissen, keine individuellen Dinge. Doch wie soll man diese Schwierigkeit lösen?

Die wittgensteinsche Lösung der Schwierigkeit mit der logischen Form der ontologischen Aussagen.

In dieser Situation bezieht Wittgenstein wie folgt Stellung: Die ontologischen Aussagen sind für ihn tatsächlich ungrammatikalische Scheinsätze. Aber wir benötigen diese ontologischen Aussagen gar nicht. Was diese Aussagen sagen wollen, das kann zwar nicht in korrekter Form gesagt werden, aber man kann es sehen lassen, die Beschreibung eines Weltzustandes besteht zum Beispiel aus einer langen Konjunktion von Relationsaussagen, wie ‚$aRb \,.\, \sim bRa \,.\, aRc. \ldots$'. Diese Formel *zeigt*, daß die Welt aus Tatsachen besteht. Genau genommen könnte die Formel auch ohne Relationsausdrücke auskommen, man könnte z.B. einfach schreiben: ‚$ab \,.\, \sim ba \,.\, ac. \ldots$'. Denn nach Wittgenstein werden auch die Beziehungen *gezeigt*: „Daß ‚*a*' in einer gewissen Beziehung zu ‚*b*' steht, sagt, daß *aRb*" (TLP 3.1432). Die Beziehung zwischen *a* und *b* könnte also schon durch das bloße Nebeneinanderstehen der Buchstaben ‚*a*' und ‚*b*' gezeigt werden.

Der Name ‚*a*' im Ausdruck ‚*aRb*' (bzw. ‚*ab*') zeigt zudem, daß *a* ein individueller Gegenstand ist. Also sind selbst ontologische Aussagen von der grammatikalisch harmlosen Art, wie ‚*a* ist ein individueller Gegenstand' überflüssig.

Was so gezeigt werden kann, ist nichts Verborgenes oder Irrationales; man kann es ja klar verstehen, auch wo man nicht grammatikalisch korrekt *darüber* sprechen kann. Dies ist für Wittgenstein ein höchst wichtiges Ergebnis, denn er zieht daraus den Schluß, daß alle metaphysischen Einsichten bezüglich der Welt, des Ichs, Gottes und des Sinns des Lebens von dieser unsagbaren Art sein müßten (vgl. hierzu Küng (1978)).

Der Wittgenstein des „Tractatus" kehrt hiermit zu einem gewissen Mystizismus des Un-

sagbaren zurück, wie ihn Russell bei Bradley bekämpft hatte; aber der wittgensteinsche Mystizismus ist nur partiell, denn er hält ja an der von Russell betonten Aussagbarkeit von Tatsachen und am ontologischen Pluralismus fest. Auch ist dieser Mystizismus weniger geschwätzig als der von Bradley: „Wovon man nicht sprechen kann, darüber muß man schweigen" (TLP 7). Wittgenstein kann sich diesen Befehl leisten, eben weil er glaubt, daß schon durch das bloße Zeigen ein rationales Verständnis dessen, was nicht gesagt werden kann, ermöglicht wird.

Die wittgensteinsche Lösung der Schwierigkeit mit den ontologischen Aussagen besticht durch ihre Folgerichtigkeit. Trotzdem ist sie, meiner Ansicht nach, unbefriedigend. Denn die als Scheinsätze bezeichneten ontologischen Aussagen wurden sowohl von Russell als auch von Wittgenstein (in den Anfangskapiteln des „Tractatus") verwendet *und jedermann konnte sie unmittelbar verstehen.* Es ist also nicht etwa so, daß nur das durch die Tatsachenaussagen ausgeübte Zeigen von nicht-dinglichen Entitäten verstanden würde. Wittgenstein hat aber keine Erklärung dafür anzubieten, wie das intuitive Verstehen der seiner Ansicht nach fehlerhaften ontologischen Aussagen vor sich geht.

3. *Carnaps logische Syntax*

Carnap war nicht so mystisch veranlagt wie Wittgenstein. Er war deshalb froh, als er mit der „Logischen Syntax der Sprache" (1934) eine Lösung für die Schwierigkeit mit den ontologischen Aussagen fand, dank derer man wieder etwas geschwätziger sein konnte. Den Tip für diese Lösung hat Carnap von der Metamathematik von David Hilbert erhalten: so wie man sich in der Mathematik Rechenschaft darüber gegeben hat, daß man nicht nur gewöhnliche Dinge, sondern ebenso leicht auch Ziffern und andere mathematische Zeichen zählen kann, so macht Carnap sich den Umstand zu Nutze, daß man nicht nur über gewöhnliche Dinge, sondern auch über sprachliche Ausdrücke sprechen kann. Was in der materialen Redeweise der Objektsprache als ein ungrammatikalischer Scheinsatz auftritt, kann so in eine einwandfreie Aussage in der formalen Redeweise der Metasprache übersetzt werden. Statt

> Albert liebt Brigitte ist eine Tatsache
> Liebt ist eine Beziehung

läßt sich sagen:

> ‚Albert liebt Brigitte' ist eine Tatsachenaussage
> ‚Liebt' ist ein zweistelliger Prädikatsausdruck.

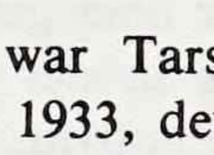
Es sind die Anführungszeichen, welche das entscheidende Kunststück fertigbringen, aus jedem Ausdruck gleich welcher Kategorie einen nominalen Ausdruck zu machen. Allerdings zögerten die Logiker, die Anführungszeichen als namenbildende Funktoren zu bezeichnen und zogen es vor, einen Ausdruck zusammen mit seinen Anführungszeichen als eine unanalysierbare Einheit zu betrachten. Denn es war ihnen nicht ganz geheuer, einen Funktor anzunehmen, der Argumente von jeder beliebigen Kategorie haben kann. Auch bildet ein Ausdruck mit Anführungszeichen einen intensionalen Kontext, in den nicht ohne weiteres hineinquantifiziert werden darf.

Für Carnap war die Lösung der Schwierigkeit mit den ontologischen Aussagen ebenfalls ein höchst wichtiges Ergebnis. Denn mit der Übersetzung von der materialen in die formale Redeweise konnte für die philosophischen Aussagen trotz der alles andere ausschließenden Dichotomie in tautologische und empirische Aussagen eine Heimat gefunden werden: man konnte sie nunmehr als tautologische oder empirische Aussagen der „Syntax" auffassen. Damit war der Neupositivismus fähig geworden, seine Prinzipien auch auf sich selbst anzuwenden und so wenigstens mit sich selber ins Reine zu kommen.

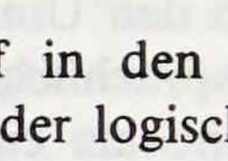
Man kann sich fragen, weshalb Wittgenstein den Schritt in die Metalogik nicht vollzogen

hat. Ein wichtiger Grund scheint mir darin zu liegen, daß nach der nominalistischen Auffassung von Wittgenstein eine außersprachliche Tatsache, die entsprechende Tatsachenaussage und die syntaktische Beschreibung dieser Tatsachenaussage alle genau dieselbe logische Form haben, sodaß der Aufstieg in die Metasprache nichts Neues zu bringen scheint. Man vergleiche:

gewöhnliche Auffassung:
‚a' neben ‚>' . ‚>' neben ‚b'
a > b



Wittgenstein:
‚A' ‚b'
A b



Die logische Syntax von Carnap hat sehr wichtige neue Perspektiven eröffnet. Aber als Lösung der Schwierigkeit mit den ontologischen Aussagen ist sie aus dem gleichen Grund unbefriedigend, wie die wittgensteinsche Lösung: eine Erklärung dafür, wie das Verstehen der anscheinend fehlerhaften Aussagen der materialen Redeweise vor sich geht, ist immer noch ausstehend.

Doch Carnap suchte nicht in dieser Richtung weiter zu kommen. Statt dessen bemühte er sich, die in den syntaktischen Aussagen verwendeten Prädikate ausführlicher zu erklären. Wann kann man von einem Ausdruck sagen, er sein ein Eigenname, ein einstelliger Prädikatausdruck, ein zweistelliger Prädikatausdruck, eine Aussage? Bloß syntaktische Erklärungen sind da offensichtlich unbefriedigend.

4. *Tarskis formale Semantik*

Es war Tarskis Schrift vom Wahrheitsbegriff in den formalisierten Sprachen (polnisch schon 1933, deutsch 1935), welche den Weg von der logischen Syntax zur formalen Semantik gewiesen hat. Was unsere Frage betrifft, so konnte man nun bei der Übersetzung in die formale Redeweise ausführlichere Erklärungen geben als zuvor. Man konnte im Rahmen eines exakt formulierten Systems sagen:

> ‚*a*' ist ein Eigenname, d.h. ‚*a*' ist ein Ausdruck, welcher ein bestimmtes Element aus der Klasse aller Individuen bezeichnet. Zum Beispiel: ‚*a*' designiert Albert.
>
> ‚*R*' ist ein zweistelliger Prädikatausdruck, d.h. ‚*R*' ist ein Ausdruck, welcher durch geordnete Paare von Individuen aus einer bestimmten Menge von geordneten Paaren erfüllt wird. Zum Beispiel: ‚*R*' designiert die Menge derjenigen geordneten Individuenpaare, von denen gilt, daß das erste Glied des Paares das zweite Glied des Paares liebt.
>
> ‚*aRb*' ist eine Aussage, d.h. ‚*aRb*' ist ein Ausdruck, welcher wahr oder falsch ist.
>
> ‚*aRb*' ist wahr genau dann, wenn das geordnete Paar, das aus den von den Eigennamen ‚*a*' und ‚*b*' designierten Individuen gebildet wird, ein Element der von ‚*R*' designierten Menge von Individuenpaaren ist.

Alle modelltheoretischen Semantiken interpretieren die Aussagen einer gegebenen Objektsprache in dieser Art. Was die Schwierigkeit mit den ontologischen Aussagen betrifft, so besteht der Fortschritt darin, daß man nun zum Beispiel den ontologischen Scheinsatz ‚Liebt ist eine Beziehung' nicht mehr nur in die Aussage ‚Der Ausdruck ‚liebt' ist ein zweistelliger Prädikatsausdruck' übersetzt, sondern zusätzlich auch etwas über die semantische Verbindung sagen kann, die zwischen dem Ausdruck ‚liebt' und der Wirklichkeit besteht: man ordnet dem Ausdruck ‚liebt' ein Designat zu, und kann mit Bezug auf dieses Designat exakt definieren, wann eine Aussage von der Form ‚*x* liebt *y*' wahr ist. Und dies alles kann man tun ohne in grammatikalische Schwierigkeiten zu geraten.

Der Trick dieser Lösung besteht darin, daß man zwar allen Ausdrücken, auch den Prädikatausdrücken und Funktoren, Designate zuordnet, daß man aber als modelltheoretische

Designate nie Eigenschaften, Beziehungen oder Funktionen im eigentlichen nichtdinglichen Sinne verwendet, sondern immer nur von individuellen Gegenständen und von Mengen, welche ebenfalls als Gegenstände aufgefaßt werden, spricht. Auch wo in modelltheoretischen Semantiken von Intensionen die Rede ist, sind darunter gewisse mengentheoretische Konstrukte zu verstehen. Es ist also immer nur von Entitäten die Rede, die benennbar sind und *über* die man ohne Schwierigkeiten grammatikalisch korrekt sprechen kann.

Zwar sind die Mengen eine merkwürdige Art von Gegenständen, die mit einiger Vorsicht eingeführt werden müssen, wenn man nicht Widersprüche provozieren will. Man zählt sie zu den abstrakten Entitäten, den Universalien, und die Nominalisten behaupten, sie könnten nicht verstehen, was es heiße, mehrere Individuen nicht nur zu einem konkreten (mereologischen) Ganzen zusammenzusetzen, sondern darüber hinaus noch einen weiteren Gegenstand, nämlich die Menge (oder Klasse) dieser Individuen zu bilden. Aber die strenggläubigen Nominalisten sind in letzter Zeit fast alle ausgestorben; man scheint ja heute ohne Mengenlehre kaum noch Mathematik treiben zu können. Zudem scheinen die Mengen insofern ganz akzeptable Gegenstände zu sein, als man für sie ein einfaches Identitätskriterium angeben kann: zwei Mengen sind identisch, wenn sie dieselben Elemente haben. Doch wie dem auch sei, die Bedenken, die ich in diesem Aufsatz zur Sprache bringen will, sollen nicht in erster Linie der etwas mysteriösen Fabrikationsmethode gelten, die bei der Produktion von Mengen zur Anwendung kommt. Was uns hier vor allem beschäftigt, ist die Schwierigkeit mit der logischen Form der ontologischen Aussagen, und diese Schwierigkeit ist in dem Sinne gelöst, als alle modelltheoretischen Designate echte Gegenstände sind.

Aber die modelltheoretische Lösung unserer Schwierigkeit hat trotz allem immer noch sehr unbefriedigende Seiten. Zum einen erklärt auch sie nicht, was vorgeht, wenn wir die „fehlerhaften" ontologischen Aussagen über Eigenschaften, Beziehungen und andere nicht-dingliche Entitäten unmittelbar verstehen. Des weiteren kann man einwenden, daß die modelltheoretische Interpretation der nicht-ontologischen Aussagen nicht den *Sinn* dieser Aussagen wiedergibt. Durch die modelltheoretische Interpretation wird zum Beispiel die gewöhnliche Aussage

> Albert liebt Brigitte
> *aRb*

mit der mengentheoretischen Aussage

> Das von Albert und Brigitte gebildete geordnete Paar ist ein Element derjenigen Menge von geordneten Paaren, für die gilt, daß das erste Glied des Paares das zweite Glied liebt
> $< a, b > \varepsilon \hat{x}\,\hat{y}\,(xRy)$

gleichsetzt. Nun stimmt es natürlich, daß diese beiden Aussagen äquivalent sind. Man darf aber nicht darüber hinwegsehen, daß es sich keineswegs um eine Synonymie handelt. Die zweite Aussage ist offensichtlich viel komplexer und von einer höhrern Stufe als die erste Aussage; sie spricht über ein geordnetes Paar und eine Menge, und nicht wie die erste Aussage über zwei Individuen. Durch die zweite Aussage wird nur angegeben, wie der *Wahrheitswert* der ersten Aussage in Übereinstimmung mit der rekursiven Definition des Prädikates ‚wahr' bestimmt werden kann; es wird aber nicht der genaue *Sinn* der ersten Aussage erklärt.

Anders gesagt: das modelltheoretische Designat eines Ausdrucks ist nur bei den Eigennamen mit dem identisch, was man in einem gewöhnlichen Sinn ein Bezeichnetes nennen kann. Nur dort ist es (a) etwas, worüber die gewöhnliche Aussage spricht oder (b) etwas in der realen Wirklichkeit, das die gewöhnliche Aussage wahr macht.

Nehmen wir das obige Beispiel vor: die besagte Menge von geordneten Paaren ist das modelltheoretische Designat des Prädikatausdruckes ‚*R*'. Aber die Aussage ‚*aRb*' spricht nicht *über* diese Menge. ‚*R*' ist ja nicht ein Name für die Menge $\hat{x}\hat{y}\,(xRy)$. $\hat{x}\hat{y}\,(xRy)$ ist bloß die Extension von ‚*R*'. Der Ausdruck ‚*R*' *hat* diese Extension, aber er *benennt* sie nicht. (Der Name von $\hat{x}\hat{y}\,(xRy)$ lautet ‚$\hat{x}\hat{y}\,(xRy)$' und nicht ‚*R*'.)

Man kann auch nicht gut sagen, daß die Menge von geordneten Paaren etwas in der Wirk-

lichkeit ist, das die Aussage ‚*aRb*' wahr macht; denn als abstrakter Gegenstand kommt eine Menge nicht in der Wirklichkeit vor. (Russell scheint allerdings einer Konzeption gehuldigt zu haben, wonach auch abstrakte Gegenstände in der Wirklichkeit vorkommen dürfen, denn er hat ja behauptet, daß dem Ausdruck ‚ist ähnlich mit' ein Universale entspreche.) Meiner Ansicht nach muß man zugeben, daß im Falle von wahren Aussagen einem Prädikatausdruck wie ‚liebt' in der Wirklichkeit ein nicht-dingliches Etwas entspricht. Denn eine Aussage wird ja nicht bloß durch das Vorkommen von Individuen wahr gemacht. Albert und Brigitte könnten zum Beispiel in der Wirklichkeit vorkommen, ohne daß es wahr wäre, daß der Albert die Brigitte liebt (vgl. die im vorliegenden Band enthaltenen Papiere über ,,Truth-makers'' von Simons und Smith).

Mit der Annahme von solchen nicht-dinglichen ,,Etwassen'' sind wir aber wieder bei unserer alten Schwierigkeit angelangt: wie soll man auf sachlich und grammatikalisch korrekte Weise *über* ein nicht-dingliches Ewas sprechen?

5. *Die Lösung des Tuns-als-ob*

Nach Wittgenstein bildet die Tatsache, daß der Ausdruck ‚*a*' in der Aussage ‚*aRb*' zum Ausdruck ‚*b*' in einer bestimmten räumlichen Beziehung steht, die Tatsache, daß *aRb* ab; man wird auf die Beziehung *R* hingewiesen, aber *über* sie kann man nicht korrekt sprechen, man kann über sie nur schweigen. Man kann aber versuchen, diese wittgensteinsche Position zu einer neuen Lösung weiterzuentwickeln, indem man zugibt, daß man trotz allem *über* nicht-dingliche Entitäten sprechen kann: zwar nicht in vollem Ernst, sondern nur in der Weise des als-ob. Das heißt, man gesteht zu, daß für nicht-dingliche Entitäten nominale Ausdrücke (wie ‚die Beziehung des Liebens', ‚die Tatsache, daß Albert die Brigitte liebt' usw.) eingeführt und verwendet werden dürfen, obwohl nominale Ausdrücke eigentlich dingliche Entitäten intendieren. Man verlangt nur, daß sofort beigefügt wird, daß man bloß so tue als ob; daß man sehr wohl wisse, daß Eigenschaften, Beziehungen usw. keine dinglichen Entitäten seien.

Die vorgeschlagene Methode besteht also darin, daß man sofort den eigenen Aussagen widerspricht und so das, was an dem zuerst Gesagten falsch ist, aufhebt, in der Hoffnung, der Hörer werde durch diesen Widerspruch veranlaßt, den Blick auf die Wirklichkeit selbst zu richten und könne so das wahre Wesen der nicht-dinglichen Entitäten zur Kenntnis nehmen.

Viele Philosophen können aber die Rede von einem Zur-Kenntnis-nehmen eines Etwas, *über* das man nur in Widersprüchen sprechen kann, nicht sehr befriedigend finden. Sie pochen darauf, daß es auf die Frage, was denn dem Wort ‚liebt' in der Wirklichkeit entspreche, keine sachlich und grammatikalisch einwandfreie Antwort gebe. Daß man also mehr als eine modelltheoretische Interpretation nicht anbieten könne. Ein Wort wie ‚liebt' sei eben einfach ein synkategorematischer Ausdruck, dem gleich wie z.B. den Aussagefunktoren ‚und', ‚oder' usw., in der Wirklichkeit keine besondere Entität zugeordnet werden könne.

Ist aber eine solche Haltung im Hinblick auf die von Russell erarbeitete realistische Problemstellung nicht eine allzu unbefriedigende Vogel-Strauß-Reaktion? David Armstrong hat meiner Ansicht nach Recht, wenn er in Bezug auf diese rein synkategorematische Auffassung der Prädikate von einem ,,*ostrich nominalism*'' gesprochen hat (vgl. die Diskussion von Devitt, Armstrong und Quine (1980)).

6. *Die leśniewskische Lösung*

Es gibt aber noch eine fünfte Lösung der Schwierigkeit mit den ontologischen Aussagen, und diese scheint das Kunststück fertigzubringen, daß man ,,über'' nicht-dingliche Entitäten sprechen kann, ohne diese zu verdinglichen. Sie stützt sich auf das System des polnischen

Logikers Stanisław Leśniewski (1886—1939), welcher eine exakte künstliche Sprache entwickelt hat, deren Grammatik gänzlich ohne Namen von nicht-dinglichen oder abstrakten Entitäten auskommt, und die trotzdem Übersetzungen der ontologischen Aussagen anbieten kann, und zwar ohne metasprachliche Ausdrücke in Anspruch zu nehmen.

In Bezug auf unser Problem besteht die wesentliche Errungenschaft der leśniewskischen Sprache darin, daß sie den Rahmen des klassischen Subjekt-Prädikatschemas sprengt. Allzulange hat man sich darauf versteift, die Schwierigkeit mit den ontologischen Scheinsätzen dadurch lösen zu wollen, daß man an der *Subjektstelle* keine nicht-nominalen Ausdrücke, aber auch keine anstößigen Namen von nicht-dinglichen Entitäten zuließ, sondern an ihre Stelle Namen von irgendwelchen echten Gegenständen zu setzen versuchte. Es gibt aber prinzipiell noch eine zweite Möglichkeit, wie man die Schwierigkeit anpacken kann, nämlich indem man die *Prädikate* der ontologischen Scheinsätze zu verändern und den nicht-nominalen Ausdrücken an der Subjektstelle anzupassen sucht. Es geht also darum, an die Stelle der Prädikatausdrücke ‚ist eine Eigenschaft', ‚ist eine Beziehung', ‚ist eine Tatsache' usw. Funktoren zu setzen, welche nicht-nominale Ausdrücke als Argumente zulassen.

Tatsächlich sind in der Logik schon lange Funktoren bekannt, welche mit nicht-nominalen Ausdrücken als Argumenten wohlgeformte Aussagen bilden, nämlich die Aussagefunktoren ‚nicht', ‚und', ‚oder' usw. Weshalb soll man also den Prädikatsausdruck ‚ist eine Tatsache' nicht in einen entsprechenden Funktor von der gleichen grammatikalischen Kategorie wie die aussagenlogische Negation verwandeln? Man könnte z.B. das Zeichen ‚$\dashv$' als einen solchen Funktor betrachten, der z.B. zusammen mit der Aussage ‚*aRb*' die wohlgeformte komplexe Aussage ‚$\dashv aRb$' bildet. Extensional gesehen kann man ‚$\dashv p$' sogar sehr einfach definieren, da ‚$\dashv p$' ja mit ‚p' gleichwertig ist und ‚$\dashv$' also demjenigen unter den einstelligen Wahrheitswertfunktoren entspricht, der den Wahrheitswert unverändert läßt (vgl. Luschei (1962)), S. 226).

Wie steht es mit einem Funktor, der den Prädikatausdruck ‚ist eine Eigenschaft' ersetzen könnte und der zusammen mit einem Prädikat ‚φ' eine wohlgeformte Aussage bilden würde? Hier zögert man einen solchen Funktor einzuführen, denn in unserer Umgangssprache scheint es keine Ausdrücke von dieser Kategorie zu geben. Wir sind uns gewöhnt, uns bei aussagenlogisch nicht zusammengesetzten Aussagen an das klassische Subjekt-Prädikat Schema zu halten, das entweder die Form Subjekt-Prädikat oder die Form Subjekt-Copula-Prädikat hat, und wo an Subjektstelle immer ein nominaler Ausdruck stehen muß. Doch weshalb soll man diese Begrenzung nicht überwinden können?

In der von Russell initiierten Typentheorie sind in der Tat Funktoren zugelassen, welche mit Prädikatausdrücken zusammen Aussagen bilden. Doch wie ein Blick auf die einfache Typentheorie von Church (1970) zeigt, sind mit diesen „Funktoren" die *Quantoren* gemeint: Da ist zum Beispiel der Allquantor ‚π', ein undefinierter Ausdruck, der mit einem λ-Ausdruck zusammen eine wohlgeformte Aussage bildet. Auf die Umgangssprache übertragen heißt das, daß Ausdrücke wie ‚jeder' als Funktoren aufgefaßt werden, die zusammen mit Prädikatausdrücken wie ‚ist intelligent' sinnvolle Aussagen ergeben (‚Jeder ist intelligent'). Die ontologischen Prädikate ‚ist eine Eigenschaft', ‚ist eine Beziehung' usw., die wir durch Funktoren von nichtnominalen Ausdrücken ersetzen möchten, sind jedoch keine Quantoren.

Es ist das Verdienst von Leśniewski, ein exaktes logisches System entwickelt zu haben, in welchem Funktoren jeder beliebigen neuen Kategorie *durch Definition* eingeführt werden können. (Dabei sind alle Kategorien, welche mit Hilfe der Grundkategorien „Aussage" und „Name" spezifiziert werden können, berücksichtigt; im Gegensatz zu Church sind es aber nicht die singulären Termini, sondern die Namen im Allgemeinen (inklusive die leeren und die allgemeinen Termini), welche eine Grundkategorie bilden; auch werden die Quantoren (welche Variablen jeder beliebigen Kategorie binden können) von Leśniewski zu *keiner* Kategorie gezählt.) Erst durch die leśniewskischen Definitionen ist es möglich, die von uns gewünschten Analoga der ontologischen Prädikate zu erhalten. Natürlich sind Definitionen, welche neue Kategorien einführen können, nicht Definitionen im üblichen Sinne, sondern Äquivalenzaussagen, die nach besonderen explizit formulierten Regeln gebildet sind. So ist

das Folgende eine reguläre leśniewskische Definition eines aussagenbildenden Funktors ‚*prpr*', welcher einstellige Prädikatausdrücke als Argument verlangt:

$$[\varphi] : prpr\langle\varphi\rangle \,.\equiv: [\exists \mathrm{a}] \,.\, \varphi\,(a) \,.\, ob\,(\mathrm{a})$$

Dabei ist der Funktor, ‚*ob*' seinerseits wie folgt definiert:

$$[a] : ob\,(\mathrm{a}) \,.\equiv.\, [\exists b] \,.\, a \varepsilon b$$

Die beiden Definitionen lassen sich auf deutsch ungefähr wie folgt paraphrasieren:

> Für jedes beliebige φ gilt: φ ist eine (tatsächlich existierende) Eigenschaft genau dann, wenn für ein bestimmtes *a* gilt, daß φa und daß *a* ein (existierender) individueller Gegenstand ist.

> Für jedes beliebige *a* gilt: *a* ist ein (existierender) individueller Gegenstand genau dann, wenn für ein bestimmtes *b* gilt, daß *a* ein *b* ist.

(Ich verdanke die Definition von ‚*prpr*' einer Mitteilung von Prof. Lejewski (Manchester); ein ähnlicher Funktor findet sich in Słupecki (1955), S. 56. In neueren Aufsätzen schreibt Lejewski ‚*ex*' statt ‚*prpr*', da ‚prpr $<\varphi>$' auch gelesen werden kann: „φ existiert". Man darf aber ‚*prpr*' nicht mit dem leśniewskischen Existenzfunktor für Namen verwechseln, der ebenfalls ‚*ex*' geschrieben wird, und wo ‚*ex* (*a*)' bedeutet: „*Wenigstens ein a* existiert".)

Die Funktoren ‚*ob*' und ‚*prpr*' sind von mir so gewählt, daß sie eine tatsächliche Existenz implizieren und also ontologischen Ausdrücken im aristotelischen Sinne entsprechen können. Wenn man will, kann man aber auch Funktoren definieren, welche keine Existenz in der Wirklichkeit implizieren und somit dem Sinn entsprechen, in dem man von der Eigenschaft eines *Perpetuum mobile* und von der Gegenständlichkeit eines Pegasus spricht. Für die besondere Bedeutung der leśniewskischen Quantoren, die hier eine Rolle spielt, vergleiche Küng und Canty (1970) und Küng (1977).

In der Definition von ‚*ob*' kommt die leśniewskische Kopula ‚ε' vor. Diese ist ein undefinierter Funktor des Systems, dessen Bedeutung durch ein Axiom festgelegt wird, welches zum Ausdruck bringt, daß eine Aussage ‚$a \varepsilon b$' genau dann wahr ist, wenn ‚*a*' genau einen existierenden individuellen Gegenstand bezeichnet und dieser Gegenstand einer der durch ‚*b*' bezeichneten Gegenstände ist. Demnach sind zum Beispiel ‚Sokrates ε Sokrates' und ‚Sokrates ε Mensch' wahre Aussagen, dagegen ist ‚Mensch ε Säugetier' eine falsche Aussage.

Da wir uns beschränken müssen, können wir hier nicht weiter auf die Kopula ‚ε' und den Funktor ‚*ob*' (welcher eine Explikation des weniger kontroversen ontologischen Prädikates ‚ist ein individueller Gegenstand' darstellt) eingehen, und wollen uns im Folgenden auf eine Diskussion der Problematik des Funktors ‚*prpr*' beschränken.

Wie ersichtlich, ist die soeben gegebene deutsche Paraphrase der Definition von ‚*prpr*' unbefriedigend, da sie den Prädikatausdruck ‚φ' behandelt als ob er ein Name wäre und also genau den grammatikalischen Fehler macht, den die leśniewskische Formel vermeidet. Dieses Manko ist jedoch unvermeidlich: da die deutsche Sprache nicht über Ausdrücke aller semantischen Kategorien verfügt, so ist eine adäquate Übersetzung der leśniewskischen Formel schlechthin unmöglich.

Wie soll man aber dieses Fehlen einer adäquaten Übersetzung in die Umgangssprache bewerten? Es sind hier zwei verschiedene Reaktionen denkbar. Man kann entweder der Auffassung sein, daß dieser Umstand für die Überlegenheit der leśniewskischen Sprache gegenüber den uns geläufigen Umgangssprachen spreche; oder man kann die entgegengesetzte Meinung vertreten, wonach dieser Umstand zeige, daß das leśniewskische System nur ein künstliches Formelgebilde und gar keine echte Sprache sei. Ist zum Beispiel die Formel ‚*prpr* $<$ ist intelligent $>$' eine echte Aussage, welche den ungrammatikalischen Scheinsatz ‚Ist intelligent ist eine Eigenschaft' ersetzen kann und die auch gegenüber dem die Eigenschaften fälschlicher Weise verdinglichenden Satz ‚Die Intelligenz ist eine Eigenschaft' einen Fortschritt darstellt? Wer diese Frage bejaht, braucht deswegen nicht generell auf alle reifi-

zierenden Formulierungen der Umgangssprache zu verzichten. Er kann zugeben, daß wir nun einmal mit diesen Redewendungen aufgewachsen sind, und daß deren Verwendung in den meisten Fällen keine besonderen Schwierigkeiten nach sich zieht. Er wird nur die Auffassung vertreten, daß für eine präzise Behandlung logischer und ontologischer Probleme ein Hinüberwechseln in die genau durchdachte leśniewskische Sprache notwendig sei.

Ist aber ‚*prpr* < ist intelligent >' wirklich eine Aussage? Zwar ist es unbestritten, daß man für die Formel ‚*prpr* < ist intelligent >' Wahrheitsbedingungen angeben kann: aus den Definientia von ‚*prpr*' und ‚*ob*' läßt sich eruieren, daß die Formel genau dann wahr ist, wenn es wenigstens ein Individuum gibt, das intelligent ist. Doch das Haben von Wahrheitsbedingungen macht eine Formel noch nicht zu einer sprachlichen Aussage im vollen Sinne. Wie Lycan (1979) betont hat, kann eine Formel trotz des Vorhandenseins von Wahrheitsbedingungen „semantisch stumm" (*semantically mute*) sein. Frege hat zum Beispiel einen Funktor, den horizontalen Strich, eingeführt, der zusammen mit einer wahren Aussage eine Formel mit dem Wahrheitswert Wahr, zusammen mit einer falschen Aussage eine Formel mit dem Wahrheitswert Falsch, und zusammen mit einem nominalen Ausdruck stets eine Formel mit dem Wahrheitswert Falsch bildet. Sind diese Formeln echte Aussagen? Insbesondere bei einer Formel wie ‚—17' hat man nicht das Gefühl, daß dies eine Aussage sei, auch wenn man weiß, daß die Formel einen Wahrheitswert, nämlich den Wahrheitswert Falsch hat. Ist ‚*prpr* < ist intelligent >' vielleicht auch eine solche semantische stumme Formel, mit der man zwar hantieren kann, die aber keine echte sprachliche Aussage ist?

Zugunsten der leśniewskischen Formel läßt sich anführen, daß ein Haupteinwand gegen den fregeschen horizontalen Strich auf den Funktor ‚*prpr*' nicht zutrifft. Was uns nämlich an Freges horizontalem Strich vor allem stört, ist die Tatsache, daß er nicht auf eine einzige Kategorie von Argumenten festgelegt ist, sondern sowohl propositionale als auch nominale Argumente akzeptiert. Jede solche Promiskuität ist (wie wir schon bei den Anführungszeichen erwähnt haben) den meisten Logikern nicht geheuer, denn sie scheint eine Äquivokation in den betreffenden Funktor hineinzutragen. (Tatsächlich hat Frege den erwähnten Funktor auch nur deshalb so weit gefaßt, weil er Aussagen und Namen als kategorial verwandt ansah: die Aussagen waren für ihn im weiteren Sinne ebenfalls Namen, nämlich Namen der Gegenstände „das Wahre" oder „das Falsche".) Leśniewskis Funktoren halten sich demgegenüber strikte an das Gesetz, wonach jeder sprachlich Funktor eindeutig auf eine einzige Kategorie von Argumenten festgelegt sein muß. Wenn also, wie auch Lycan vermutet, die Ursache der semantischen Stummheit in erster Linie in der kategorialen Promiskuität zu suchen ist, dann ist die leśniewskische Formel vielleicht doch nicht so „stumm", wie ein Verteidiger der Superiorität der Umgangssprache zunächst meinen könnte.

Doch die Frage, ob eine Formel semantisch stumm oder eine echte sprachliche Aussage sei, ist eine sehr schwierige phänomenologische Frage. Was geht in mir vor, wenn ich die Umgangssprache, bzw. wenn ich die Formeln eines leśniewskischen Systems benütze? Sind diese Vorgänge wirklich gleichartig, sodaß man in beiden Fällen von propositionalem Denken sprechen kann?

Wenn ich einen Text der Umgangssprache lese, dann ist meine Aufmerksamkeit normalerweise nicht in erster Linie auf die Schriftzeichen gerichtet, sondern ich bin vor allem „bei der Sache", ich verfolge direkt den ausgedrückten Gedankengang, ich denke ihn mit. Beim Lesen einer logischen Formel scheint es dagegen kaum vorzukommen, daß die Schriftzeichen aus meinem Bewußtsein verschwinden. Woher kommt dieser Unterschied? Ein Grund liegt wohl darin, daß die Systeme der Logiker primär schriftlich formuliert sind und es sich bei ihren Schriftzeichen nicht bloß um Zeichen zweiter Ordnung handelt, über die man hinwegsehen kann. Auch stellen die Mehrzahl der aus logischen Formeln gebildeten Texte formale Ableitungen dar, die es zu kontrollieren gilt, und dies geschieht am bequemsten, indem man auf die äußerliche Handhabung der Schriftzeichen achtet. Doch das Betrachten der Schriftzeichen und des Hantierens mit ihnen schließt nicht aus, daß man gleichzeitig, auch Gedankengänge vollzieht. Die entscheidende Frage lautet, ob wir dabei nur allgemein etwas

denken, oder ob wir beim Lesen einer Formel wirklich einen einheitlichen Gedanken verfolgen, dessen Artikulation in den einzelnen Teilen der Formel ausgedrückt ist.

Bei den Formeln der klassischen Prädikatenlogik erster Stufe scheint die Antwort auf diese Frage eindeutig in einem Ja zu bestehen. Denn es gibt dort eine Paraphrase in „Logikerdeutsch", die beim Erlernen des Systems mithilft, mit den Formeln einen propositionalen Sinn zu verbinden. Zwar braucht später der Rekurs auf die gesprochene Paraphrase nicht mehr vollzogen zu werden, aber die Möglichkeit eines solchen Rekurses bleibt bestehen und kann jederzeit einen Zweifel an der sprachlichen Sinnhaltigkeit der Formeln zum Schweigen bringen. Bei einer Formel wie ‚*prpr* < ist intelligent >' ist die Antwort schwieriger, da hier — wie wir gesehen haben — eine befriedigende Paraphrase in Logikerdeutsch prinzipiell ausgeschlossen ist. Derjenige, der die Formel als echte sprachliche Aussage zu verstehen meint, hat es also hier viel schwerer, seine Ansicht überzeugend zu begründen.

Wie steht es also? Ist das Zeichen ‚*prpr*' für mich mehr als ein bloßes Abkürzungszeichen, welches auf das längere und komplexere Zeichen ‚[∃*a*] . . . . (*a*) . *ob* (*a*)' zurückverweist? Und wenn ich die Formel ‚*prpr* < ist intelligent >' lesend mitzudenken versuche, denke ich da nicht einfach den ungrammatikalischen Scheinsatz ‚Ist intelligent ist eine Eigenschaft'? Habe ich beim Lesen wirklich ein nicht-dingliches Ewas im Sinn, das in der Wirklichkeit vorkommen muß, wenn die Aussage ‚*a* ist intelligent' wahr gemacht sein soll; und denke ich, daß dieses nicht-dingliche Ewas von der ontologischen Kategorie einer Eigenschaft ist? Aber ich soll nicht etwa denken: ‚*Die* Intelligenz *ist* von der ontologischen Kategorie einer Eigenschaft'. Ich darf nicht verdinglichend an ein „Etwas" im strengen Sinne denken, und auch die Verbindung, die ich denken soll, wenn ich die Artikulation „. . . < . . . >' sehe, darf nicht eine der geläufigen *ist*-Verbindungen sein. Schaffe ich es wirklich, auf die gewünschte neue Art zu denken?

Beim Überlegen dieser Frage ist des weiteren in Betracht zu ziehen, daß im leśniewskischen System die Kategorien nicht wie bei der von Wittgenstein im „Tractatus" vertretenen Auffassung zu den ontologischen Kategorien isomorph sind. Leśniewski spricht denn auch emphatisch von *semantischen* Kategorien. Schon die leśniewskische Kategorie der Namen ist keineswegs ein Abbild der ontologischen Kategorie der Substanzen. Zu der semantischen Kategorie der Namen zu gehören heißt hier nur soviel wie distributiv zu benennen, d.h. eine Extension von individuellen Gegenständen zu besitzen (aber nicht: diese Extension zu benennen!); wobei diese Extension ebensogut auch eine leere Extension sein kann. Gleicherweise heißt zu der Kategorie der Ausdrücke von der Form ‚φ' zu gehören nicht so viel wie eine Eigenschaft in der Wirklichkeit abzubilden, denn es gibt auch Funktoren dieser Kategorie, welche zusammen mit leeren Namen wahre Aussagen bilden. Zur Kategorie dieser Funktoren zu gehören heißt vielmehr einen Sinn von der Art einer Funktion zu haben, welche gewissen Extensionen (und also auch der Nullextension) gewisse Wahrheitswerte zuordnet. Dabei wird dieser Sinn, bzw. diese Funktion wiederum nicht benannt, sondern „gehabt", das heißt im Sinne eines tatsächlichen Fungierens ausgeübt. Auf eine gleiche Weise ist auch der kategoriale Sinn aller anderen Funktionsausdrücke zu verstehen. Das distributive Benennen und diese verschiedenen Arten des Fungierens sind *sprachliche* „Tätigkeiten". Es handelt sich also in der Tat um grammatikalische und nicht um ontologische Kategorien. Die einzigen außersprachlichen Entitäten, auf die in der leśniewskischen Erklärung der semantischen Kategorien explizit Bezug genommen wird, sind die individuellen Gegenstände; und selbst diese werden nicht sprachunabhängig, um ihrer selbst willen, sondern nur in ihrer Eigenschaft als Elemente der faktischen, von der betreffenden Sprache gerade bevorzugten Zerlegung der Wirklichkeit berücksichtigt; ein solcher individueller Gegenstand kann also ein metaphysisch grundlegender Gegenstand im Sinne einer aristotelischen Substanz sein, es kann sich aber auch gerade so gut um eine nur oberflächlich motivierte Einheit der Wirklichkeit handeln.

Die Tatsache, daß bei der Erklärung der leśniewskischen Kategorien nur auf die individuellen Gegenstände Bezug genommen wird, besagt aber meiner Ansicht nach noch nicht, daß man beim Lesen einer leśniewskischen Formel nie an andere, nicht-dingliche außersprachliche Entitäten denken dürfe, und vielleicht sogar müsse. Die früher erwähnte Überlegung, wonach

es für die „Wahrmachung" von Aussagen nicht genügt, bloß individuelle Gegenstände anzunehmen, scheint mir ein gewichtiges Argument zugunsten der Auffassung zu sein, daß man oft auch nicht-dingliche ontologische Entitäten „im Sinne haben" müsse. Von daher scheint die Frage nicht so sehr darin zu bestehen, *ob*, als vielmehr *wie*, auf welche Weise, wir beim Lesen gewisser leśniewskischer Aussagen nicht-dingliche Entitäten im Sinne haben können, und wie ein solches Im-Sinne-haben von Nicht-dinglichem sich mit dem gedanklichen Benennen von individuellen Gegenständen und dem Ausüben der übrigen semantisch-grammatikalischen Funktionen zu einer phänomenologisch einleuchtenden Einheit verbinden kann.

Wir haben diesen Aufsatz mit einer Reihe von noch ungelösten und ungeklärten Fragen schließen müssen. Aber vielleicht ist dies gar nicht so schlimm, wenn man bedenkt, daß diese Fragen eine Aufforderung darstellen, ein noch unerforschtes Neuland zu erschließen. Ein Neuland zudem, das eine neue Seite eines sehr alten Gebietes darstellt, das schon Platon und Aristoteles zu vermessen versucht haben, ohne dabei zu einer abschließenden Klarheit gelangt zu sein.

SUMMARY

The difficulty of the well-formedness of ontological statements

When *Russell* argued for his ontological convictions, for instance that there are negative facts or that there are universals, he expressed himself in English. But *Wittgenstein* must have noticed that from the point of view of Russell's ideal language these ontological statements appear to be pseudo-propositions. He believed therefore that what these statements pretend to say, could not really be said but only shown. *Carnap* discovered a way out of this mutism: what in the material mode of speech of the object language looks like a pseudo-proposition can be translated into a perfectly meaningful proposition in the formal mode of speech (in the metalinguistic mode of speech of the logical syntax of language). But is this ascent into the metalanguage necessary? Taking advantage of *Leśniewski's* logical system there exists another way out: we can expand the number of categories of our ideal language. But Leśniewski's formulas raise another profound problem, the problem of "semantical muteness" (cf. W. G. Lycan "Semantic competence and funny functors" *The Monist* Vol. 64 (1979), pp. 209—222).

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Church, A., „A Formulation of the Simple Theory of Types", in: *Journal of Symbolic Logic*, Bd. 5 (1940).
Devitt, M., Armstrong, D. M., und Quine, W. V. O., Symposium: „Nominalism", in: *Pacific Philosophical Quarterly*, Bd. 61 (1980).
Heck, W. C. und Lycan W. G., „Frege's Horizontal", in: *Canadian Journal of Philosophy*, Bd. 9 (1979).
Henry, D. P., *Medieval Logic und Metaphysics* (London 1972).
Küng, G., *Ontologie und logistische Analyse der Sprache* (Wien 1963) (englische Ausgabe in der Synthese Library, Dordrecht 1967).

Küng, G., ,,Concrete and Abstract Properties", in: *Notre Dame Journal of Formal Logic*, Bd. 5 (1964).
Küng, G. und Canty, J. T., ,,Substitutional Quantification and Leśniewskian Quantifiers", in: *Theoria*, Bd. 36 (1970).
Küng, G., ,,Prologue-Functors", in: *Journal of Philosophical Logic*, Bd. 3 (1974).
Küng, G., ,,The Meaning of the Quantifiers in the Logic of Leśniewski", in: *Studia Logica*, Bd. 36 (1977).
Küng, G., ,,Nominalistische Logik heute", in: *Allgemeine Zeitschrift für Philosophie*, Bd. 2 (1977).
Küng, G., ,,Wittgensteins nominalistischer Mystizismus", in: E. Leinfellner et al. (Hrsgg.), *Akten des 2. Int. Wittgenstein Symposiums* (Wien 1978).
Küng, G., ,,Leśniewski's Systems", in: W. Marciszewski (Hrsg.), *Dictionary of Logic* (The Hague 1981).
Küng, G., ,,Abélard et les vues actuelles sur la question des universaux", in: *Cahiers de la Revue de théologie et philosophie*, Nr. 6 (1981a).
Lejewski, C., ,,Proper Names", in: *Proceedings of the Aristotelian Society,* Supplementary Volume 31 (1957).
Lejewski, C.,,,Zu Leśniewskis Ontologie", in: *Ratio*, Bd. 1 (1957/1958).
Lejewski, C., ,,Parts of Speech", in: *Proceedings of the Aristotelian Society*, Supplementary Volume 39 (1965).
Lejewski, C., ,,Leśniewski, Stanisław", in: P. Edwards (Hrsg.), *The Encyclopedia of Philosophy*, Bd. 4 (New York 1967).
Lejewski, C., ,,A System of Logic for Bicategorial Ontology", in: *Journal of Philosophical Logic*, Bd. 3 (1974).
Lejewski, C., ,,Syntax and Semantics of Ordinary language", in: *Proceedings of the Aristotelian Society,* Supplementary Volume 44 (1975).
Lejewski, C., ,,Outline of an Ontology", in: *Bulletin of the John Rylands University Library of Manchester*, Bd. 59 (1976).
Lejewski, C., ,,Logic and Ontology", in: S. Koerner (Hrsg.), *Philosophy of Logic* (Oxford 1976).
Lejewski, C., ,,On the Dramatic Stage in the Development of Kotarbiński's Pansomatism", in: P. Weingartner und E. Morscher (Hrsgg.), *Ontologie und Logik* (Berlin 1979).
Lejewski, C., ,,Logic und Ontology", in: E. Agazzi (Hrsg.), *Modern Logic : A Survey*, (Dordrecht 1980).
Luschei, E. C., *The Logical Systems of Leśniewski* (Amsterdam 1962).
Lycan, W. G., ,,Semantic Competence and Funny Functors", in: *The Monist*, Bd. 64 (1979).
Rickey, V. F., ,,A Survey of Leśniewski's Logic", in: *Studia Logica*, Bd. 36 (1977).
Simons, P. M., ,,On Interpreting Leśniewski", in: *History and Philosophy of Logic* (in Vorbereitung).
Simons, P. M., ,,Moments as Truth Makers", in: W. Leinfellner et al. (Hrsgg.), *Akten des 6. Internationalen Wittgenstein Symposiums* (Wien 1982).
Smith, B., ,,Some Formal Moments of Truth", in: W. Leinfellner et all. (Hrsgg.), *Akten des 6. Internationalen Wittgenstein Symposiums* (Wien 1982).
Słupecki, J., ,,Leśniewski's Calculus of Names", in: *Studia Logica*, Bd. 3 (1955).

* * *

THE INADEQUACY OF THE ACTUAL AND THE REAL: BEYOND EMPIRICISM, IDEALISM AND MYSTICISM

V. Plumwood and R. Routley

§ 1. *The suppression of big philosophy with the dominance of empiricism.*[1] It is difficult in reading ancient philosophy not to be struck by the fact that contemporary philosophy, especially the professionalised philosophy which in the last hundred years has acquired a virtual monopoly of intellectual life as the result of academic institutionalisation, has lost a great deal of the intellectual daring and adventurousness which was so characteristic of much early philosophy and especially of Greek thought. This was an adventurousness in which a philosopher did not hesitate to state a conclusion even if it was unpopular, improbable, or intellectually shocking, or to follow through dialectic in which a chain of reasoning was taken to its logical end even if the result went well beyond the bounds of normal, received opinion. It was a philosophical and metaphysical adventurousness that did not hesitate to posit non-sensible worlds beyond the actual, which were often considered far more fundamental than the material, sensible world.

One of the corollaries of the descent into timidity and respectability which has by and large accompanied professionalisation and institutionalisation has been the progressive loss of *big philosophy* and of large-scale choices, as well as the institutionalisation of a particular set of positions (those conforming to the referential paradigm) as the received philosophical opinion.

The question of the choice between really large philosophical frameworks is one that has been suppressed in much contemporary analytical philosophy, especially in Australasia but also more generally in the English-speaking world. One such choice that has largely disappeared, at least in the Antipodean philosophical and cultural scene (if ever it clearly emerged), is that between empiricism, idealism, rationalism and the other big philosophical positions. Even where (what is not common) idealism and rationalism are taught, it is done (as in Hospers' text) in a half-hearted and unsympathetic fashion, with the alternatives to empiricism viewed, for the most part, as historical curiosities rather than as live options. The main reason why the big choices are no longer seen as live issues is that both contemporary analytical philosophy and what are seen as the alternatives to it, e.g. American pragmatism, existentialism, dialectical materialism, work *within* a framework of a generally empiricist kind, with a largely unquestioned referential one world paradigm, and accompanying cultural ethos. Opposition to many world theories is as harsh in Sartre and Nietzsche, for example, as it is in any positivist:

> If once we get away from what Nietzsche called "the illusion of worlds-behind-the-scenes", and if we no longer believe in the being-behind-the-appearance, then the appearance becomes full positivity; its essence is an "appearing" which is no longer opposed to being but on the contrary is the measure of it. For the being of an existent is exactly what it *appears* (Sartre (1976), p. xlviii).

But although the big philosophical alternatives may appear to have been finally vanquished and buried, appearance *is* here illusion: the big issues are being reopened, apparently defeated theories like Meinong's exhumed, and so forth. There are several reasons for this. One is the re-emergence of philosophical theories set in terms of worlds following the technical successes of worlds semantics. Another reason is the growing interest in alternative paradigms which challenge the dominant empiricism, especially among those involved in environmental and social critiques of contemporary culture. A further reason is the current decline in the status of

technical logic,[2] especially the classical research program which is degenerating (Priest and Routley (1982)).

For the contemporary absence of real alternatives to empiricism can in part be accounted for through the ascendancy of classical logic: classical logic, which *seemed* very hard to fault, underpins empiricism (for classical logic is the logic of the Reference Theory, which empiricism incorporates: see Routley (1979), 9.10). By contrast, the traditional logic of the syllogism was to a large extent neutral as between various big philosophical positions. Thus widely separated thinkers and parties could all use the same logical apparatus without substantially prejudicing their positions. Not so with classical logic. The advent of classical logic (systematically) closed off many options which traditional logic left open, and it closed them off in a way that was particularly favourable to a single position from the alternatives, namely empiricism, on a whole range of crucial issues (which were decided in favour of empiricism).

Traditional syllogism reasoning, for example,[3] did not demand that the subjects of reasoning should all exist, that all places be referential (and referentially transparent) or that all predicates be extensional. All these demands, which have a very important bearing on many philosophical problems and positions, classical logic now makes. To be sure, there were those who wished to see such restrictions imposed on traditional syllogisms—for clearly philosophical reasons—but the point is that syllogistic reasoning would work perfectly well without them (as even empiricists such as Mill realised, in the case of non-existent items such as ghosts for example), and in this sense it was much more neutral. This is *not* true of classical logic, which *will not work* properly unless such restrictions are met. The basic philosophical technology of reasoning, then, has been set up to favour and reinforce a particular set of philosophical positions. In much the same way, many have argued (e.g. Dickson), the physical technology of modern industrial society is not neutral but favours and reinforces a particular set of social structures. So we may have got, with classical logic, a more versatile reasoning technology than with traditional, but at the same time we have acquired a much more philosophically biased one.

Nevertheless classical logic has been generally viewed as a neutral reasoning technology, one which is in some way unique and absolute.[4] But just as the similar claims of the dominant technologies of modern industrial societies have been coming into question in recent years, so too have those of classical logic. It is much clearer now in the case of the reasoning technology, as in the other case, that alternatives are available, and their mere presentation has served to underline the assumptions and non-neutral character of classical logic. There has been much research over the last decade into nonclassical logics, which do not settle the issue of alternatives to empiricism in the fashion of classical logic. The research has proceeded in the face of considerable disapproval, with its subject matter written off as "deviant", "oddball", "not worth bothering with", etc., and has often been pursued as a mere formal exercise, designed to achieve very limited ends and solve what may appear to be quite limited problems. But this research has shown that there are viable and satisfactory formal alternatives to the way classical logic settles the issues which are closely tied to the question of broad philosophical issues, that classical logic is neither as unique nor as absolute as is supposed. Just as classical logic has constrained the choices, so with the broadening of logics the class of viable options is widened very considerably, and it is apparent that classical logic has not finally settled but has merely begged many of the important philosophical questions relevant to these choices. It is now clear that some of these contemporary alternatives can be given just as good a logico-technical presentation as theories based on classical logic; they can be made precise, well-axiomatised, formalistically presented, etc.: in short, in terms of more theory-neutral criteria, they are in no way inferior to classically-packaged goods (and often they work better in solving problems, etc.). The complaint, previously widespread, that such alternatives as idealism and Meinongian rationalism are incoherent or unintelligible and that classically-based empiricism is the only logically coherent position, cannot be sustained.

And so as these alternative reasoning technologies are investigated and shown to be viable, the whole issue of the broad alternatives, of choice among great frameworks, is being reopened again. But not just in the old form. These choices are being thrown back up again in a much

sharper and more precise form, one that makes the range of alternative positions much clearer, and one that will perhaps enable a rather more definitive resolution of *some* of the questions that have vexed philosophy for more than 2000 years. In this sort of context, we want to look again at some of these larger issues.

One set of issues that have a crucial bearing on the choice between the broad frameworks (e.g. of empiricism as opposed to rationalism, idealism, etc.) are those concerning existence and intensionality. Here classical logic is very far from neutral—far less so than traditional logic—in closing off alternatives other than empiricism. Indeed some fundamental problems are *produced* by classical logic, for example through its restriction to existentially loaded quantifiers and extensionally-governed predicates and through such associated assumptions as that everything (that counts) exists, everything that matters can be accounted for, by reductive analysis, in terms of what exists, in terms of the *one* referential world, the actual world G. On this view there is never any need to go beyond what exists, beyond the actual (narrowly construed).

The connection between these existence doctrines and what is usually called 'empiricism' may not be immediately clear. Empiricism is usually characterised as the position that everything can be explained through experience, that all knowledge derives from experience. However, this is an epistemological formulation of the central doctrine which lies in metaphysics and logic and whose connection with the existential doctrines can be seen when the missing connections are supplied, in particular the assumption that only what exists can be experienced, and less importantly, the converse connection that what exists, can in principle be got to be known about through experience, and also is accessible to the senses.[5] These connections provide a direct bridge from the usual formulation, that all (worthwhile) knowledge can be gained through experience, that the world can be (adequately) explained and understood through experience, to comparable theses in terms of what exists, that all (worthwhile) knowledge can be obtained in terms of what exists, that truth can be accounted for, and truth conditions given, just in terms of what exists, that the world can be adequately explained just in terms of what exists.

Along with this insistence upon existence goes an insistence on the extensional nature of the world. The existentiality and extensionality theses are of course intimately connected. If, as on a commonsense ontology, worlds, situations and objects other than the actual do not exist, then according to the existential theses of empiricism, we will never be called upon to make use of these other worlds or items in explaining what needs to be explained or understood about the world. But since the non-extensional can be characterised as that which requires for its semantical assessment worlds other than the actual, it follows from the existential theme that everything (that needs to be done) can be done extensionally. The faith that everything can be done existentially and extensionally are major tenets of the empiricist religion which governs the great bulk of current philosophical thought, the referential framework in terms of which problems are generated or set up, solutions sought, etc. The faith is the source for the grand program of philosophical reductions which empiricism has had on its agenda since its inception. The faith is in fact the faith of the Reference Theory, according to which truth is a function of reference, to which empiricism adds the assumption that reference is experientially determined.[7]

This faith is shared neither by certain contemporary alternatives to classical logic and empiricism, nor (except in watered-down form) by traditional rivals to empiricism, such as idealism and rationalism. In what follows we want to elaborate on these alternatives to empiricism, and on how they differ from empiricism and from one another, and thereby to elaborate further aspects of Meinongian rationalism as expressed in the theory of objects.

§ 2. *Big historical alternatives to empiricism.* In contrast to empiricism the historical alternatives of (traditional) rationalism, Meinongian rationalism, mysticism and idealism are alike in their rejection of what we have selected as the most important characterising thesis of empiricism,

that the world can be adequately accounted for or explained just in terms of what exists, in terms of the actual (referential) world G.

Meinongian rationalism has a modern logical expression in noneism, the theory of items elaborated elsewhere (especially in Routley (1979)). The core theses of noneism include the following:—Every (significant) singular term signifies an object, i.e. (in earlier terminology) is about an object. Everything whatsoever—whether it is possible or not, complete or not, paradoxical or not, thinkable or not—is an object. Most objects do not exist, in any way at all, or have any form of being (or other ontological status) at all. Nonexistent objects, nonentities, are constituted in one way or another, and have more or less determinate natures. An object, whether it exists or not, has those properties which characterise it, e.g. the object which fs does f, where f is a characterising property. But existence, and many other properties (especially "higher-order" properties) are not characterising properties.[8]

Additional theses, presupposed in and of some importance for what follows are these: Universals are objects which do not exist (hence also they are something). Objects are not reducible to entities; for instance, nonexistent objects are not in some way constructs from what does exist, and discourse about nonentities is not translatable, without residue, into discourse about entities.[9] Running in tandem with this is a nonreductionist theme (with something of the ring of the later Wittgenstein): Nonentities are mostly perfectly in order as they are, without reduction. With intensionality as with nonexistence, noneism is committed to commonsense theses (again of a later Wittgenstein cast): Very many intensional statements are perfectly in order as they are, without reductive analysis, and are about the objects they appear to be about. For example, 'Bacon looked for Atlantis' is about Bacon and Atlantis. There is just one object sought, Atlantis; there is no need to try to resolve the statement into one concerning concepts, or complex set-theoretic constructs, or such like; whether or not Atlantis ever existed.

The foregoing themes lead naturally (once the semantical theory is introduced) to further theses,[10] theses that go to the heart of philosophy (as many have seen it), theses stating conditions on the truth and explanation of things in the world: the truth conditions for the factual world T, and also for its actual subworld G, involve nonentities, essentially. This thesis, that truth depends on *non*existence, derives in part from the earlier theme that there are irreducible truths about what does not exist. Further, the explanation of what exists, and so of the actual world G, involves essential appeal to what does not exist, to other worlds beyond G. It is themes like these that render noneism a transcendental position,[11] and align it with idealism.

Contrary to empiricism, then, we *do* need to go beyond the factual world and to consider possible and impossible worlds, and beyond entities of the factual world to consider a wide range of other objects, including impossible and merely possible ones. In particular, according to noneism, we cannot adequately *understand* or *explain* the actual world, its entities and its phenomena, without going beyond to other worlds, without adverting, in essential ways, to the non-actual. *The actual is not sufficient*, on its own, *to account either for truth or for explanation.*

As a corollary, noneism stresses the essentiality and non-eliminability of the intensional, and as an outcome the ineliminability of intensional discourse, the ineliminability of the mental, and of such items as necessary connections, etc. In epistemology it stresses the intensional character of observation, and the way in which the inadequate treatment of this intensional character lies at the root of empiricist problems in epistemology, problems of epistemological scepticism and of alternatives to realism, etc. (cf. Routley (1979), 8.10).

The major empiricist theme of the adequacy of the actual was equally rejected by its important historical rival, idealism. The 'universal' philosophy of idealism, common to both Greek and Hegelian philosophy, stressed that the particulars of the world of experience are all to be explained in terms of universals, that is items which either do not exist at all or which exist in some further totally different way from the objects of experience (or are *taken* to do so). The items to be explained and eliminated are the material entities of the

actual world, objects of experience, and they are to be explained in terms of other items (universals, etc.) which do not exist or do not exist in the ordinary everyday way. The main thrust of Greek idealism is directed towards showing that the ordinary everyday items themselves cannot be understood just by themselves, that they can only be understood in terms of something else over and beyond which cannot be experienced, at least through the senses, that the ordinary items of experience and of the actual world are *explanatorily inadequate.*

These nonentities or subsistent entities then, which are not taken to exist in the way of the ordinary objects of experience, were taken to be more fundamental than them. Because they were seen as explaining existing items, particulars, which were to be eliminated in terms of these universals, they were taken to have superior metaphysical status, and were termed *reality.* The items of the actual world of experience, which were explanatorily inadequate and which were to be eliminated as explanatorily subordinate to universals, were termed *appearance* to mark their inferior or 'imperfect' status. The ordinarily existing items were seen not merely as logically and metaphysically inferior or 'imperfect', but also as *morally* and *aesthetically* inferior; thus 'reality' contained no form of the bad, evil being treated as an imperfection, and the items of everyday experience were seen as being merely 'copies' or 'reflections' of the universals, and hence as aesthetically inferior.

When the doctrine of the moral and aesthetic inferiority and imperfection of the actual is viewed from the stance of mathematics or theoretical science, which is primarily about items such as ideal gases, perfect spheres, regular figures, etc., whose mathematical perfection and simplicity can never be achieved other than approximately in the existing world, it is perhaps not so strange. The strangeness is further submerged (though strictly puzzlement should increase) when the doctrine is coupled with the prevalent theme of the divinity of the real: for what is divine is perfect.

Moreover the opposing doctrine of the moral adequacy of the actual world is clearly open to the objection that it simply accepts the moral status quo. To anyone concerned both to imagine and help bring to realisation a morally better world than the actual one, there is no great difficulty in accepting the view of the actual world as morally inadequate and inferior. And there evidently was not for many Greek philosophers, with their numerous utopias (of which the Platonic *Republic* was only one, and apparently the most authoritarian). It seems, however, that Greek idealism had more than the mere inferiority of a *particular* actuality in view, holding rather that *no* actualisation of the real could be more than an inferior copy. This is a view which goes well beyond a theory for improvement to the moral denigration of *any* actualisable state, of the actual *as such* as imperfect. But if the general doctrine of the inevitable moral and aesthetic inferiority of the actual, which does tend to be a rather strange and unacceptable one to modern secular thought, is set aside, what remains is a much more defensible theory—in modern times anyway. The theory is built around the doctrine of the explanatory inadequacy of the actual; this we shall consider as the core negative doctrine of idealism, and of what is called the *universal philosophy*, an evolving philosophy common to Greek and Hegelian idealism:—

> . . . The essentials of the universal philosophy . . . [include] the following:
>
> I. The real is what has a wholly independent being, a being dependent only on itself.
>
> II. Appearance is what depends for its being upon another being. This other being is the real.
>
> III. Existence is what can be immediately presented to consciousness. It may be either a material or a psychic entity.
>
> IV. The real is the universal.
>
> V. The real is not an existence. Its being is logical being.
>
> VI. Existence is appearance.

VII. The real, that is, the universal, is also thought, mind, or intelligence; but this thought, mind, or intelligence is not an existent, individual, subjective mind, but an abstract, universal, objective mind. It has a logical and not a factual being.

VIII. The real, that is, objective thought, is the first principle or ultimate being, the Absolute, which is the source of all things, and from which the universe must be explained.

IX. This first principle is first only in the sense that it holds logical priority over all things. It is not first in order of time.

These propositions constitute the idealist creed only so far as it has developed up to the time of Aristotle. [However] . . . the philosophy of Hegel . . . recognises all past truth, absorbs it into itself, and *advances of course* (Stace (1929), pp. 30—1).

This belief in the logical and explanatory inadequacy of the actual is the position which runs through Greek philosophy and into Hegel, and has stood as the major contrast with and rival to empiricism. It is the position given by Plato's cave analogy, where the ordinary, existing objects of perception and experience are seen as mere shadows, as appearances cast on the cave wall by the world of reality. One widespread misconception in the contemporary understanding of idealism has been the confusion of this position with the epistemological scepticism of both empiricism and its close relatives (extensions) such as Cartesian rationalism. The terms 'appearance', as applied to the actual world and 'reality' as applied to the world of universals, do not arise from the belief that the actual world is some sort of illusion or hallucination or that it is someone's dream which does not in fact exist. Thus shadows are not illusions, hallucinations, or dreams; rather they are *secondary things* which cannot stand on their own but which are to be comprehended through what they are shadows of. In the same way particulars are secondary. There is an asymmetrical dependence relation such that ordinary material items cannot stand on their own (any more than shadows can) but depend upon universals, whereas the converse does not hold, universals in no way depend upon their instantiations, any more than objects depend upon their shadows or originals upon their copies. The existent is an *expression* of the universal, but not vice versa.

Rather than indicating, then, that the material world is taken to be an illusion or hallucination, something which does not in fact exist, the terms 'appearance' and 'reality' indicate that a logical reduction is being made or proposed, that the existent is being reduced to, or made dependent upon, the nonexistent or subsistent, which is taken to be more logically fundamental. This emerges especially in the proposed elimination of particulars, which are taken to exist, in favour of constructions from universals, which are often taken not to exist but to subsist (to have being). In these terms it is neither incomprehensible nor indefensible to say that the actual world is not real, that it is only appearance. For this is to say what is quite comprehensible and consistent, that the actual world is not what is logically fundamental, that the 'real', the logically fundamental, is the nonactual, the nonexistent. This idealist position is not then (as it has so often been presented especially over the last 70 years) an incomprehensible absurdity, but a rational and well-motivated alternative to empiricism and its unattainable program of reductions.

The same applies to the doctrine of ideas, which has similarly been confused with an empiricist reduction, namely phenomenalism. But a quite different interpretation should be given to the doctrine of ideas, which is more concerned with the logical eliminability of the intensional than with epistemological scepticism. For consider Stace's way of putting this doctrine: In saying that everything is thought, that matter is thought and so on, idealists are not saying that they are the thoughts of a particular thinker or thinkers (in contrast perhaps to Berkeley). Material things are *thought* in a much more general sense; to say that matter can be reduced to thought or spirit appears to be an attempt to get at the intensional, which is taken as fundamental. To say that something is thought is a way of saying that it is intensional. The confusion of the idealist position with, and the attempt to present it as a form of, scepticism has again helped to make the position seem weird and incomprehensible.

But the reality/appearance terminology and distinction signals much more than the mere rejection of the empiricist doctrine of the adequacy of the Actual and the associated empiricism program of reduction to the Actual. It indicates not only that the empiricist reduction is being rejected but, by assigning the existent world of experience to an inferior place and that of universals to a logically superior one, that the existent is *in turn* being eliminated, or reduced in favour of this 'higher' reality. It is not just being claimed then that the realm of the existent is by itself logically inadequate, and that a further area must be recognized and allowed for if the world is to be understood, but rather that the first is inferior, the second superior, the first is eliminable, the second is not eliminable, the first is the reflection or the secondary thing, the second the real, primary or fundamental thing, and so on. There is, however, an important difference between Greek idealism and German idealism in the strength and nature of the reduction. German idealism incorporates the thesis that everything *is* thought,[12] which is not an essential component of Greek idealism, and which appears to be a much *stronger* form of reduction than the Greek idealist position that items which are not ideas are secondary. Both positions however involve a reduction.

If empiricism and, more generally, positions premissed on the Reference Theory give us, then, the reduction of the nonexistent to the existent and correspondingly of the intensional to the extensional, what idealism gives us, and what the appearance/reality terminology signals, is a *converse* reduction, the reduction of the existent to the nonexistent or subsistent, as indicated in the cave analogy, and the elimination not of the intensional but of the extensional.

The traditional opponents, empiricism and idealism, then face us with reduction and converse reduction. To see the matter in this light is at the same time to see that these traditional alternatives are not exhaustive. For there is a third option between the (false) choices of reducing A in favour of B and reducing B in favour of A; namely, of seeing neither item as eliminable in favour of the other. This is the view of the other main position which rejects the empiricist reduction to the existent, namely rationalism, especially noneist rationalism as expressed in the theory of items.

Noneism rejects both these reductive alternatives (the term 'noneism' also abbreviates 'nonreductionism' as well as 'nonexistentialism'). While it agrees with the great stream of idealist thought in rejecting the reduction of the nonexistent to the existent, it equally agrees with empiricism in rejecting the idealist reduction to thought or ideas (to the nonexistent) and the view of nonentities as more fundamental and of the existent as mere appearance. It rejects both the reduction of the intensional to the extensional (which is characteristic of empiricism) and the converse reduction of the extensional to the intensional (of matter to thought or spirit) which has been typical of idealism. According to noneism, both these two types of things, existent and nonexistent, extensional and intensional, are equally essential and fundamental for understanding the world; neither is adequate on its own, and neither can form the basis for a satisfactory reduction.

Thus according to noneism both reduction programs are misconceived, but each has a point in contrast to the other, namely the importance of the unreduced class. Because it takes points from each of the conventional alternatives, but at the same time rejects aspects of them as well, noneism can be seen, in a qualified way, as a synthesis of these two positions. But it also presents an alternative to empiricism, one which lacks the fantastic character of idealism which is so striking and unacceptable to modern thought. This fantastic character arises from idealism's adoption of the converse reduction to empiricism. Claims such as that all matter is really spirit, that the world of existent items is only really appearance, *do* seem to have an extravagant ring; and it has of course been very convenient for empiricism that the traditional historical opponent appears to modern thinkers in this light. But no such obviously fantastic character attaches to the claims of noneist rationalism, which does not in any way reject the actuality of an external world of existing items, which can present a thorough-going realist theory of perception and whose main theses, the explanatory in-

adequacy of the existent and the nonreducibility of the intensional, present (when properly understood) far fewer affronts to commonsense than empiricist reductions do.

At the same time this position, in rejecting the idealist reduction and asymmetrical dependence relation between the existent and non-existent, and affirming the equal importance and indispensibility of the intensional and extensional, of the actual and non-actual, for an understanding of the world, may appear to run the risk of falling into a form of *dualism*. The two spheres, the actual and non-actual, the intensional and the extensional, are treated as relatively independent, and as not reducible one to the other, giving rise to two independent principles and thus apparently to a type of dualism.

In particular, since there is a (very) approximate correlation between the extensional and the material or body, and the intensional and the spirit or mind, it might seem that the position is open to all the objections applicable to mind/body dualism. We want to argue that the position enables a rejection of dualism and is antidualistic, and that it can also provide an account of how and why dualism arises. In rejecting dualism it in fact resembles to some extent both Hegelian idealism[13] and materialism, but it rejects a dualistic approach *without* the reduction to either of the poles characteristic of both these other positions; that is, without either mechanistic (or materialistic or physicalistic) reductionistic accounts which reduce the mental to the physical, or their opposite.

§ 3. *The problem of dualism and the philosophy of mind: a noneist perspective.* The problem of the reducibility of the mental and the account of the mental is very closely connected with the problem of the reducibility of the intensional and the account of the intensional. For while by no means all intensional functors are mentalistic, it is fairly clear that all (genuinely) mental predicates are intensional. The mental is a subspecies of the intensional, and the main problems about the mental are really special cases of problems that are thought to arise about the intensional. The reduction of the mental to the physical (or etc.) is thus a reflection in the area of philosophy of mind of the reduction of the intensional to the extensional in logic, and the two positions customarily go hand in hand.

Dualism in the philosophy of mind is similarly a reflection of certain positions concerning the intensional. Dualism is the consequence of inadequate theories of, and ways of dealing with, the intensional. For just as certain extensional reductionist theories try to deal with the intensional by treating the intensional element as a separate distinct object—a concept, sense-datum, or idea or other intermediary, which is then treated as simply behaving referentially in the same way as an item in an ordinary extensional context—so Cartesian dualism locates the mental as the product of a further distinct subject, the Mind, which is treated as a further referential object, etc. (cf. Ryle on the Cartesian myth).

A traditional problem for dualism has of course been that the intensionally acting subject, the one who carries out mental acts, thus becomes irrevocably split into two separate subjects, a mind and a body. Essential unity and wholeness are lost with this division of the subject into two separate elements, a mind and a body, and no satisfactory account has been, or seemingly can be, provided which restores this unity. The logical theory at the base of this, the Reference Theory, through its denial of the intensional, thus tends to force a choice between mechanistic (physicalistic) reduction—the reduction or denial of the *mental*—on the one hand, and on the other its recognition in an unacceptable form, with other positions forming minor variants on these themes.

These problems of mind/body dualism, and especially the problem of the division between and unrelatedness and lack of unity between mind and body, closely parallel problems with epistemological intermediaries. All these problems arise from the same source, the inability to deal adequately with the intensional. One of the central problems for such intermediary accounts is the lack of unity resulting from the great difference between the 'ordinary' subject as it occurs unanalysed, and the subject as it is analysed in an intensional context. Thus under this account 'Burton saw Mecca' is reanalysed in Fregean style as 'Burton saw the concept (or other intermediary) of Mecca' and 'Burton, disguised as a

pilgrim, saw Mecca, an inland city of Arabia' must be reanalysed as 'Burton, disguised as a pilgrim, saw the concept (or other intermediary) of Mecca, and Mecca is an inland city of Arabia'. The problem here, just as with the mind/body case, is that the *unity* of the subject 'Mecca' in the original statement 'Burton, disguised as a pilgrim, saw Mecca, an inland city of Arabia' has been destroyed in the analysis. The result is then a statement about two quite different sorts of objects, Mecca and the intermediary of Mecca, whose connection is left quite unclear. Intensional predicates can on this account never be predicates of an ordinary subject such as Mecca. They must always, upon reanalysis, be predicates of 'concepts . . .', 'ideas', 'sense data' or other intermediaries.[14] In much the way that one cannot obtain a properly unified subject of extensional and intensional predicates and one cannot explain how ordinary objects are related to these intermediaries, so one cannot, under parallel dualistic positions in the philosophy of mind, obtain a single subject (such as a *person*) which has both bodily and mental properties or explain how mind and body are related. In neither case can one unify or give any due account of its unity which would not ruin the analysis.

In order to understand the mechanism and motivation behind the moves which set up those problems, suppose that there is a situation where a certain class of relations cannot be dealt with adequately within the scope of the conventional logical theory. They do not preserve truth when analysed according to the theory, and in other ways create problems. One major option is clearly to invent or concoct new relata, and to reanalyse the problematic relations in terms of these new relata, in such a way that they *can* now be dealt with within the scope of the dominant theory. There may then be a problem about how the new concocted items relate to the old relata with non-problematic properties (which is how dualistic and epistemological problems arise), but the problematic relations will be, superficially at least, treatable in terms of the conventional theory without the need for any major revision.

This is what happens in the case of intensional relations, which cannot be dealt with adequately by the dominant (Reference) theory and conventional logic. Here there are two possible routes for replacement strategies, for reanalysis and replacement of either of the relata may make the application of this strategy possible, that is one can have either new concocted objects or new concocted subjects. The former is the route taken by the epistemology of intermediary objects, and the latter that taken in the mind/body problem. In the first case the result is a dualism of the object, and in the second a dualism of the subject.

To set the matter out in more technical detail, in both perceptual and mentalistic cases problematic statements take the form, aRb, with subject a R-related to object b. In the perceptual case the problem is taken to lie with the object b, e.g. in 'Moore saw a grey after-image', as in 'Bacon sought Atlantis', the object may not exist and is not duly transparent (so the Reference Theory is violated on both main scores). And the repair was taken to require replacement of the object by a new object—sometimes called an *intensional object* —not subject to these problems, e.g. the concept of b, the sense datum of b, b*. Such replacement of the object immediately required, for the (apparent) preservation of truth and sometimes even of significance, replacement of the relation R by a new relation R*. In more important cases paraphrases for the new relation were introduced, as for instance in 'Moore *had* a grey after-image sense datum'.[15] By contrast, in the mentalistic case the problem was located in the subject, a. Specificity of reference required that assertions such as 'Descartes thought about God' be paraphrased to refer to a thinking substance, to Descartes' *mind*, not to Descartes' body, which being an element of extension could not engage in mental activity. Thus the obvious subject was replaced by a new subject, an *intensional subject.* And this in turn required a change in relation, to preserve both truth and other felicities; so R gives way to R^{+}, e.g. 'thought about' yields to '*engaged in* thought about' (for among the few things minds are naturally, but metaphorically, said to do is to engage in things). Thus where there is a duality of subject aRb is transformed to $a\,{}^{+}R\,{}^{+}b$, not as with duality of object to aR*b*.[16]

These new subjects or objects are special theoretical ones, such that intensionality is

relocated in or relegated to *them*, and the problematic relation can be treated as an unproblematic one holding between these special sorts of items, which are treated as references. Thus in the epistemological case we can have an apparently extensional relation between a perceiver and the concocted special objects of perception (new concepts, sense data, ideas, phenomena, or other intermediaries or special objects), and in the mind/body case we have new subjects, again special objects, namely minds, which now instead of the one unified subject of both intensional and extensional predicates, are the special havers or harbourers of thoughts, emotions, purposes, intelligence, and so on, and relate appropriately to the special new objects of perception (concepts, etc.), and are the places where these special new intermediaries (ideas, etc.) are 'located'. These new subjects, minds, can be treated as further very special (negatively characterised) sorts of things, referents unlocatable in any space but which operate in an appropriate pseudo-mechanistic and extensional fashion. So in the mental case, just as in the case of epistemological intermediaries, the theory can obtain the appearance of conformity with it and of having solved the problem, through the creation of special new sorts of referential items (minds), which however now have strange properties and are now distinct from and isolated from the old subjects bearing extensional properties (bodies) (cf. Ryle again).

To explain how and why the problem arises—as a consequence of the inability to deal adequately with the intensional within the conventional theory—is also to see how and why it does not arise for a theory which *does* allow for the special character of intensional relations and does not require that they be eliminated or explained away in favour of extensional relations holding between specially contrived relata. The motivation for and driving force behind the strategy which results in these dualistic problems of subject and object is lacking. There is no problem in obtaining a single, unified subject which can have both intensional and extensional properties, a single subject which can both think and act physically in the world, conjecture and take a walk, prove theorems and repair the roof, just as there is no problem about obtaining a single unified object of perception and also of non-intensional properties, a single object (of quantification) which can both be oval and white and laid by a hen and be *perceived* to be such. Unification (and so prepositional cross-reference quantification) can be obtained without reductionism, without special places such as minds, as Wittgenstein and Ryle hoped (although there was always a reductionistic streak in Ryle's work).

The noneist position also avoids a serious problem which affects Ryle's version in particular of such a unifying anti-dualistic philosophy of mind (cf. Routley (1979), p. 683). This is the problem that much discourse about minds and mental objects such as thoughts becomes suspect and has to be rephrased so that mention of such 'dubious' objects is avoided or locked away in predicate or adverbial expressions which are not permitted to yield subjects. But such discourse about mental objects occurs sometimes in an ineliminable way, is not in need of reduction or elimination, and is in order as it is. To allow it to occur in such a way is not to hand things back to the Cartesians.

Both epistemological intermediaries and minds are theoretical objects of a special kind which can be defined by abstraction, (e.g. Mind $= \lambda x$ (x has a mind)). The problem does not lie in the ability to define these theoretical objects, but rather in the attempt to use them to reduce or eliminate the problematic intensional relation, to locate the intentionality within these items which are then treated as special sorts of referential objects. It is *not* a consequence of the antidualistic position outlined above that we have to stop talking about minds or epistemological intermediaries; rather it is that the mind terminology (like the intensional object or sense-data terminology) is not connected to a worthwhile theory, cannot be made to bear much explanatory weight, is easily lent to misleading applications if treated referentially, and can commonly be avoided.

To appreciate the logical and metaphysical driving force behind mind/body dualism is not to have got to the *bottom* of the problem, for there is still the matter of explaining why the dualism of the subject occurs in the mind/body case and the dualism of the object in the epistemological case. It seems likely that this structure is not determined just by logical

considerations and that it is necessary to look beyond these to cultural and social factors (to consider holist as well as partist factors). Others have pointed out that there is a connection between the dualism of mind and body and a certain kind of society, although the cause and effect relations are less clear. Dualism appears to both reflect *and* reinforce certain sorts of social and cultural tendencies and situations, where in each case a similar structure is exhibited. For example, dualism encourages and underlies the social distinction between two classes of work and two classes of workers, superior 'intellectual' work and inferior 'manual' work or bread labour, the sharp distinction between the intelligent and purposive decision-makers and managers and the rest, the labourers, those who carry out physical labour in as machine-like a fashion as possible, both the sharp separation of the functions and the higher status accorded the former reflecting the dualist position. We can likewise find connections between dualism and various sorts of chauvinism, and with the repression of the body, of sexuality, of animality, and of women (women traditionally being identified more closely with all these things and hence seen as inferior). Another manifestation of the same dualistic structure is in the great wall erected between man, the intelligent, purposive and creative creature, and the rest of the universe, which is supposed to be no more than a machine—a position (Rodman's (1981) 'differential imperative') operating as strongly in Marx and his followers as in Descartes and his. We can't get to the bottom of dualism and its motivation just in logico-philosophical terms, but to understand it must also see it in this larger context.

We want to claim for noneist rationalism an antidualistic position. But haven't we just relocated our dualism, it will be objected, in the two kinds of relations, properties, and different logical treatment appropriate to intensional and extensional respectively? No, there is a uniform logical theory, from which, however, separate treatment of referential and non-referential cases can be derived. Thus, derivatively, the theory, like many theories, does admit a very broad kind of dualism, in the sense of the admission of two different sorts of broad principles or spheres or structures, which have some independence but are nevertheless related (a sort of logical yin and yang). But this kind of *broad* dualism is, we would urge, harmless and in no way to be equated with the damaging sort of dualism which appears in the mind/body case, in the epistemological dualism of the object, or in the kinds of social dualism mentioned above. The slogan 'Down with all dualism', if it means that there is something wrong with distinguishing two basic kinds of anything, will not do: it is necessary to be a bit more discriminating. In fact without recognition of these different kinds of logical structures the avoidance of these more damaging kinds of dualism is difficult.

§ 4. *The worlds of Appearance and Reality, Becoming and Being, and the route beyond the universal philosophy.* Dualism is not confined to the philosophy of mind, but can pervade other reaches of philosophy. Much of Greek philosophy, including the universal philosophy, has been charged with dualism. Here the contrasting principles involved are, as before, Appearance and Reality, or Becoming and Being.[17] Indeed these two contrasts are frequently identified. Because however, the contrasting principles are *not independent*, Appearance or Becoming being dependent, according to the universal philosophy, on Reality or Being, the dualism charge is not warranted, the dualism is not a true dualism. But apparent or not, are not such two (or more) world theories open to the objections that defeat dualism? And isn't noneism, which is broadly dualist, so defeated? No, again the matter depends critically on the nature of the worlds and their interrelations (see the failure of the usual anti-two-worlds arguments, Routley (1979), pp. 700—1).

There are several routes to the contrasts, which are incorporated not only in idealism but in other big alternatives to empiricism. One route, for example, is from inconsistencies in the world of Appearance, $\underline{\underline{A}}$, in combination with the assumption that Reality, $\underline{\underline{R}}$, as disclosed by reason, cannot be inconsistent. Hence they must differ. (Hegel, by allowing that $\underline{\underline{R}}$ may be inconsistent, could close *this* gap again.)

A more important route is from the explanatory inadequacy of $\underline{\underline{A}}$; from the insufficiency

of $\underline{\underline{A}}$ to supply its own truth or explanation conditions.[17] (It is inadequate to the task for the same sorts of reasons that the factual world $\underline{\underline{T}}$ is insufficient on its own for satisfactory truth conditions for modal and intentional statements.) For these conditions, appeal to other worlds is required, under idealism to $\underline{\underline{R}}$; and traditionally it was commonly assumed, as in the universal philosophy, that appeal could be restricted to $\underline{\underline{R}}$. (See themes II and I of the *universal philosophy*, UP.)

There are some awkward, but seldom raised, questions about the nature of $\underline{\underline{A}}$ and $\underline{\underline{R}}$, $\underline{\underline{B}}$ (Becoming) and $\underline{\underline{I}}$ (Being), that is about what properties and sorts of properties they have and lack; more commonly asked are questions about relations between them. But some things are clear enough; for instance, that none of them are worlds of modal logic, since those that are not incomplete are inconsistent. $\underline{\underline{A}}$, for example, appears seriously incomplete. For consider any object a that is not observed; then a is neither green nor not green, neither solid nor not, since appearance does not settle a's features at all. Of course it could be ruled that a is not in the domain $d(\underline{\underline{A}})$ of $\underline{\underline{A}}$, but similar incompleteness would arise as regards objects that were observed but not observed in every aspect, e.g. speckled hens. There are deeper problems about $\underline{\underline{A}}$, the *common* world of appearance. Common to what? Among other things, to each observer x. For strictly, there is a world of appearance $\underline{\underline{A}}_x$ for each such x. What holds in $\underline{\underline{A}}_x$ is just what appears to be so to x; e.g. if the lawn looks brown to x, then I (the lawn is brown, $\underline{\underline{A}}_x$) = 1. But the commonality is ambiguous,[18] in particular as between resulting world $\cap_x \underline{\underline{A}}_x$ and $\cup_x \underline{\underline{A}}_x$. The first of these worlds is extremely impoverished, and possibly null, in that nothing holds in it, given the geographical isolation of observers, except, perhaps, such statements as that rain is wet. So it is tempting to equate $\underline{\underline{A}}$ with $\cup_x \underline{\underline{A}}_x$. An upshot is that $\underline{\underline{A}}$ is also inconsistent, since things sometimes appear differently to different observers. In fact, an argument for $\underline{\underline{A}}$'s inconsistency can be based on one observer, since the bent oar looks bent and feels straight.[19]

What was commonly meant by the 'world of appearance' was not, however, $\underline{\underline{A}}$, which only overlaps $\underline{\underline{G}}$, but the world of (everyday) experience,[20] in fact the empirical world $\underline{\underline{G}}$, upon which existential requirements were certainly imposed (cf. theme III of UP). Several considerations make this evident, for instance the frequent shifts from *appearance* to *experience* and back, indicating their intended interchangeability. Similarly the world of Becoming was often equated with $\underline{\underline{G}}$; and there will be no serious loss of content in working henceforth with $\underline{\underline{G}}$ in place of $\underline{\underline{A}}$ and in equating $\underline{\underline{I}}$ with $\underline{\underline{R}}$ (cf. themes V and I of UP). Nor does it matter that worlds like $\underline{\underline{G}}$ and $\underline{\underline{R}}$ are not entirely theory-invariant. The referential world $\underline{\underline{G}}$ depends for instance on what (acclaimedly) exists: it will be the empirical world of experience if what exists is empirically determined.

Reality, $\underline{\underline{R}}$, like $\underline{\underline{A}}$ and unlike $\underline{\underline{G}}$ (as intended), is incomplete. Consider, for example, $\underline{\underline{R}}$ as given by the Stoics' theory or on Plato's theory. The domain $d(\underline{\underline{R}})$ will include such objects as a generic Man; but Man is neither Greek nor barbarian, according to the Stoics, so I (Man is Greek, $\underline{\underline{R}}$) $\neq$ 1, and similarly for its negation.[21] As regards Plato's theory, as a first approximation, $d(\underline{\underline{R}}_p)$ consists of certain universals, those that exhibit perfection, and what holds in $\underline{\underline{R}}_p$ is what is true of these universals.[22]

Although noneism can thus incorporate, as further (theoretical) objects, the worlds of the universal philosophy, it differs in crucial ways from that philosophy. Most important, though the truth and explanation conditions for $\underline{\underline{G}}$ and $\underline{\underline{T}}$ require appeal to (infinitely many) other worlds, these worlds do not regularly converge on, or collapse to, $\underline{\underline{R}}$. In noneism, $\underline{\underline{R}}$, however traditionally characterised (e.g. through universals), ceases to play an important semantical role, its place being taken by the factual world $\underline{\underline{T}}$. But $\underline{\underline{T}}$ is not sufficient for its own truth and explanation conditions: no world is. In this sense, assumption I of the universal philosophy is false. Differently construed (e.g. where worlds are taken as fusions of things), I also fails. For given that nothing necessarily exists, that everything that exists does so contingently (as argued in Routley (1979), 9), everything that exists depends on other things, for instance has causes beyond itself. So no entity satisfies the independence conditions imposed on the Real. This is a further reason why noneism qualifies the asymmetrical dependence relation

of idealism. For what exists, which comprises d ($\underline{\underline{G}}$), does not depend, causally for instance, on what does or has not, though explanations of its existence may well transcend $\underline{\underline{G}}$. Certainly what exists does not reduce to what does not (since e.g. 'exists' is transparent).

Another crucial objection, already levelled, is that of the Real as (objective) thought, in VIII. For the domain of the Real, even if comprising (as under IV) universals, and not existents (by V) or some other sort of genuine objects, does not reduce to thought, unless universals are thoughts. But such a result is only forced upon us by such fallacious transformations as that since everything is an object then everything is an object of thought (in Meinong's sense), so everything is a (perhaps objective) thought. The requirements that universals are thoughts and have logical being is the result of a residual Ontological Assumption that would assign ontic status to these abstractions, a being that is accounted for by construing the abstractions as thoughts. Noneism removes this *thought backdrop* by removing the residual Reference Theory. Abstractions such as universals have no sort of being, hence they need not be identified with something that does.

In somewhat similar fashion, noneism rejects the remaining assumptions of the universal philosophy that cannot be rendered analytic (many can be so rendered, e.g. IV or VI, but the reconnections force others to fail). Yet although it rejects so much, noneism has analogues for most of the assumptions of the universal philosophy. For instance, in place of the assumption that the Real is objective thought, noneism has the truism that the Real is an object, in place of V it has the thesis that the real does not exist or have any kind of being, logical or otherwise. And so on.

Noneism also differs in other ways from other transcendental positions such as idealism, for example, in its epistemic themes, which include the following freedom of thought theses:— what is conceivable is not restricted to the possible, i.e. impossible items (including situations and worlds) can be conceived, considered logically, and reasoned about, and even believed. Indeed, there are no restrictions on what (propositions) can be believed; and hence there are no laws of thought (in the main traditional sense). Historical idealism, by contrast, was seriously hampered by a residual Ontological Assumption, that every object (of thought) had being, and so characteristically confined by a consistency assumption deriving from this and by alleged 'laws of thought'.

Even with noneism there are, however, significant limitations, which afford contrast with the freedom theses; for instance, an absolutely inconceivable object, should the theory admit such, is not conceivable. Less speculatively, there are restrictions on what truths can be known by finitary creatures such as humans. More generally, there are limitations upon the extent to which the factual world, $\underline{\underline{T}}$, can be fully comprehended by finitary creatures like humans. It is through such limitation themes, especially those expanding on the limitation of purely empirical methods, that noneism finds itself in the company of mysticism. And even though noneism and mysticism eventually go their separate ways, they share other significant features as well, though primarily those that noneism and idealism have in common.

§ 5. *The far side of mysticism: mysticism and its variants compared and contrasted with idealism and noneism.* As we have seen, noneism stands with idealism, opposed to empiricism, in having an other-worldly theory. The actual world $\underline{\underline{G}}$ of empiricism (a referential circumscribed part of the factual world $\underline{\underline{T}}$) suffices for none of the important philosophical roles such as truth, explanation, knowledge, etc.: it is only a fragment of a much bigger picture. In this respect, noneism allies itself not just with idealism, but with even more scientifically disreputable positions such as mysticism.

For several of the core theses of mysticism—whether ancient or modern, whether western or eastern,[23] whether straight or countercultural, whether based on religious experience or on drug or psychotic experience—coincide with those of Greek idealism, and are part of the universal philosophy, namely:—

M 1. There is 'a Reality behind the world of appearance' (Russell (1949), p. 9).[24] That is,

to begin spelling out the 'behind' metaphor, R, which differs from A, explains or helps to explain A, but is not observable. Hence access to R cannot be just by perception of the everyday sort. R also has some of the same characteristics idealism ascribes to it.

M 2. Reality is immutable, unchanging (Russell (1949), p. 11, 21). Neither of these theses is as remote or alarming as empiricists like Russell suppose.[25] In fact, M1 and M2 can be jointly modelled by contrasting the changing temporal 3-dimensional world of experience with the block 4-dimensional world of Einstein-Minkowski. The further thesis,

M 3. Time is unreal, can be accommodated in the same model. M3 is presumably a consequence of M2, since the changing world of appearance is not the Real world, and also a reason for M2 since if Time were real R would exhibit it.[26] Under Noneism—which hardly needs to accept M2, but which includes unchanging worlds among worlds—a thesis like M3 emerges independently from the thesis that existence is existence now (Routley (1979), 2.1).

In common with idealism also is the theme of the perfection of the Real,

M 4. All evil is appearance, not part of Reality—or a metaphysically independent thesis whose inclusion is, however, readily comprehended, as with Greek idealism. M4 entails a thesis about A, that it includes evil. This theme is sometimes strengthened, that A is imperfect, is unreliable, is even a shared delusion, which disguises or interferes with perception of R.

Also shared with Hegelian idealism is a holistic position, which is not so easy to capture, but tends to go like this:

M 5. Wholes are genuine objects which do not reduce to extensional (logical) constructions of their individual parts. A popular, but not quite adequate, way of putting this is to say that wholes are more than the sums of their parts. The thesis certainly does not exclude consideration of wholes as systems, as relational structures, the elements of the structure being the parts, and this systemic picture is certainly compatible with wholes having "emergent" properties. Thus M5 does not support stronger (false) theses which 'refuse to admit opposition or division anywhere',[27] or which insist that all boundaries and divisions are artificial or conceptual (so that any two separate wholes merge into *the* Whole, which is the only genuine, but strictly inaccessible, object). But it is assumed

M 5′. R is whole, or unity.

No, what distinguishes mysticism from idealism is the method of access to Reality. The difference is, so to say, epistemic. It concerns transworld relations: revelation, for instance, is a means of transworld access. With idealism the method is reason: with mysticism it is mystical experience of some sort—contemplation, intuition, revelation, insight, drug-heightened perception, psychotic awareness—as contrasted with reason or analysis. Hence the crucial separating theme,

M 6. There is a way (or method), said to be of wisdom or knowledge, namely mystical experience, as *contrasted* with (the faulty or limited procedures of) reason or scientific method, which provides information about Reality.[28]

What is objectionable about this thesis is primarily the claim of the way to afford knowledge. Knowledge requires higher evidential standards than mystical experience *tends* to offer. (On the other hand, there is inductive-type evidence that procedures for obtaining knowledge are neither confined to nor coincide with those of contemporary logical and scientific method.) Were the way downgraded to a *way of opinion*, providing conjectures or views about Reality, which are sometimes independently verified, there would be little or nothing for noneism to dispute in the crucial separating thesis, and main differences between noneism and mysticism would boil down to differences at most like those between noneism and idealism. In fact, noneism can be integrated with mysticism once M6 is reduced to a way of opinion, upon suitably spelling out remaining mystical theses M1—M5 and their associates (e.g. M2 becomes a thesis about 4-D space-time worlds).

The Australian Aboriginal theory of the Dreamtime uses yet another method of access, a method which is certainly transworld. The Dreamtime is (or was) what is *real* and what *accounts for* what happens. Thus far it is like the other world of idealism and mysticism. But the accessibility relation (or relations) is different. Whereas access—from world to

world—in idealism is by reason (with understanding construed, often as illumination, on the model of seeing, of vision), access in the aboriginal theory is by dream. But not just by dream, it seems: magic also affords access and more systematically than dreams (it is partly for this reason that magic is power, or rather, one who controls magic holds power).

All three types of theories agree in rejecting ordinary sense perception as a method of access to Reality. (Thus the '*beyond*' of mysticism is 'an *unseen* over and above the seen' to paraphrase Happold (1966).) But they would of course reject some at least of each others' methods. Mysticism, for example, certainly rejects the methods of idealism and rationalism as in M6; 'aspects of truth unplumbed by the rational intellect are revealed to' the mystic (Happold (1966)). Nonetheless the mystical method is said to extend or refine rational and perceptual methods (Happold (1966), p. 17). Again, in all three cases skill at the method could be acquired, improved upon, and technically assisted. However, in the nonrational cases the skills tended to be acquired 'through (secret) initiation ceremonies' and what was gained, often by occult means, was 'a secret wisdom about which it was unlawful ... to speak'. Not exactly means, that is, open to independent testing and assessment, but again means for acquiring views and beliefs, but not usually knowledge,[29] since knowledge requires, as well as *true* belief, a reliable (evidential) method, which can be accounted rational. The arguments against these special means affording knowledge are like those against religious experience as a method of knowledge (e.g. as an argument for God's existence) and are well-known (see e.g. Hospers, where the decisive arguments of Hume and others are sketched; also Wisdom). Such arguments do not show however that requisite reliable methods are restricted to empirical ones or the like. Reliable methods are certainly not so restricted: knowledge concerning the nonempirical, for example regarding other worlds, is obtained by methods that exceed empirical ones.

The exactness and positive content of these theses, M1—M6, of mysticism refutes the common assumption, set down for example by Russell ((1949), p. 3), that 'mysticism is, in essence, little more than a certain intensity and depth of feeling in regard to what is believed about the universe' (indeed, Russell's own subsequent development of themes refutes the assumption). There is, however, a further apparently more recalcitrant thesis, sometimes adduced as integral to mysticism, and not generally shared by idealism or totemism, namely an ineffability thesis:—

M7. There are aspects of $\underline{\underline{R}}$ that cannot be described in words.

This is not the thesis to which limitative results might give credence—that there are aspects of $\underline{\underline{R}}$ (truth) that cannot be known—because what such mystics often seem to say is that there are properties validated by $\underline{\underline{R}}$ which *they* know but which cannot be expressed, in short, wordless knowledge. This is doubtful, to say the least. Nor is M7 the extraordinary thesis, foisted upon mysticism by an empiricist opposition, that mystical experiences cannot ever be described in any possible language, that descriptions of such experiences are entirely exempt from conditions on language or for making sense. In some ways M7 is not particularly remarkable, but is just one side of Skolem's paradox. For displace '$\underline{\underline{R}}$' by '$\underline{\underline{T}}$' and call the result M7′. M7′ can be argued for as follows:— $\underline{\underline{T}}$, since it includes in its domain all real numbers, will ratify nondenumerably many truths. But natural languages only contain at most denumerably many words and so denumerably many declarative sentences (of finite length). Hence, since their ambiguity is finite, they can express only denumerably many propositions. Therefore, there are truths, of $\underline{\underline{T}}$, that cannot be described. Similar arguments appear to refute such effability theses as that everything can (necessarily) be described.[30]

Much as one world philosophies are inadequate, as big philosophies, so are two world positions, and three worlds, ... and indeed n world philosophies, for any finite n. For they are insufficient to account, semantically, for the intensional notions that an adequate philosophy has to account for. Finite world positions are certainly historically represented. Empiricisms that allow only for the Actual, or the world of experience, and mysticisms and idealisms which are presented just in terms of the Actual and the Real, are *both* of this sort. Among two world positions are also many dualisms. Seventeenth century rationalism frequently took a

rather different two worlds form, with a world of material things (extensions) and a world of mental objects (intensions). Three world theories are not so common, but they have been sponsored, recently for instance by Popper, who distinguishes 'the physical world' (World 1), 'the world of experience or thought *in the subjective sense*' (World 2), and 'the world of objective thought, especially the products of the human mind' (World 3). Roughly Popper's position is an idealism containing $\underline{\underline{G}}$, $\underline{\underline{A}}$ (or perhaps $\underline{\underline{A}}_x$ for each x) and $\underline{\underline{R}}$, and is defective for similar reasons (as well as its human chauvinism).

The argument that finite world theories are inadequate is simply this:—Many fundamental intensional functors, e.g. entailment, conditionality, necessity, permissibility, cannot be satisfactorily represented in finite-valued systems; more precisely, logics for these functors have no finite-valued characteristic matrix (and generally no rational sentential logic has a finite characteristic matrix: see Routley and Wolf). Hence these systems also lack a finitary worlds modelling (for if they had a finite world modelling a finite characteristic matrix could be defined in terms of it in a standard way: see e.g. Routley and Meyer 1982).

Accordingly, a theory that is adequate for fundamental intensional functors, as a big philosophy should be, will allow for infinitely many worlds.[31]

Idealism and mysticism *can*, of course, allow for this, much as noneism does—$\underline{\underline{G}}$ and $\underline{\underline{R}}$ are just two among many worlds—and perhaps some historical variants did. But it involves merging idealism, for example, with a very different tradition, the countless (or infinite) worlds picture emanating from Anaximander and running through Greek atomists such as Democritus. Moreover, unless the ontological neutrality of noneism is adopted as regards worlds,[32] the expansion involves attributing being excessively widely, and in a way in conflict with the usual motivation for the shift to the Real, where the Real comes to be *the* locus of truth and explanation.[33]

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NOTES

1 In this paper we intend to look at the general systemic relationships between several big philosophies, rather than setting up, distinguishing, and criticising or defending variants on the positions. That is, this is a paper which employs a telescope rather than an analytical microscope.

Thus, for example, we do not distinguish logical empiricism from, e.g., Mill's empiricism or Quine's empiricism. It is unneccessary to do so because all these different forms of empiricism succumb to the same criticism: see below.

2 Therewith ensue also declines in several parameters associated with status, a decline in interest in logic, in the role of logic in philosophy (indicated by such things as the scheduling of logic papers at major philosophy conferences), in employment and book publication opportunities for logicians, etc. Perhaps higher status for logic is a periodic phenomenon and we have just come out of a high period.

3 The logic of the syllogism, which is (as Routley (1979), pp. 174—6 explains in detail) substantially independent of the severe restraints imposed by classical logic, is only one example of options closed off classically. Many important philosophical positions are beyond reach of classical formulation (see Priest and Routley). Hegelian idealism, which calls for a strong paraconsistent logical base, is just one of the more striking examples. Another less colourful example is Reid's neutralisation of Plato's theory of forms. Of course, if intensional extensions of classical logic are excluded, in the way that empiricists and strict adherents of the classical faith require, much else that is crucial is also excluded, a wide class of intensional notions such as (to merely touch on the range) logical and causal necessity, and their epistemic and deontic analogues.

4 As Wittgenstein observed,

> The whole essence of Russell's view is that there is only one logic . . . logic should be . . . in no way arbitrary . . . There must not be a Russellian and a non-Russellian logic, in the way in which there is a Euclidean and non-Euclidean geometry (*LFM*, p. 172; rearranged.).

Heidegger (1957) has remarked on 'the complicity, the "elective affinity" between symbolic logic and the contemporary technological domain', on the similar styles of thought (p. 163). But elaborating the similarities in due detail requires first separating out classical logic among symbolic systems.

5 This converse connection is denied by some who call themselves empiricists, e.g. Armstrong and others, who think that certain instantiated universals exist. The priniciple used, however, that the world can be explained in terms of what exists, comes out of the first connection.

6 The logical connections between standard formulations of empiricism and these theses are developed in detail in Routley (1979), especially 9.10, where, too, the substantial case against forms of empiricism is documented.

7 On the latter point, see Routley (1979), p. 742. The Reference Theory is the driving force, in one way or another, not merely behind all one-world positions such as empiricism and existentialism, but in a weakened form (e.g. with *being* replacing *existence*) behind transcendental positions such as idealism, mysticism, and traditionalism. The idea of the Reference Theory as the source of very many philosophical problems derives from Wittgenstein's later thought: but (in Routley (1979)) the formulation and application of the Theory has been much refined.

8 The emerging big theory, noneism, is a kind of amalgam of Meinong with the later Wittgenstein; so however strange the combination may seem, it can claim a good Austrian ancestry.

9 While a semantical analysis of discourse about nonentities can be given, e.g. through a universal semantics (cf. Routley (1979), 1.24), in terms of what Platonists are pleased to call 'entities', the objects involved in the analysis do not exist.

10 So far only nonepistemic themes have been assembled. For subsequent comparisons, especially with ways of knowing and interworld access of idealism, mysticism, primitivism, etc., it will however be important to introduce epistemic and limitative theses.

11 In the standard sense of 'transcendental', of being other-worldly, necessary for (the explanation of) experience, and not reducible to it.

12 This is partly to be accounted for through the assumption that judgements and their contents always involve an experiencing subject, or consciousness, and partly through an illicit transformation on the associated theme that everything is an object of thought. These assumptions persisted in both British idealism and phenomenology. Thus, for example, phenomenological analyses of meaning, truth, etc., are bound to be restricted to presentations, and hence accessible to phenomenological reflection, in an act, to what, that is, that can be captured by reflecting consciousness (cf. Hintikka (1981), p. 117). Insofar as Husserl's phenomenology admitted alternative worlds—and in its later stages it certainly did—these are '*constituted* by intentional acts' and answer back to actual consciousness (Mohanty (1981), p. 105, p. 111):

> In his last period, [Husserl] introduced the concept of a "lifeworld" (a "pregiven" lifeworld), which was to bridge the gap between pure consciousness and the world of ordinary experience . . . The world of natural existence was not accorded prior status with the conception of a pregiven lifeworld. The basic idealistic thesis of phenomenology was supposed to be further implemented, but not abandoned, with that conception (Farber (1968), p. ix).

13 Noneism has striking similarities with parts of Hegel's idealism. Similarities include, as well as related transcendental theses, the position on consistency, and convergent approaches on the role of contradiction (in paraconsistent noneism) and on negation. Of course, the similarities are limited: contradictions are not seen in everything or as the motive power of the world. The similar toleration of contradiction is in part the outcome of displacing empiricist determination through the actual world, required, by classical logic, to be contradiction free.

14 The details are like those in Routley (1979), 8.10, p. 672ff.

15 With the ambiguous possessive affording, as Marx observed, the model of all relations (cf. Rodman). Marx's observation can be made good as follows: All examples of predication can be represented as cases of instantiation through the transformation $f(x_1 \ldots x_n) \leftrightarrow (x_1 \ldots x_n) i \lambda f$, with instantiation, 'i' read 'has (have) the property'. And having can be construed in terms of possession.

16 Of course if both a and b are replaced, so aRb is uniformly transformed to say $a'R'b'$, then such replacements, which are not one-sided, can succeed. The question is then: what does the transformed result mean? Its meaning is entirely parasitic on what it replaces.

17 '. . . The contrast between appearance and (non-sensible) reality is a leitmotiv of Presocratic thought, and . . . the question of their relations was at the centre of fifth-century philosophical controversy' (Guthrie (1962), vol. III, pp. 199—200).
We focus on $\underline{\underline{A}}$ and $\underline{\underline{R}}$. But different routes become evident if the focus is shifted to $\underline{\underline{B}}$ and $\underline{\underline{I}}$. On Greek perceptions, features of $\underline{\underline{B}}$ such as motion and change require explanation, and this explanation is to be given in terms of what does not require explanation, namely rest and changelessness, i.e. in terms

of features of $\underline{\underline{I}}$. The dynamic is explained statically! Different again is Parmenides' route to $\underline{\underline{B}}$ 'on the basis of a logical argument as to the impossibility of not-being' (Russell (1949), p. 373).

[18] Nor is the relevant class of observers clearly delineated. The Greeks with characteristic chauvinism appeared to limit these observers to humans, but animals should be included as well, making new boundary problems. And should observers be confined to the present, or are past observers allowed, or future ones?

[19] $\underline{\underline{A}}_x$ is characteristically incomplete as well as perhaps inconsistent. The fact that the underlying semantical theory unproblematically admits such worlds has the fortunate corollary that implausible steps in Hintikka's semantical theory of perception can be straightforwardly avoided. Hintikka is obliged to step beyond the phenomenologically uncontroversial claim that 'to specify what someone, say a, perceives is to describe what the world is like according to his perceptions (whether veridical or not)' because the world in question (approximately $\underline{\underline{A}}_a$: see Mohanty, p. 99) is not a possible (i.e. modal logic) world. He has to say, what seems false, that the world is not fixed sufficiently uniquely and that really the description of what the world is like according to a's perception is 'logically speaking not unlike a disjunction of several alternatives concerning the world' (Hintikka, p. 61). From here he steps to the dubious theme that to specify what a perceives is to give the set of all possible worlds compatible with a's perceptions. Neither step is warranted, and neither is necessary since $\underline{\underline{A}}_a$ is logically in order and usable as it is.

[20] Experience was not limited to appearance, but was intended to be characterised through what *could* be experienced were, for example, observers suitably placed.

[21] This claim leads to a familiar dialogue, since the initial negation involved is predicate negation.

[22] By contrast, on Leibnitz's world view $\underline{\underline{R}}_L$ is the world of monads. Access to $\underline{\underline{R}}_L$ from $\underline{\underline{G}}$ is (again) by reason, more exactly by the arguments for the monadology. While Leibnitz's world picture is not confined just to $\underline{\underline{G}}$ and $\underline{\underline{R}}_L$, it is idealistic in that (other) possible worlds exist only in the mind of God.

[23] Most of the points adduced appear to apply equally to Indian mysticism: cf. Matilal. One point that Indians, like Greeks, sometimes correctly stressed is that $\underline{\underline{G}}$ as well as $\underline{\underline{R}}$ ratifies truth, and access to $\underline{\underline{R}}$ may have to start from $\underline{\underline{G}}$ (more accurately from $\underline{\underline{T}}$). The Indian two-world position was, however, sometimes, again like the Greek position, misleadingly put in terms of planes or levels of existence.

[24] Russell sums up in a useful way several of the themes of mysticism. His summary can, by and large, be confirmed from other sources on mysticism. Although the account of mysticism offered is more detailed than Russell's, it is by no means complete. Among important elements not taken up is the proposition that access to $\underline{\underline{R}}$ is important not merely as a route to truth and explanation, and so enlightenment, but, as a corollary of this, for the meaning of life, for arranging and directing one's life.

[25] Nor need they lead where Russell (1949) thinks, e.g. 'to the metaphysical notion of substance' (p. 21).

[26] Russell claims that M3 is an outcome of the denial of division, which follows from the theme of unity; but that it by no means evident.

[27] This is the excessively strong form Russell gives the unity or holistic thesis. Nor, it seems, need a mystic be committed to Heraclitus's or Hegel's principle of unity of opposites, though, like an idealist, he or she may. Since the unity of opposites can be made sense of in a reasonable way (see e.g. Priest), mysticism even with it need not lead to mystery or mystification.

[28] Russell outlines the thesis in terms of a 'belief in a way of wisdom which is contrasted with the slow and feeble study of outward appearance by a science relying wholly upon the senses'. But Russell here makes a false contrast between purely empirical science and mere insight, since empirical science does not exhaust rational investigation.

There is an associated thesis concerning access that is sometimes added to M6, namely that access is *immediate*. This seems to take up what is implied by saying that $\underline{\underline{R}}$ is 'everywhere . . . close at hand'.

[29] The same applies against the perennial philosophy Huxley educes (see both references), where $\underline{\underline{R}}$ is again immediately apprehended by those who have fulfilled (unspecified, but various more or less specifiable) conditions.

The perennial philosophy as presented by Huxley only properly overlaps mysticism, but properly described would no doubt include mysticism (*or* idealism). Better characterised, *a perennial philosophy* requires (1) a two worlds model (at least) with $\underline{\underline{R}}$ comprising the truth which explains $\underline{\underline{G}}$; (2) experiential, in fact mental, access to $\underline{\underline{R}}$; and (3) that what is valuable is determined by $\underline{\underline{R}}$. In this sense noneism can furnish a perennial philosophy. But Huxley adjoins, as well as such reasonable themes as that access to $\underline{\underline{R}}$ yields enlightenment, some extra assumptions, which are not suitably invariant across philosophers, and which are decidedly problematic, namely, to the metaphysical thesis (1), the assumption that $\underline{\underline{R}}$ is divine, to the psychological thesis (2), the assumption that the soul is, if not a part of $\underline{\underline{R}}$, at least similar to it, and less damaging, to the ethical thesis (3), the assumption that man's final end depends on knowledge of $\underline{\underline{R}}$. However, he is prepared to concede that these additions to (2) and (3) are less central. Of course it is not difficult to find theories which do bring out all of (1)—(3), e.g. $\underline{\underline{R}}$ is construed as the universal mind or spirit, rendering (2) analytic. But there are good grounds for dismissing such theories as defective.

In *The Doors of Perception* Huxley introduces different and conflicting elements. For example, $\underline{\underline{R}}$ is said to transcend 'good and evil, right and wrong and all opposites and contradictions which bedevil everyday living'.

[30] But they do not necessarily, because of a quantifier shift, tell against the thesis that anything can be

described or against Tooley's remarkable thesis that it is logically necessary that anything can be described. Tooley's thesis appears, however, to be refutable by design of a suitable possible worlds model.

31 Naturally there have been and will be attempts to avoid this sort of result. One attempt appeals to alternative semantics which do not involve worlds. But while such semantics can be furnished for fundamental intensional functors, e.g. purely functional semantics, *if* they are adequate, they will enable the definition of worlds. So worlds are removed only as far as appearances go.

32 Both Stoic and Epicurean philosophies adhered to leading theses of noneism. Such objects as *lekta* were something but did not exist. But worlds were apparently not among such objects.

33 We are much indebted for information and helpful comments to several people at gatherings where earlier versions of this paper were presented, at the Wittgenstein Symposium, at the University of Western Australia, at Guelph University and at the Australian National University.

REFERENCES

Anderson, J., *Studies in Empirical Philosophy* (Sydney 1962).
Armstrong, D. M., *A Theory of Universals*, Volumes I and II (Cambridge 1978).
Diamond, C. (ed.), *Wittgenstein's Lectures on the Foundations of Mathematics, Cambridge 1939* (Sussex 1976).
Dickson, D., *Alternative Technology and the Politics of Technical Change* (London 1974).
Farber, M., *The Foundation of Phenomenology* (Albany ³1968).
Galanopoulus A. G., and Bacon, E., *Atlantis: The Truth Behind the Legend* (London 1969).
Guthrie, W. K. C., *A History of Greek Philosophy* (Cambridge 1962).
Happold, F., *Religious Faith and Twentieth Century Man* (Penguin 1966).
Heidegger, M., *Der Satz vom Grund* (Pfullingen 1957).
Hintikka, J., "Phenomenology vs. Possible World Semantics: Apparent and Real Differences", *Revue Internationale de Philosophie*, Vol. 135 (1981), pp. 113—119.
Hospers, J., *Introduction to Philosophical Analysis* (London 1956).
Hume, D., *Dialogues Concerning Natural Religion* (London ²1947).
Huxley, A., *The Doors of Perception* (New York 1954).
Huxley, A., *The Perennial Philosophy* (New York 1945).
Katz, S. T., (ed.), *Mysticism and Philosophical Analysis* (New York 1978).
Matilal, B. K., *The Logical Illumination of Indian Mysticism* (Oxford 1977).
Meinong, A., "The Theory of Objects", in: R. M. Chisholm (ed.), *Realism and the Background of Phenomenology* (Glencoe 1960), p. 76—117.
Mill, J. S., *A System of Logic* (London 1947).
Mohanty, J., "Intentionality and Possible Worlds", *Revue International de Philosophie*, Vol. 135 (1981), pp. 91—112.
Popper, K., *Objective Knowledge* (Oxford 1972).
Priest, G., and Routley (eds.), *Paraconsistent Logic* (forthcoming 1982).
Priest, G., "A Dialectical Model of the Growth of Science", Presented at the Australasian Association of Philosophy Conference (1980).
Priest, G., "Classical Logic—a Degenerating Research Program", in: Priest and Routley (forthcoming 1982).
Quine, W. V., *Word and Object* (Cambridge 1960).
Reid, T., *The Works of Thomas Reid*, Vol. 2 (Edinburgh 1895).
Rodman, J., "Paradigm Change in Political Science", *American Behavioural Scientist*, Vol. 24 (1981), pp. 49—78.
Routley, R., *Exploring Meinong's Jungle and Beyond* (Canberra 1979).
Routley, V., and Routley, R., "Social Theories, Self-Management and Environmental Problems", in: D. Mannison, M. McRobbie and R. Routley (eds.), *Environmental Philosophy* (Australian National University 1980).
Routley, R., "Necessary Limits to Knowledge: Unknowable Truths", in: E. Morscher, *et. al.* (eds.), *Essays in Scientific Philosophy* (Comes-Verlag 1981).
Routley, R., Meyer, R. K., *et. al.*, *Relevant Logics and Their Rivals* (California 1982).
Routley, R., and Wolf, R., "No Rational Sentential Logic has a Finite Characteristic Matrix", *Logique et Analyse* , Vol. 17 (1974), pp. 79—83.
Russell, B., *Mysticism and Logic* (London 1949).
Ryle, G., *The Concept of Mind* (London 1949).
Sartre, J. P., *Critique of Dialectical Reason* (London 1976).
Stace, W. T., *The Philosophy of Hegel* (London 1924).
Wisdom, J., *Other Minds* (Oxford 1952).
Wittgenstein, L., *Philosophical Investigations* (Oxford 1953).

* * *

ÜBER DIE MÖGLICHKEIT, PLATONS ONTOLOGISCHES SYSTEM MONISTISCH ZU DEUTEN

Zotscho Bojadshieff

Es ist eine alte Frage der Platonauslegung, ob Platon den Dualismus zwischen den beiden Welten irgendwann überwunden hat und wenn ja, dann auf welche Weise. In der neuzeitlichen Literatur ist vielfach (Natorp, Stenzel, N. Hartmann) versucht worden, die Kluft zwischen den Ideen und den nach ihnen benannten Dingen zu überbrücken. Dank der neuesten Untersuchungen (die Arbeiten von Krämer und Gaiser) fand das Problem eine bemerkenswerte Lösung. Diesen Arbeiten nach wird der metaphysische Dualismus zwischen der intelligiblen und der sensiblen Welt in der umfassenden Prinzipientheorie Platons aufgehoben. Die Einheit des platonischen Systems wird durch das Prinzip des Isomorphismus rehabilitiert: die Ideen und die Sinnendinge, welche beide durch die fundamentalen Archai, die Eins und die unbestimmte Zwei, konstituiert sind, stehen — als bestimmte Strukturen — in einer isomorphen Beziehung zueinander

Die Frage taucht überraschenderweise wieder auf, jedoch jetzt in einer anderen Form. Denn es bleibt offen, wie sich die beiden Urprinzipien zueinander verhalten. Sind sie ontologisch gleichwertig, oder handelt es sich um eine Ableitung der Dyas von der Ur-Eins? Und wenn das erstere der Fall ist, warum brauchte Platon diese „Verdoppelung" des Dualismus? Warum sollte er den „vertikalen" Dualismus der Ideen und der Dinge durch den „horizontalen" Dualismus der Prinzipien belasten? Wenn wir vor einer Ableitung stehen, wie vollzieht sich diese? Auf welche Weise entfaltet sich die absolute Eins zur Vielheit des Seienden?

Die Frage verschärft sich dadurch, daß, wenn die Prinzipien rein ontologisch auf einer Ebene stehen, sie doch axiologisch nicht gleichwertig sein können: die Eins, als das Gute, soll „höher" als die Dyas (das Böse) stehen. Doch die beiden Aspekte des platonischen Philosophierens sind unzertrennbar (Stenzel, Krämer, Gadamer).

Das grundsätzliche Argument für die dualistische Interpretation der platonischen Philosophie soll dieses sein, daß in den Testimonia Platonica fast überall von *zwei Archai* die Rede ist, die nebeneinander stehen und die für alles Seiende als konstitutive Prinzipien gelten.

Doch dazu soll Folgendes gesagt werden:

1. Man findet nirgends in den Testimonia eine Stelle, in der wörtlich gesagt ist, daß die Eins und die Dyas den gleichen ontologischen Status haben. Sie werden zwar nebeneinander betrachtet, aber nur als Archai *der „Dinge"*, d.h. *nur in ihrer Funktion* als konstruktive Urelemente alles Seienden. Über ihr gegenseitiges Verhalten im Sinne des Nebeneinanderstehens findet man in den Berichten kein Wort.

2. Ich möchte darauf aufmerksam machen, daß fast die ganze indirekte Information über Platons Lehre durch die duale Struktur der aristotelischen Interpretation beeinflußt ist, in der wir eine Stilisierung der platonischen Philosophie unter dem Materie-Form-Schema sehen können. Wenn in einigen Berichten die aristotelische Tradition zurücktritt, oder wenn bei ihnen eine andere Überlieferungslinie zugrunde liegt, so kann man wesentliche Unterschiede bemerken.

3. Die dualistische Deutung findet keine unbestreitbare Stütze in den wichtigsten systematischen Dialogen, wie z.B. im „Staat", „Parmenides" oder „Timaios".

Ich werde nicht zu behaupten wagen, daß Platons philosophisches System ohne jeden Zweifel als ein monistisches System gelten darf. Doch ich bin überzeugt, daß die monistische *Tendenz* — wenn sie auch nur die eine Tendenz des platonischen Philosophierens

ist — sich als die grundlegende Linie des antiken Platonismus erweist, und daß der Ausgangspunkt dieser Linie in der platonischen Lehre selbst liegt.

Dazu möchte ich eine prinzipielle Erwägung mitteilen: Es ist nicht richtig, Platons philosophische Leistungen mit dem Maße des Stagiriten zu messen. Es ist bekannt, daß die beiden Denker nicht nur von verschiedenen theoretischen Voraussetzungen ausgehen, sondern daß ihr Philosophieren sogar aus ganz entgegengesetzten Grundintuitionen herauswächst (I. Düring). Aristoteles geht von den primären Substanzen aus. Ihm geht es vor allem um die Physis und Kinesis. Die eigentliche Substanz ist für ihn das aus Materie und Form zusammengesetzte Einzelding. Die Perspektive, aus der Aristoteles das Seiende betrachtet, ist die der mannigfaltigen Sinnenwelt. Darauf gründet sich die peripatetische Interpretation und Kritik der platonischen Ideenlehre und der platonischen Philosophie überhaupt. Platons Grundintuition ist aber eine ganz andere. Für ihn ist der eidetische Blick auf das Weltall das Wichtigste. Die fundamentale Überzeugung, daß die Welt eine Einheit ist, bildet die Basis des platonischen Philosophierens. Die Einheit der Welt soll in einem transeidetischen Prinzip, dem Einen selbst, fundiert sein, welches das Sein der Ideen und der Dinge als Eins-Sein bestimmt und das Ganze des Weltalls ontisch umfaßt. Von dieser Grundintuition muß man ausgehen, wenn man Platon richtig verstehen will. Die Frage, die vor Platon steht, lautet: wie geht aus diesem Ur-Eins die Vielheit der Ideen und der Dinge hervor? Wie entfaltet sich das Hen zu den Polla?

Damit das passieren kann, soll in dem Schoße des in seinem absoluten Übersein undifferenzierten Ursprungs sein Anderssein, seine Grenze, seine Verneinung geboren werden. Das Eins soll aus sich selbst das Gegenprinzip setzen und erst dann, dank des Zusammenwirkens beider Prinzipien, entsteht das Seiende — das noetische wie das sensitive — als *hen ek pollōn*. Erst wenn das Absolute seine eigene Grenze setzt, d.h. aus sich selbst seine eigene Andersheit bestätigt, kann es Ursprung von allem sein. In der Hierarchie des platonischen Kosmos gilt das Eine als das eigentliche Prinzip. Die unbestimmte Dyas, die beim Konstruieren des Seienden eine wichtige Rolle spielt, ist doch nur eine Nebenursache, welche das Absolute bei seiner Entfaltung in jedem ontologischen Bereich als seine eigene Grenze setzt. Wenn also die *aoristos dyas* des Großen-und-Kleinen immer wieder nur schattenhaft ist, eine Privation des Überseienden Einen, so wird sie ohne eigene Subsistenz sein und deshalb kein Prinzip im eigentlichen Sinne.

Die These möchte ich durch einige Belegstellen bestätigen: *Staat 507bff.* — Im Höhlengleichnis findet man m.E. ein tiefes Symbol des monistischen Systems Platons. Die Sonne selbst ist der Ursprung des Sehens und des Sichtbaren (508c). Wenn aber z.B. ein Ding gesehen werden soll, so muß es ein plastisches lichthaftes Relief haben, d.h. es müssen — wenn das Sein als etwas Lichthaftes hervortritt — seine Grenzen als Finsternis gesetzt werden. Die Idee des Guten gibt dem Seienden das Sein (509b). Damit konstruiert sie auch die Privation des Seins, das Negative, das Nichtsein als Grenze des Seins. Sie ist nämlich die Ur-Eins, in der die Welt ihren dialektischen Ursprung, ihre Arche, findet. Die Idee des Guten ist ja das Grundsymbol aller Dialektik — sie stellt die Identität von Licht und Finsternis, Sein und Nichtsein, Alles und Nichts dar.

Parmenides 137cff. — Auch den schwierigen zweiten Teil des Dialogs hoffe ich im Sinne einer monistischen Dialektik interpretieren zu können. Bleiben wir bei den ersten zwei Hypothesen, so sehen wir, daß hier von der Existenz einer überseienden Eins die Rede ist, und zwar in zwei Aspekten — im Aspekt ihrer Absolutheit und im Aspekt ihres Verhaltens zum Seienden. Wenn wir die Eins in ihrer Absolutheit betrachten, so müssen wir ihr alle Charakteristika absprechen, denn *als überseiendes Prinzip* steht sie jenseits jedes Denkens und Seins. Wenn wir sie aber als Prinzip *des Denkens und Seins* beschauen, dann stellt sie die ganze Fülle von Seinscharakteristika dar. Also ist die Eins dasselbe Prinzip, das sich durch die Identität von Nichts und Alles, Transzendenz und Immanenz kennzeichnet. Die Idee der dialektischen Entfaltung der überseienden Eins zur Mannigfaltigkeit der Ideen und der Sinnendinge ist durch den Begriff des „Plötzlichen" (ἐξάιφνης) gegeben. Der Übergang zum Seienden findet in dem Augenblick statt, in dem das absolute Eins sich zum „Anderen" wendet

und so seine eigene Grenze, das Nicht-Eine, setzt. Der Begriff „plötzlich" deutet auf den Punkt des Hervorgehens des Einen aus sich selbst und der Setzung des intelligiblen und des sensiblen Seins. — Die Deutung des „Parmenides" im Sinne der Sonnen-Henologie des „Staates" setzt sich allmählich durch (Lossew, Wahl, Wyller) und es scheint mir, daß diese Tendenz für die Platon-Forschung von größter Bedeutung sein kann.

Hermodorus ap. Simpl. in Phys. 247, 30ff. (fr. 31, Gaiser). — Der Bericht ist wichtig, weil er aus einer von Aristoteles unabhängigen Quelle stammt. Er ist von außerordentlicher Bedeutung auch deshalb, weil hier das peripathetische duale Schema zurücktritt und der Weg zur monistischen Deutung der platonischen Prinzipienlehre gezeigt wird. Bei Hermodorus wird alles außerhalb des Einen (*πάντα πλὴν τοῦ ἑνός*) durch die Privation des Seins (*κατὰ ἀπόφασιν τοῦ ὄντος*) bestimmt. Das Unstabile, das Formlose, das Unbegrenzte und das Nicht-seiende haben weder Arche-Charakter, noch selbständige Subsistenz und sie werden — so kann man den Gedanken weiterführen — durch das erste Prinzip, das Eine, gesetzt.

Sextus Empiricas, Adv. Math. X, 248ff. (fr. 32, Gaiser). — Das Referat „pythagoreischer" Lehren ist seit Wilpert und de Vogel für die mündliche Lehre Platons gesichert. Es ist ohne Zweifel wichtig, die eigentliche Quelle des Berichtes zu bestimmen. Ich möchte mich mit Krämer, der die aristotelische Herkunft der Stelle bestreitet und auf die anderen akademischen Nachschriften der platonischen Vorlesung „Über das Gute" verweist, einverstanden erklären. Hier kann man also eine Abweichung von der Aristoteles-Interpretation der platonischen Lehre erwarten. Und tatsächlich sieht man im § 261 eine bemerkenswerte Äußerung: „Pythagoras" sprach, daß die Monas der Ursprung alles Seienden ist; und sie selbst, wenn man sie „an und für sich" (*κατ' αὐτότητα*) betrachtet, soll als Monas gedacht werden, wenn aber „der Andersheit nach" (*καθ' ἑτερότητα*), dann als die unbestimmte Dyas. Es scheint mir, daß hier klar die dialektische These Platons geschildert ist: die unbestimmte Zwei ist das Eine selbst in seiner Andersheit. — Ein Stück weiter (§ 281—282) spricht Sextus von einer „pythagoreischen" Lehre, die die Entfaltung der ganzen Welt als einen aus der Selbstbewegung des Punktes hervorgehenden Prozeß betrachtet. Diese Auffassung wird einer anderen, „älteren" These gegenübergestellt, zufolge der das Seiende auf zwei Prinzipien reduzierbar ist. Ich finde keine genügenden Gründe, die „ältere" Lehre mit der Platons und die „neuere" mit der seiner Nachfolger zu identifizieren. Genau umgekehrt: Die alten Pythagoreer halte ich für typische Dualisten (cf. Arist., Met. 986b2, Phys. 213b23—28, Stob. Ecl. I 18c). Denn die beiden Urprinzipien des Seienden, Peras und Apeiron, sind für sie gleich ursprünglich und über das Sich-Entfalten des einen aus dem anderen hören wir in den Fragmenten kein Wort. Die monistische Lösung des Prinzipienproblems — die Geburt des zweiten Prinzips aus dem ersten — ist erst in der dialektischen Ontologie Platons möglich und historisch verwirklicht.

Zum Schluß möchte ich bemerken, daß die vorliegende Interpretation gewissermaßen eine „neuplatonische" ist. Der „neuplatonische" Charakter der Interpretation soll aber kein Argument gegen sie sein. Denn im Neuplatonismus nämlich entfaltete sich derjenige Gedankenreichtum, der wirklich in der platonischen Philosphie lag, in seiner ganzen Fülle.

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DESCARTES' KONZEPT EINER ALLGEMEINEN METHODOLOGIE ALS ALTERNATIVE ZUR TRADITIONELLEN ONTOLOGIE

Hermann Oetjens

Es gibt kaum eine Lehre, die so mißverstanden wurde wie Descartes' Lehre von der ‚Intuition' und ‚Deduktion' als den beiden Grundpfeilern der wissenschaftlichen Methode. Peirce hat die Methode des Descartes als eine Art Geschmacksbildung bezeichnet, und er betont: Es bestehe „keine Gefahr, daß sein (sc. Descartes') Schema jemals wieder überbewertet wird".[1] Und auch das Diktum Wittgensteins „Die Intuition eine unnötige Ausrede" (PU, § 213) wird gewöhnlich so interpretiert, als ob Descartes' Methode davon mitbetroffen würde. Trotz dieser schwergewichtigen Kritiken möchte ich im Folgenden zu zeigen versuchen, daß und inwiefern Descartes' Methodologie, wie sie in den ‚Regulae ad directionem ingenii' entworfen ist, in einschneidender Weise mit der traditionellen Ontologie bricht, indem Descartes an ihre Stelle eine operationalistische Auffassung von geradezu atemberaubender Modernität zu setzen versucht, die in einem ganz neuen Sinne zu sagen erlaubt, Descartes sei der eigentliche Vater der modernen Erkenntnis- und Wissenschaftstheorie.

Es wäre reizvoll, durch eine ausführlichere Stilanalyse dem Philosophen mit der Maske[2] auf die Schliche zu kommen. So wäre zu zeigen, daß Descartes seine Methode eindeutig abgrenzt gegen die scholastische Methode der Autorität und des Syllogismus. Er tut dies in der literarischen Form der Anspielung einerseits auf die Tradition der mittelalterlichen Lichtmetaphysik, andererseits auf die sokratische Hebammenkunst, die auch einem ungebildeten Sklaven Wahrheiten der Mathematik zu entlocken weiß.[3] Hier ist wegen Mangel an Raum leider darauf zu verzichten.[4]

Der Sache nach wendet Descartes gegen die Methode der Autorität und des Syllogismus zweierlei ein. (1) Wer sich des Syllogismus bedient, der dreht sich im Kreise, weil er mit den Konklusionen nichts Neues gegenüber dem sagen kann, was bereits in den Prämissen enthalten ist. Insofern tauge der Syllogismus nicht zum Beweisen inhaltlicher Wahrheiten.[5] (2) Und wer versucht, sich auf Autoritäten zu stützen, wird finden, daß es keine wesentliche These in der Philosophie gäbe, die nicht von den einen bejaht, von anderen hingegen verneint wird. Man würde also nicht einmal zu einer einheitlichen Meinung kommen, und „Stimmen zu zählen . . . würde auch nichts nützen".[6] Diese Aporien der scholastischen Methode versucht Descartes zu überwinden durch eine *Logik des Neuen.*

In den ‚Regulae' findet sich dazu ein Bild: In der Wissenschaft komme es darauf an, Methoden ebenso zu entwickeln, wie die Handwerker sich ihr Werkzeug herstellen, indem man zuerst z.B. in der Schmiedekunst gezwungen sei, „einen harten Stein oder ein Stück Roheisen als Amboß, einen Felsblock als Hammer zu nehmen, Hölzer zu Zangen zurechtzumachen" etc.[7] Und mit diesen spärlichen Mitteln würde ein Schmied sich nicht sogleich daran machen, Helme und Schwerter zu schmieden, sondern zuerst darauf bedacht sein, sich besseres Werkzeug herzustellen, mit dem dann kunstvollere Arbeiten möglich werden. Es ist nun wichtig zu wissen, daß Descartes' Konzept einer entsprechenden Methodologie nicht etwa lediglich auf einer blumigen Metapher beruhte, wie wir sie oft in der Philosophiegeschichte antreffen. Von seinen geometrischen Studien her, insbesondere aus seinen Bemühungen um eine synthetische Erweiterung der Euklidischen Geometrie der Ebene, verfügte er vielmehr über sehr plausible Beispiele solcher Werkzeuge, die gleichsam eine größere logische Reichweite haben als die Mittel, die zu ihrer Herstellung erforderlich sind. So gelang es Descartes, mit Hilfe allein von Zirkel und Lineal den folgenden Trisektionszirkel zu konstruieren:[8]

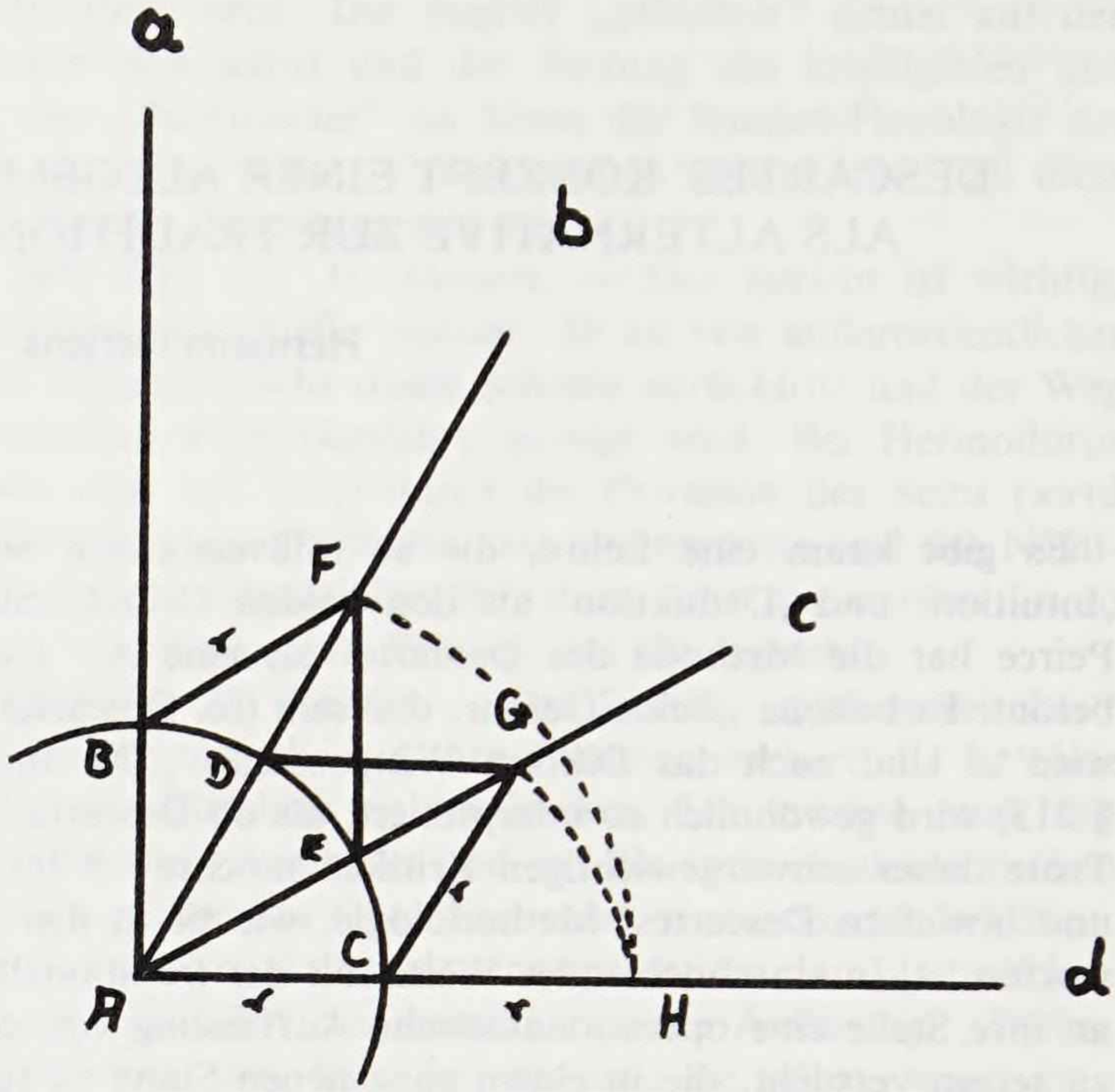


Fig. 1:
(Cartesischer Trisektions-zirkel)

Zur Konstruktion:

Man drittelt den Rechten, indem man die gleichseitigen Dreiecke ABE und ADC konstruiert. Die Kreisbögen um B und D mit r schneiden die Gerade b in F und die Gerade c in G. Für die Längen der Strecken gilt dann: $AB = AC = BF = FE = DG = GC = CH = r$.

Man denke sich die Geraden a, b, c, d drehbar in A, die Punkte F, G verschiebbar auf b, bzw. c. Wird der Zirkel auf- und zugeklappt, bleiben die Schenkel b und c ersichtlich auf Drittelung des von a und d aufgespannten Winkels eingestellt. Dabei wandern die Punkte B, D, E und C auf dem Kreisbogen um A mit Radius r. Die Punkte F und G wandern auf krummen Linien, die sich in H treffen.

Bekanntlich ist mit Zirkel und Lineal allein nicht jeder beliebige Winkel zu dritteln. Der Cartesische Trisektionszirkel schafft hier Abhilfe. Ist es erlaubt, mit seiner Hilfe die obigen krummen Linien in den gegebenen Winkel einzuzeichnen, so kann man aufgrund der Kenntnis ihrer logischen Eigenschaften dann mit Zirkel und Lineal diesen Winkel dritteln, indem man den verwendeten Trisektionszirkel rekonstruiert. In der ,,Geometrie" von 1637 heißt es dazu später, derartige krumme Linien seien in die Geometrie der Ebene einführbar, wenn man zu den Euklidischen Postulaten (sc.: daß man zwischen zwei Punkten die Strecke und um einen gegebenen Punkt mit Radius r einen Kreis zeichnen kann) hinzunähme: ,,daß es möglich sei, zwei oder mehrere Linien aufeinander zu bewegen, und daß durch deren Schnittpunkt eine andere Linie beschrieben wird".[9]

Wir dürfen somit davon ausgehen, daß Descartes über durchaus ‚hartes' Beispielmaterial verfügte, als er die Regeln seiner Methodenlehre in Analogie setzte zu den Handwerkstechniken. Stellt man das in Rechnung, dann gewinnt die Frage besonderes Interesse, wie Descartes sich die Verallgemeinerung der geometrischen (und algebraischen) Methode auf die empirischen Wissenschaften vorstellte. Was ist für Descartes überhaupt das wesentliche Charakteristikum dieser Methode?

Um es kurz zu sagen: Es ist der methodische Standpunkt der Analysis, der Descartes fasziniert und den er ebenfalls für die empirischen Wissenschaften in Anspruch zu nehmen versucht. Dazu heißt es, man bemerke recht gut, ,,daß die alten Geometer sich einer gewissen Analysis bedient haben . . ., wenn sie sie auch ihren Nachkommen mißgönnten".[10] Descartes betont, daß diese Methode neuerdings als ,,eine Spielart der Arithmetik, Algebra genannt,

im Schwange“ sei, „um das bezüglich der Zahlen zu leisten, was die Alten bezüglich der Figuren schufen“. Es komme darauf an, sie auch für andere Wissenschaften zu entdecken, „wo größere Hindernisse sie zu ersticken pflegen, wo sie jedoch zweifellos auch, wenn man sie nur mit größter Sorgfalt pflegt, ihre vollkommene Reife werde erreichen können“.[11]

Nach Euklid ist eine Analysis „die Zugrundelegung des Gefragten als anerkannt um seiner auf anerkannt Wahres führenden Folgerungen willen“.[12] Im Kontext der Analyse z.B. einer Dreieckskonstruktion setzen wir das Gefragte als anerkannt, indem wir ein Dreieck zeichnen, es als das gesuchte betrachten und nun die gegebenen Bestimmungsstücke in ihrem Verhältnis zu anderen Teilen des Dreiecks (Winkeln, Seiten, Höhen, etc.) untersuchen, bis uns ein Weg einfällt, wie man aus den gegebenen Größen das gesuchte Dreieck auf dem Weg einer synthetischen Konstruktion erzeugen kann.

Descartes bezeichnet die Probleme in Geometrie und Arithmetik als vollkommene Probleme in dem Sinne, daß in ihnen „nichts gefragt wird, das einen größeren Umfang hätte als das, was aus dem Gegebenen deduziert werden kann“.[13] Das bedeutet: Unter dem Gesichtspunkt der Analysis betrachtet man das Unbekannte als im logischen Sinne vollständig bestimmt durch das bekannte Gegebene (mit den drei unabhängigen Bestimmungsstücken eines Dreiecks ist das gesuchte Dreieck im logischen Sinne mitgegeben, wenn es auch noch nicht konstruiert ist.) Unvollständige Probleme sind demgegenüber dadurch charakterisiert, daß die Fragestellung auf mehr aus ist, als aus dem in der Frage Gegebenen deduziert[14] werden kann. Ein unvollständiges Problem wäre somit die Aufgabe, aus nur zwei gegebenen Größen ein Dreieck zu konstruieren, was erkenntnislogisch unmöglich ist.

In demselben Sinne, und darin liegt die Pointe der Descartes'schen Kritik der traditionellen Ontologie, liegt ein unvollständiges Problem vor, wenn man nach dem ‚Wesen' der Dinge in einer speziellen Bedeutung fragt.

Descartes diskutiert Gilberts[15] Forschungen über den Magneten. Dabei polemisiert er gegen diejenigen, die glauben, „daß irgendeine neue Gattung des Seins . . . gefunden werden müsse, z.B. wenn etwa gefragt wird, welches die Natur des Magneten sei“.[16] Gegen die Fiktion einer „neuen Gattung des Seins“ als der Natur ‚an sich' des Magneten, setzt Descartes „die wahre Natur des Magneten . . ., soweit sie vom Menschen und aufgrund der gegebenen Experimente entdeckt werden“ kann.[17]

Eine ausführliche Interpretation dieser Textstelle würde den hier möglichen Rahmen sprengen. Daher möchte ich nur zwei Aspekte hervorheben: (1) Die „wahre Natur des Magneten . . ., soweit sie vom Menschen . . . entdeckt werden kann“ betrifft meiner Auffassung zufolge das Erklärungsmodell der Analyse im allgemeinen. Descartes ist offensichtlich der Ansicht, daß Erkenntnis generell darin besteht, Modelle zu entwerfen, die die gegebenen Phänomene (als Explananda) zu begreifen gestatten als Effekte, die sich aus der Wirksamkeit ihres naturhaften Substrates unter gewissen Bedingungen ergeben würden. (2) Die „wahre Natur . . ., soweit sie . . . aufgrund der gegebenen Experimente entdeckt werden“ kann, betrifft die hypothetische Einschränkung des Geltungsanspruches in Bezug auf je konkrete Modelle, die verbessert und vervollständigt werden müssen wie das Handwerkszeug des Handwerkers.

Dieser Metapher entsprechend schien Descartes vorzuschweben, daß alle Wissenschaften im Sinne einer „sapienta universalis“ in einen erkenntnislogischen Stammbaum integrierbar sein müßten, dessen Verzweigungen sich durch eine synthetische Logik in demselben Sinne nachvollziehen lassen müßten wie die synthetische Erweiterung der Euklidischen Geometrie der Ebene um die krummen Linien, die durch den Cartesischen Trisektionszirkel zeichenbar sind, — eine durchaus konstruktivistische Vision vom systematischen Aufbau der Wissenschaften.

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ANMERKUNGEN

1 Vgl. C. S. Peirce, How to Make Our Ideas Clear, in: C. S. Peirce, Collected Papers, Bd. 5 (Cambridge, Mass. 1965), § 392. Zu Peirces Descartes-Kritik vgl. auch H. Oetjens, ‚Idee' und ‚Bedeutung' als wahrheitstheoretische Grundbegriffe, in: Zeichen und Realität (= Akten des 3. semiotischen Kolloquiums, Hamburg 4.—8. Okt. 1981) (im Erscheinen).

2 Vgl. das Werk von M. Leroy, Descartes, le philosophe au masque, (Paris 1929), welches sich mit seinem Titel auf Descartes' berühmte Selbstcharakterisierung in seinen Jugendaufzeichnungen „Olympia" bezieht, wo es heißt: „Larvatus prodeo" — ich trete mit der Maske auf (zit. n. R. Specht, Descartes (Reinbek bei Hamburg ^{2}1980), S. 59).

3 Man beachte etwa, wie die Rede vom ‚Licht der Vernunft' ergänzt wird durch den Verweis auf das, was ‚jeder Bauer weiß' (Regel 12 (Abs. 23)). Literarisch noch augenfälliger wird Descartes' Bezug auf die sokratische Methode in dem unvollendeten Dialog (!) „La recherche de la verité".

4 Ich hoffe, dazu demnächst eine ausführlichere Studie vorlegen zu können.

5 Vgl. Regel 10 (Abs. 5). Mit dieser These folgt Descartes der antiken Skepzis. Vgl. dazu Sextus Empiricus, Hypp. pyrr. II 195 ff. (dt.: Grundriß der pyrrhonischen Skepzis, übers. v. M. Hossenfelder (Frankfurt a. M. 1968), S. 203 ff.).

6 Vgl. Regel 3 (Abs. 2).

7 Regel 8 (Abs. 4).

8 Diesen Trisektionszirkel hat L. Gäbe, Descartes' Selbstkritik (Hamburg 1972), S. 115, aus Descartes' Nachlaß mitgeteilt. Diesen neuen Zirkel hatte Descartes schon etwa zehn Jahre vor der Abfassung der ‚Regulae' konstruiert, so daß es gerechtfertigt erscheint, denselben zur Illustration der Werkzeug-Metapher heranzuziehen.

9 Descartes, R., Geometrie, dt. hrsg. v. L. Schlesinger (Leipzig ^{2}1923; repr. Darmstadt 1981), S. 20.

10 Regel 4 (Abs. 3).

11 a.a.O.

12 Euklid, Elemente, Buch XIII, § 1a (zit. nach der Übers. von Cl. Thaer (Braunschweig ^{7}1973; repr. Darmstadt 1980), S. 386).

13 Regel 13 (Abs. 1). Vgl. ferner Regel 12 (Abs. 27).

14 Descartes versteht, das kann hier nur angemerkt werden, unter „Deduktion" nicht eine Ableitung im formallogischen Sinne (welche nichts Neues liefern würde), sondern eine synthetisch-konstruktive Ableitung in dem Sinne, wie z.B. der Trisektionszirkel eine Erweiterung gegenüber seinen Konstruktionsmitteln darstellt.

15 Gilbert, W., De Magnete, . . . (London 1600).

16 Regel 12 (Abs. 24). Vgl. auch: Regel 13 (Abs. 1).

17 Regel 12 (Abs. 24).

* * *

CANTOR'S ONTOLOGY

Margarete Möllmann

A mathematician normally carries out his investigation in a certain domain—e.g. the real numbers. In the nineteenth century it became common for mathematicians to extend their investigation to the new domain of subclasses. These classes were then called sets. Cantor, however, was the first to develop a theory of arbitrary sets.

A general theory of *classes* is at least as old as Aristotle's syllogisms. Every property which we can express determines the class of things satisfying that property. This principle of class formation which leads from a property P to a class Z is called comprehension: $Z = \{x|x \text{ is } P\}$.

A *set* is a class which, having become an object of investigation in its own right, is capable of being a member of a class. The notion of class traditionally belonged to logic. The notion of set was developed by mathematicians. Frege, who wished to reduce mathematics to logic, based his set theory on the simple assumption that all classes are sets. This led—via the above comprehension schema—to Russell's well known antinomy of the class of all classes which are not members of themselves.

Frege was shattered by this discovery. Russell's paradox and the related one of Burali-Forti gave rise to an atmosphere of crisis in the foundation of mathematics at the turn of the century. Poincaré doubted that set theory would ever be free of contradiction. Cantor, on the other hand, remained unmoved and continued to develop his theory. His clearest statement on the subject came in a late letter to Dedekind in which he made the distinction between sets and proper classes which cannot themselves be elements of classes. (He called the latter "inconsistent sets".) Although Cantor never explicitly axiomatized his theory—as Frege attempted to do—it is my belief that his theory was based from the very beginning on principles of set formation which are radically different from Frege's comprehension schema. An examination of his work shows that he formed his sets not by a "global" principle but by local applications of operations leading from preexisting sets to new ones. Thus given any object y, we may form the unit set $\{y\}$, which has y as its sole member. Given two sets y, z, we may form the union $y \cup z$ (defining $y \cup z = \{x|x \in y \text{ or } x \in z\}$). Similarly, if u is a set and y_i is a set for $i \in u$, we may form the union $\bigcup_{i \in u} y_i$ (defining $\bigcup_{i \in u} y_i = \{x|x \in y_i \text{ for some } i \in z\}$). The comprehension schema is a special problem. Undoubtedly Cantor used comprehension, but his work shows that he used it only to form subsets of a given set y. This leads to Zermelo's seperation schema: $Z = \{x|x \in y \text{ and } x \text{ is } P\}$. These principles became the basis of Zermelo's axiomatisation of set theory and Fraenkel's later improvement.

At the time, however, the difference between Frege's and Cantor's approaches was not widely recognized and the strong intuitive basis of the Zermelo-Fraenkel axiomatisation was apparent only to the experts. Hence there was little faith that this axiomatisation had disposed of the contradictions. The fear of contradictions strengthened the case of the constructivist oponents of set theory—in particular the intuitionists. Hilbert, who valued the freedom which set theory had given to mathematics, proposed countering these fears by formalizing set theory and proving its consistency by constructively acceptable means. In 1931, however, Gödel demonstrated the impossibility of Hilbert's program by showing that the consistency of a consistent mathematical system cannot be proven within itself. Thus we cannot know with certainty that a formal system is consistent, but we have grounds for believing it so if its axioms express principles which we intuitively feel to be right and if after long experience with the system no contradictions appear.

Cantor's ontology is the direct result of his analysis of the concept of infinity, a notion

which had always been a source of puzzlement and controversy in philosophy. Cantor's tool for this analysis was an extension of the natural numbers to the infinite. He was the first to realize that there are two such extensions, yielding two different notions of infinite number, the ordinal numbers and the cardinal numbers. The ordinal numbers result when we continue the process of counting into the infinite. After the natural numbers are used up, we come to the first infinite number ω, followed by $\omega + 1$, etc.

o, 1, . . . n, . . . ω, $\omega + 1$, . . . $\omega + n$, . . . $\omega + \omega$, . . . $\omega \cdot n$, . . . $\omega \cdot \omega$, . . .

Cantor originally introduced these numbers in order to provide infinte iteration indices for mathematical processes. The original application took place in analysis. Another example of an ordinal iteration is the von Neumann hierarchy of V_α's, which describes the construction of the universe of sets from below. We define:

V_o = the collection of all objects which are not sets (''Urelemente'').

For successor ordinals $\alpha + 1$ we define:

$V_{\alpha+1} = V_\alpha \cup P(V_\alpha) = V_\alpha$ augmented by its subsets.

If λ is a limit ordinal (i.e. neither O nor a successor) we define:

$V_\lambda = \bigcup_{\delta<\lambda} V_\delta$ = the union of the previous V_δ's.

This hierarchy is cumulative, i.e. if $\alpha \leqslant \beta$ then $V_\alpha \subset V_\beta$.

It seems entirely in keeping with Cantor's procedure of forming sets ''from below'' to assume that every set is a member of some V_α. Von Neumann showed that we run no additional risk of inconsistency in adding this assumption to the axioms of Zermelo and Fraenkel.

We come now to Cantor's second generalization of the natural numbers, the notion of cardinality or cardinal number. Two sets have the same cardinality iff their elements can be placed in a one to one correspondence. A peculiarity of this notion is that an infinite set may have the same cardinality as a proper subset—e.g. the set of natural numbers has the same cardinality as the set of positive integers. This fact was noted by Galilei and Leibniz, who regarded it as a contradiction and concluded that there is no viable notion of the actual infinite. Bolzano, philosophically the most important predecessor of Cantor, concluded simply that a set may be cardinally equal to a larger set, or as he put it, ''the infinite is capable of increase''. (''Paradoxien des Unendlichen'', Prag 1851). This was true in a stronger sense than Bolzano could have known. Cantor proved by his famous diagonal argument that to every cardinality there is a larger one—in particular the cardinality of the power set P(x) is always greater than that of x. It follows from this that the real continuum is cardinally greater than the set of natural numbers.

The connexion between Cantor's two concepts of numbers is provided by the notion of *counting* or *enumeration*. By an enumeration of a set X by an ordinal α, we mean a one to one correspondence between the members of X and the ordinal predecessors of α. A finite set X is enumerable by a natural number n. X thus has the form $X = \{x_o, \ldots x_{n-1}\}$. This n is uniquely determined by X and may therefore be called the ordinal number (Anzahl) of X. It is clear that two finite sets have the same ordinal number iff they have the same cardinality and it is therefore natural to identify cardinalities of finite sets with their ordinal number.

An infinite set, however, may be enumerated by distinct ordinal numbers. E.g. the set N of natural numbers is enumerable by ω, since the identity is a one to one correspondence. But N is also enumerable by $\omega + 1$ as follows:

0	1	.	.	.	.	n	.	.	.	ω
↕	↕					↕				↕
1	2	.	.	.	.	n+1	.	.		0

Thus in general it is impossible to identify cardinalities with ordinal numbers, since we cannot assign a unique ordinal to an infinte set.

Another problem is that it is not apparent that each set can be enumerated by an ordinal. Cantor held this assumption as self evident. (He called it a Denkgesetz.) It is equivalent

to the statement that every two cardinal numbers a, b are comparable ($a \leqslant b$ or $b \leqslant a$). This principle, which is also equivalent to Zermelo's "Axiom of Choice" is widely used and accepted in modern mathematics, but is still regarded as more suspect than the other axioms of Zermelo and Fraenkel. Gödel had shown that we run no additional risk of contradiction in assuming it.

This then is Cantor's universe: As we have seen, it is a direct consequence of his analysis of infinity: The apparent paradox that an infinite set may be in a one to one correspondence with a proper subset leads to the notion of cardinality. The discovery that there are infinite sets with different cardinalities raises the question whether any two cardinalities are comparable. The answer to this requires Cantor's most inventive contribution, the theory of ordinal numbers.

The beauty and power of Cantor's theory are obvious. It is almost universally accepted in modern mathematics. Nonetheless, it is hard to avoid a first impression of extravagance. Cantor's world is a profusion of platonic ideas which would have astonished Plato. How can we justify Cantor's ontology philosophically and how did Cantor attempt to do so? Cantor sees no difference in the existence questions for finite and infinite numbers. He discernes a *petitio principii* in Aristotle's argument against the existence of infinite numbers. In his *Metaphysics* (Book XI, CH. 10) Aristotle admits only finite numbers because only enumeration of finite sets were known to him. As Cantor points out, this is because only finite numbers were available to him. Cantor, having introduced infinite numbers, can enumerate infinite sets. An infinite set, however, can be enumerated by more than one number. This, for Cantor, is the essential difference between the finite and infinite, but it cannot be used to deny the reality of the infinite while affirming the reality of the finite. Cantor had to defend his theory against such statements as Kronecker's „Die natürlichen Zahlen hat der liebe Gott gemacht, alles andere ist Menschenwerk" (God made the natural numbers; all else is the work of man). Hence he dealt at length with the general problem of mathematical existence.

Cantor speaks of immanent and transsubjective reality. The numbers possess immanent reality to the extent that they, as Cantor writes:

> occupy a specific place in our knowledge by virtue of definition, are clearly distinguished from all other components of our thought, to which they stand in definite relations, thereby modifying the substance of our mind in a definite way.[1]

The numbers possess transsubjective reality to the extent that they correspond to objects in the real world. Cantor leaves no doubt that he believes in the transsubjective reality of his numbers, but doesn't consider it his task to demonstrate it. The proof that a concept has transsubjective reality, in his words: "usually belongs to the most laborious and difficult tasks of metaphysics". The requirements of mathematics, however, are fully satisfied when the concepts possess immanent reality. He writes:

> Mathematics is entirely free in its development, subject only to the obvious requirement that its concepts be free of contradiction and that their relation to previous, established concepts be fixed by definition.[2]

Cantor answers the objection that this degree of freedom would endanger mathematics by saying:

> For one thing, the condition under which the freedom to form new numbers can be exercised are such as to permit hardly any room for arbitrariness; moreover, each mathematical concept contains its own corrective: if it is unfruitful or inexpedient it will be dropped for lack of success.[3]

Immanent reality is then a property of concepts which are embodied in a consistent theory which extends received mathematical knowledge. This has a formalistic ring, but I hardly think that an arbitrary theory with these properties would satisfy Cantor. He demands that the new concepts "stand in a definite relation to the other components of our thought and modify the substance of our mind in a definite way".

This is open to many interpretations, but it seems likely to me that he expects the theory to have an intuitive content which refines and extends our earlier intuitions. Certainly his own theory eminently satisfies this requirement. Although any theory which satisfies Cantor's criterion of immanence is mathematically acceptable, a theory will be abandoned if it does not ultimately prove fruitful. Cantor claims that his criterion allows little room for arbitrariness. He seems, however, to overlook the possibility that received mathematical wisdom might have mutually inconsistent extensions which satisfy his criteria (including that of fruitfulness). In this case the development of mathematics might resemble a tree rather than a linear progression.

Despite the vagueness and the unresolved problems in Cantor's formulation, it seems clear that the case he makes for his theory is essentially pragmatic. And indeed the pragmatic case for Cantor's theory is a very strong one. The first and perhaps most important pragmatic reason for accepting his theory is its strong intuitive content. A second is the sheer beauty of his conception of the universe. A third is its mathematical power. For these reasons, perhaps, Cantor's set theory is almost universally accepted by modern mathematicians as the framework of their investigation.

There remains the question of consistency. Much of the opposition to Cantor's work has been based on the danger of contradictions. As Gödel showed, it is impossible to prove consistency. I believe, however, that the strong intuitive basis of the theory gives some reason for not expecting contradictions, just as it does in the theory of the natural numbers. Reassurance can also be gained from the fact that a hundred years of intensive work in his theory has yielded no contradiction. It is also important to note that there was never reason to suspect a contradiction. The contradiction which led to the so called "crisis" in foundation arose in Frege's set theory but not in Cantor's which—as we have seen—is based on different principles. Cantor's mathematical intuition led him to build up the universe of sets from below. The philosophical justification was secondary. Frege on the other hand began with a philosophy which was intended to classify the notion of number. He believed that a mathematical theory is not fully justified without a philosophical fundament and he wanted to provide such a fundament for Dedekind's theory of number. The arithmetic which he then built upon his philosophical foundation failed because his basic concepts proved to be mathematically untenable. The lesson to be drawn is that a philosophy of mathematics must be based on mathematical insight, not the reverse.

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NOTES

1 Cantor, G., "Über unendliche lineare Punktmannigfaltigkeiten", in: G. Cantor, *Gesammelte Abhandlungen mathematischen und philosophischen Inhalts* (Berlin 1932), p. 181. (translation by author)
2 Cantor, G. (1932), p. 182.
3 Cantor, G. (1932), p. 182.

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LEAVING EVERYTHING AS IT IS?

T. E. Burke

Sir Karl Popper has been one of the most outspoken and influential critics of the Wittgensteinian conception of philosophy. In various contexts, and notably his paper on "The Nature of Philosophical Problems",[1] he has argued that to reduce philosophy to mere description of, or assembling reminders about, the scope and limits of our language, in order to eliminate problems which have arisen through failure to appreciate these, destroys the whole point and importance of the discipline. He offers instead what we may call a 'crisis-and-response' account of philosophy—in brief, its serious problems arise from crises in extra-philosophical fields of interest, science, religion, politics, or whatever it may be, crises deep-rooted enough to call in question the essential character of the field in question as hitherto understood. And philosophical theories can only be appreciated and assessed if they are seen as attempts to resolve such crises. Popper gives as examples Plato's Theory of Forms, which he sees as an attempt to resolve the crisis in Greek science brought about by the discovery of irrational numbers,[2] and the Kantian theory of knowledge as an attempt to resolve the crisis produced by, on the one hand, the supposed achievements of Newtonian science, and on the other, Hume's demonstration that such science could have no logically adequate basis in experience.[3] And we may, I believe, find an equally good example in Popper's own distinctive contribution to the philosophy of science, seen as a response both to the work of Einstein, and to the scientific claims of Marxism and of Freudian psychology.[4] I am concerned here, however, not so much with the merits of such examples, as with the question:—Even granted Popper's point about the role of extra-philosophical crises, what difference does this make to the Wittgensteinian account of what philosophy as such can do to resolve such crises?

Take the example of Kant's theory of knowledge:—Popper himself, though he denies that the problem Kant set out to solve was a 'linguistic puzzle' or 'pseudo-problem', acknowledges that it was a 'mistaken problem'.[5] The mistake was over what science, as exemplified by Newton, had in fact achieved; it lay in supposing that the characteristic results of such science were established truths of unrestricted generality. And when Hume had pointed out that induction from particular observations is necessarily incapable of yielding such results, then there *was* clearly a problem about how science could arrive at them—the problem which Kant's elaborate system was designed to answer. But once we have realised, under Popper's own guidance, that the generalisations of science are *not* established truths but merely conjectures which are never conclusively verified, then the problem disappears—and the Kantian system becomes superfluous. The breakthrough comes when we learn to resist the temptation to tackle the problem as originally stated, and enquire instead about the real, as opposed to the apparent, function of the relevant parts of discourse—in this case the sentences in scientific treatises embodying the unrestricted generalisations. Once we have got this right, and realised the implicit error in the original statement of the problem, then it no longer arises. So it would appear that, according to Popper's own analysis, Kant's response, however impressive as an intellectual feat, was in the end largely a waste of effort, and the source of much subsequent wasted effort. What philosophy *could* usefully have contributed to the situation was an accurate description of what science actually did. And clearly this is very close to Wittgenstein's conception of the role of philosophy—'We must do away with all explanation and description alone must take its place', etc.[6]

When we turn to Popper's own treatment of the time-honoured problem of induction (something that is, of course, implicit in his criticism of Kant), it is easy to see how this also

can be presented as virtually a paradigm example of the Wittgensteinian method in practice. Here we have a problem long regarded as central to the philosophy of science, i.e. that of the logical gap between the (supposed) methods and the (supposed) results of science. And a great deal of time and ingenuity has been spent on trying to bridge the gap and make science logically respectable. Popper's response is not to tackle the problem as traditionally posed and try to display still greater ingenuity than his predecessors in finding a solution, but rather—in the best Wittgensteinian fashion—to expose and correct the errors which gave rise to it. Once we have realised how the relevant formulae actually function in scientific discourse—that they are not used to state purportedly established truths but to put forward conjectures which may be arrived at in any way we please, and that observational evidence is used not to establish their truth but to try to refute them—the problem troubles us no longer. It arose from an incorrect description of how science is actually done (how the language-game is actually played, to adopt another Wittgensteinian term) and it is eliminated by a correct description.

For Wittgenstein and Popper alike, then, it would seem that, in effect, the task of good philosophy is to drive out bad. And so far as we have seen, at any rate, they do not differ essentially over how it does so. Neither by precept nor example has Popper shown that philosophy can contribute anything of value to the economy of thought beyond what Wittgenstein would have allowed. When it has tried to offer something more, as in Kant's machinery of forms and categories (or, in his earlier example, Plato's Theory of Forms), then, according to Popper's own account, it merely multiplies confusions. Again, we may grant that, in many instances, there is some extra-philosophical crisis that provokes, and gives importance to, philosophy; but this is in no way inconsistent with a Wittgensteinian answer to the question of what philosophy can actually do to resolve such a crisis.

It would be wrong, however, to conclude that Popper is simply mistaken in his criticism of Wittgenstein, or unsuccessful in his attempts at amendment. Even granted that what has just been said is substantially correct, his work still changes, in important respects, the picture of philosophy that, at the least, has commonly been derived from Wittgenstein. This presents philosophy—i.e. good, or regenerate, philosophy—as a humble exercise in a kind of linguistic sociology, patiently observing and describing how this or that language-game is actually played, careful to pass no judgments and attempt no improvements on what is found, but to leave everything as it is. And the mistakes we are thus seeking to expose and eliminate are those made only, or primarily, by philosophers, who take language away from the everyday tasks it performs quite adequately and send it off on ill-advised holidays. What Popper has made clear is, in the first place, that even if the problems of traditional—bad or unregenerate—philosophy are indeed the outcome of mistakes about how certain key terms or formulae function in discourse, such mistakes are much more widespread, and much more serious in their consequences, than this account suggests. If, for example, it is a mistake to suppose that scientific generalisations function as purported statements of established truths, then it has been made, at any rate implicitly, by a great many people other than philosophers. It may create a *problem* only, or primarily, for philosophers, since it is they who draw out its disquieting consequences and try to find means of avoiding, or living with, them. But they have no monopoly of the initial error.

So, even if our philosophy has an essentially corrective or therapeutic role, Popper is still right to insist that it can do something of much wider interest and importance than treating its own self-inflicted injuries. Clearly the 'correct descriptions' we are seeking cannot merely set out the rules or conventions generally accepted by participants in the relevant language-game—like a handbook setting out the permissible rules of the various pieces in chess. Popper's 'conjectures-and-refutations' account of science could certainly never have been reached by looking for a consensus among practising scientists over what they actually did with sentences of the 'All x's are y's' form, or by examining the rules or paradigms of procedure which they were given in their apprenticeship. Popper and Wittgenstein appear to be, at least tacitly, agreed that even the adept participant in science, religion or whatever, though

his moves within it are correct enough, may in an important sense be mistaken about what he is doing, and be unable to give, or recognize, a correct description thereof. So the philosopher, far from humbly taking notes on other people's activities, and recording what they do and say, once again has the presumption to undertake their enlightenment as to what they are really about. This is a feature common to both Popper's philosophy and Wittgenstein's; but Popper has the merit of making it a great deal more explicit.

As Wittgenstein said, the philosopher approaches his descriptive task with the traditional philosophical problem in mind. This is understandable enough; but something a good deal more specific emerges from these examples. The philosopher's examination of science, religion or whatever *starts* from his awareness of such problems, as they have affected that particular field. And his aim is, in effect, to characterise it in such a way that it no longer gives rise to these problems, even if this requires a radical departure from any previous characterisation thereof. The criterion of a *correct* description, or an identification of the *real* functions of the relevant pieces of linguistic equipment, is that they have no room for the time-honoured problems. Thus, it is obvious enough that Popper starts from the old philosophical problems about induction and its role in science; that for him the great advantage of the 'conjectures-and-refutations' account of science is that it eliminates these problems; and that he is quite undismayed by the fact that this account is substantially different from that accepted, at least tacitly, by the world at large, and by the scientists themselves over several centuries, as well as by earlier philosophers. Similarly with, say, Wittgensteinian essays in the philosophy of religion.[7] And we can readily find other examples—in Wittgensteinian analyses of the use of psychological terms, designed primarily to by-pass problems about 'other minds' etc.; or in Wittgenstein's account of philosophy itself.

Of course, this is not simply a matter of making life easy for the philosophers. The accounts of science, religion, etc. against which they were reacting, however long and widely these may have been accepted, *did* have built-in, insoluble difficulties, even if only philosophers were ever troubled by them. And hence it is reasonable enough to say, for example to scientists: No matter how you, and your colleagues and predecessors may have thought of them, your theories are really only conjectures, for that is all that (logically) they can be. Doubtless the philosopher *is*, to this extent, attempting to alter their conceptions of their own characteristic field of interest. But his presumption in so doing has the justification that it is grounded, not primarily on historical or sociological considerations about what is or is not done in a given field (about which he presumably knows less then they do), but on essentially logical considerations about what can or cannot be done (where he is, or should be, on his home ground). Altering widely-accepted conceptions of science, religion, etc. in ways that avoid the traditional philosophical problems is, *ipso facto*, simply altering them towards a more realistic view of what can, and cannot, be accomplished within them.

There is, of course, a sense in which philosophy thus understood does leave everything as it is. It is no part of its business, for example, to recommend to the scientist new subjects or methods of research, or to the believer a new reformation. On the other hand, there is also a sense in which it is much more willing to interfere in extra-philosophical thinking than was the earlier philosophy against which it reacts. Roughly speaking, that philosophy was willing to take over, more or less uncritically, say, the scientist's own conception of the functions of his discipline and of the characteristic formulae used within it. It then discovered and puzzled over the difficulties inherent in that conception. But whether its conclusions were Humean or Kantian, whether it simply warned the scientist that his procedures were logically disreputable, or offered to make them respectable at a price, there was no question of thinking again about the nature of science itself or about how the formulae in its textbooks actually functioned. Everyone, scientist, philosopher and educated layman alike, knew, or assumed that he knew, what science was; the question to be answered was Kant's How is it possible? (or perhaps a Humean *Is* it possible?). Our revised philosophy works in the opposite direction. It starts, as we have seen, from the philosophical problems, and then works back to a characterisation of science itself; and if this is appreciably different

from that generally accepted by scientists or educated laymen, then so much the worse (or the better) for them. Philosophy may indeed tell them no new facts about science, or about logic; but its reminders and rearrangements of what is commonly known may nonetheless be decidedly startling, and far-reaching, in their effects.

We have, then, a conception of philosophy which, despite the obvious differences, is in its essentials shared by Wittgenstein and Popper. It is to Wittgenstein that we owe its classic explication. But to see Popper as his unwitting disciple is only a first step, one which should lead us on to the recognition that the errors to be corrected are much more widespread and influential than, at any rate, the best-known dicta of Wittgenstein himself, and his professed followers, would suggest; and that their correction requires revisions and reappraisals extending beyond philosophy itself into many fields of interest. So, in the best dialectical fashion, what at first sight are simply two opposing, either-or, conceptions of the subject, are found, after all, to complement each other.

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NOTES

1 See K. Popper, *Conjectures and Refutations* (London 1974), p. 66 f.
2 Popper (1974), p. 75 ff.
3 Popper (1974), p. 93 ff.
4 See Paul A. Schilpp (ed.), *The Philosophy of Karl Popper*, Vol.1 (Illinois 1973), p. 65 ff.
5 Popper, K., (1974), p. 94 f.
6 Wittgenstein, L., *Philosophical Investigations* (Oxford 1963), Pt. I, § 118.
7 See, e.g., R. B. Braithwaite, "An Empiricist's View of the Nature of Religious Belief", and D. Z. Phillips "Religious Beliefs and Language Games", in: Basil Mitchell (ed.), *The Philosophy of Religion* (Oxford 1971), or L. Wittgenstein, *Lectures and Conversations* (Oxford 1970), p. 53 ff.

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POPPERS ONTOLOGIE

Otto Neumaier

Karl Popper unterscheidet neuerdings drei *ontologisch verschiedene* Teilbereiche der Welt, die er auch als *drei Welten* bezeichnet: *Welt 1* umfaßt alle physischen Gegenstände, *Welt 2* alle Bewußtseinszustände, *Welt 3* alle „*Ideen im objektiven Sinne*; es ist die Welt der möglichen Gegenstände des Denkens: die Welt der Theorien an sich und ihrer logischen Beziehungen; die Welt der Argumente an sich; die Welt der Problemsituationen an sich".[1] Genauer bezieht sich Popper mit dem Begriff ‚Welt 1' auf alle Materie in der Welt, worunter er nicht nur Einzelobjekte (z.B. Menschen, Bäume oder Bücher) versteht, sondern auch Objekte anderer Art (z.B. die chemischen Bestandteile der DNS, die Menschheit, Bibliotheken usw.) und Energiezustände (im atomaren und kosmischen Bereich).[2] Ähnlich rechnet Popper zu Welt 2 nicht nur unmittelbare Sinneserfahrungen, Schmerz, Hunger, Angst, Freude usw., sondern auch unsere Erinnerungen, Vorstellungen, Gedanken und Pläne.[3] Der o.e. Begriff ‚Bewußtseinszustand' bezeichnet also weniger den Zustand eines menschlichen Gehirns zu einem bestimmten Zeitpunkt als vielmehr die im Gehirn gespeicherte und übermittelte Information, die auch unbewußt bleiben kann. Deshalb sollte man eher von einer Welt *psychischer Erscheinungen* sprechen (die nicht notwendig bewußt sind).

Popper unterscheidet zwischen subjektiven Erkenntnissen, die einem einzelnen Individuum (und mithin der Welt 2) angehören, und objektiven Welt-3-Erkenntnissen, d.s. allgemein zugängliche Theorien und deren logischer Gehalt: „Nur objektive Erkenntnis ist kritisierbar; subjektive wird es erst, wenn sie sich objektiviert, und das tut sie, wenn wir sie *aussprechen*, besonders wenn wir sie *aufschreiben* oder *drucken*".[4] Diese Art der Unterscheidung führt zu Problemen: Wenn Popper mit dem Begriff ‚subjektiv' Inhalte meint, die grundsätzlich genau einem Individuum zukommen, dann enthält Welt 2 nur sozial ungebundene und unkontrollierbare Gegenstände; wir hätten also kein Kriterium, um welche Inhalte es sich handelt. Unser individuelles Bewußtsein ist jedoch wesentlich sozial (also durch objektive Gegebenheiten) bestimmt;[5] lediglich in manchen Geisteskrankheiten mag es „subjektive" Inhalte in diesem Sinne geben. Gilt jedoch ein Inhalt als subjektiv, wenn er an einem bestimmten Zeitpunkt nur einem Individuum bewußt ist (während er an einem anderen formuliert, also objektiv sein kann), dann verschwimmen die Grenzen zwischen Welt 2 und Welt 3; es wäre Zufall, ob ein Gedanke nur von einem Menschen vertreten und nicht formuliert wird oder ob er formuliert und allen zugänglich ist. Gegenstände könnten dann zwischen Welt 2 und Welt 3 „pendeln", etwa wenn jemand seine Überzeugungen zu Papier bringt bzw. umgekehrt wenn alle Bücher verbrannt werden, die eine bestimmte Theorie enthalten, und nur ein Mensch diese in seinem Bewußtsein behält.

Alles sprachlich Formulierte wird automatisch Element von Welt 3. Das heißt aber nicht, daß jede solche Äußerung ein *interessantes* Welt-3-Objekt ist. Einerseits gibt es verschiedene „Subwelten", deren Elementen gemeinsam ist, daß sie unabhängig von ihren Erzeugern existieren, die aber zum Teil verschiedene Merkmale aufweisen; für einen Physiker sind z.B. Gedichte irrelevant, während für einen Lyriker physikalische Theorien höchstens in einem übertragenen Sinne Bedeutung haben. Andererseits enthält Welt 3 laut Popper nicht nur wahre Theorien, sondern auch falsche: „With every truth, there is a falsehood (the negation of the truth), or even an infinite number of falsehoods. ($0+0=0$ brings in its wake the infinite procession of falsehoods $0+0=1$, $0+0=2$, $0+0=3$,...)".[6] Natürlich können wir zu jedem sinnvollen, wahren Satz nicht nur unendlich viele falsche Sätze bilden, sondern auch unendlich viele sinnlose Ausdrücke, aber was haben wir davon, wenn wir

all diesen Ausdrücken den gleichen ontologischen Status zusprechen (nicht zuletzt auch denen, die niemals formuliert werden)? Ebenso könnten wir alle Genkombinationen, die keine überlebensfähigen Organismen ergeben, als existierend ansehen. Wir *können* versuchen, einen Teil jener unendlich vielen Falschheiten aufzuzählen, die mit der Wahrheit eines Satzes einhergehen, wir können diese Falschheiten aber auch „auf die Müllhalden von Welt 3 werfen".

Um eine Theorie zu verstehen, müssen wir laut Popper ihre unendlich vielen logischen Konsequenzen kennen, die auch dann existieren, wenn sie uns im Augenblick nicht bekannt sind. Welt 3 transzendiert wesentlich ihren enkodierten Teil: „Neither a library nor a human brain incorporates an infinite series of natural numbers. But world 3 possesses the lot, because of the theorem (or axiom): every number has a successor".[7] In Poppers Augen ist nur der geringere Teil von Welt 3 in irgendeiner Form materialisiert; die Welt der Theorien enthält vor allem unentdeckte (und möglicherweise unentdeckbare!) Gegenstände. Wie Popper selbst zugibt, wird Welt 3 dadurch zu einer Art *Schattenwelt*: „But even shadows exist in a physical sense—they can be photographed, they may function as a warning signal for an animal. I assert that this shadowy world . . . exists. Proof: It interacts via world 2 with world 1".[8] So könne jemand, der an die Lösung eines Problems glaubt, sein Leben lang daran herumknobeln, selbst wenn das Problem unlösbar ist. Ein Gegenstand existiert also in Welt 3, wenn er z.B. das Verhalten eines Menschen kausal beeinflußt. Die Lösung eines Problems müßte demnach paradoxerweise auch dann existieren, wenn sich das Problem als unlösbar erweist.

Welt 3 ist laut Popper ontologisch nur *relativ* selbständig: Sie wird von Menschen geschaffen, ähnlich wie andere Artefakte von Tieren. In der Folge ist sie jedoch vom Schicksal einzelner Menschen unabhängig: „Ein Vogelnest ist ein Vogelnest, auch wenn es nie bewohnt wurde. Ähnlich bleibt ein Buch ein Buch . . ., auch wenn es nie gelesen wird".[9] Die relative ontologische Selbständigkeit gilt indes nicht allein für Theorien, sondern für jegliches Artefakt, wozu auch deren materielle Substrate gehören. Ein Buch ist *Träger* von Welt-3-Objekten (sofern es Informationen enthält; auch ein Buch mit leeren Blättern bleibt jedoch ein Buch, auch wenn es von niemandem beachtet wird — allerdings gehört es zu Welt 1). Wir müssen auch zwischen Inhalten unterscheiden, deren Schicksal allgemein nicht vom Leben ihrer Erzeuger abhängt, und solchen, die existentiell zwar nicht an das Leben eines *bestimmten* Individuums gebunden sind, wohl aber daran, daß überhaupt Menschen existieren. Soziale Regelsysteme (u.a. Sprachen) gelten objektiv, auch wenn sie nicht schriftlich fixiert sind: Kein Individuum verfügt über das gesamte Regelsystem einer Gemeinschaft, und der Regelbestand hängt nicht vom Leben einzelner Individuen ab. Hier garantiert die *Gemeinschaft* die Gültigkeit und den Weiterbestand von Regeln.

Theorien benötigen zu ihrer Existenz also einen *Träger*. Genau das wird von Popper geleugnet: Die (unendliche) Folge natürlicher Zahlen sei zwar Ergebnis menschlichen Denkens, aber viele damit zusammenhängende Probleme seien von uns *nicht geplant*, „etwa die ungelösten Probleme der Theorie der Primzahlen (z.B. die Goldbachsche Vermutung). Diese Probleme sind offensichtlich *selbständig*. Sie werden in keiner Weise von uns geschaffen; vielmehr *entdecken* wir sie, und in diesem Sinne existieren sie schon vor ihrer Entdeckung".[10] In der Tat erfassen wir nie alle (logischen und anderen) Konsequenzen einer Theorie. *Logische Konsequenzen* sind jedoch nicht ungeplant, sondern folgen zwangsläufig daraus (ob wir sie kennen oder nicht). Wenn ein Satz *logisch* aus einer Theorie folgt, dann existiert er mit und in dieser Theorie, auch wenn er nicht explizit formuliert ist; er ist „indirekt materialisiert" und muß von uns nur entdeckt werden. Eine Theorie hat andererseits auch *ungeplante Folgen*. Man kann Nikolaus Otto kaum vorwerfen, er habe durch die Entwicklung des Verbrennungsmotors das Verkehrschaos unserer Tage, die Ausbeutung der Erdölvorräte und die Zerstörung der Umwelt verursacht. Solche ungeplante Folgen werden im Unterschied zu logischen Konsequenzen nicht entdeckt, sondern vielmehr *erzeugt* (wobei eine Reihe von

Faktoren wirksam werden muß). Auch eine Liebesbeziehung kann ungeplante Folgen haben, doch existieren diese erst nach ihrer (Er-)Zeugung; und die Probleme, die Eltern mit einem Kind haben (und umgekehrt), kommen nicht mit diesem auf die Welt, sondern werden erst später erzeugt.

Die Annahme, bislang unbekannte Probleme einer Theorie existierten unmaterialisiert in Welt 3, erscheint mir auch aus folgendem Grund absurd: Wir konstruieren eine Theorie T_1, um eine Menge von Problemen $P_1, \ldots, P_n$ zu erklären bzw. zu lösen; aus T_1 ergeben sich neue Probleme $(P_{n+1}, \ldots, P_{n+m})$, sodaß wir eine Theorie T_2 konstruieren usw. (getreu Poppers Methode von Versuch und Irrtumsbeseitigung). Seinen Worten gemäß müßten jedoch die Probleme $P_{n+1}, \ldots, P_{n+m}$ bereits vor der Formulierung von T_1 in Welt 3 existieren; sie könnten bereits in einer Theorie T_0 enthalten sein, aus der die Probleme $P_1, \ldots, P_n$ folgen. Dann gibt es jedoch nichts, was in Welt 3 (unmaterialisiert) nicht enthalten ist; zumindest haben wir kein Kriterium, um über die Existenz von Welt-3-Objekten zu entscheiden. Wenn wir Theorien aufstellen, *entstehen* neue Probleme, andere dagegen *verschwinden*, d.h., durch eine Menge von Hypothesen werden bestimmte Probleme und Fragestellungen *erzeugt*, andere aber entweder gelöst, oder sie sind darin nicht formulierbar (während sie in anderen Theorien „zum Leben erweckt" werden könnten). Jede Theorie „verschüttet" unendlich viele mögliche Probleme und Fragen. Nur bei „Theorienenthaltsamkeit" erhalten wir den unendlichen Spielraum möglicher Fragestellungen aufrecht. So gesehen erscheint es aber moralisch unverantwortlich, daß wir überhaupt Theorien konstruieren.

Popper will die ontologische Selbständigkeit von Welt 3 mit einem Gedankenexperiment zeigen: Durch eine Katastrophe werden alle Maschinen und Werkzeuge ebenso zerstört wie unser gesamtes subjektives Wissen. Bleiben die *Bibliotheken* und unsere Fähigkeit, aus ihnen zu *lernen*, erhalten, dann entwickelt sich unsere Kultur bald wieder; werden die Bibliotheken jedoch ebenfalls zerstört, dann ist unsere Lernfähigkeit nutzlos, und die Kultur muß sich über Jahrtausende neu entwickeln. Poppers Überlegungen lassen sich jedoch weiterführen: Was geschieht z.B., wenn das in unseren Bibliotheken gespeicherte Wissen nur *zum Teil* zerstört wird, etwa so, daß in der Geometrie genau die Theorie des Euklid übrig bleibt? Die Entwicklung der Geometrie würde kaum genau so fortschreiten, wie sie es bis jetzt getan hat, sondern es hängt von den zukünftigen Menschen ab, welchen Verlauf sie nimmt: Für uns relevante Probleme könnten verschüttet, ganz andere aber entdeckt bzw. erzeugt werden. Oder nehmen wir an, eine Katastrophe verschone alle Bibliotheken, vernichte aber *alle Menschen* (was dank Neutronenbombe durchaus möglich ist), oder wir verlören zumindest die Fähigkeit, aus Büchern zu *lernen*. Wird die menschliche Kultur unter diesen Umständen wieder in Gang kommen??? Poppers These von der ontologischen Unabhängigkeit der Welt 3 setzt voraus, daß stets auch Menschen existieren, welche Theorien als solche interpretieren und daraus lernen können. Wenn alle Menschen stürben, könnten unsere Theorien doch wieder nur von Lebewesen verstanden werden, die über unseren Wissensrahmen (also zumindest einen Teil unserer Theorien)verfügten; Theorien und Probleme existieren immer nur in bezug auf bereits vorhandenes Wissen. Wenn das Welt-1-Substrat einer Theorie, ein Buch, existiert, so folgt daraus nicht, daß auch die theoretische Information (der Welt-3-Aspekt) existiert. Die in Büchern enthaltenen Informationen existieren nur, sofern sie von intelligenten Wesen vor dem Hintergrund anderer Informationen als solche interpretiert werden können. Insofern ist Welt 3 alles andere als unabhängig vom Bestand der Menschheit.

Trotz dieser Bedenken ist Poppers Drei-Welten-Theorie brauchbar. Man könnte etwa den Gegenstandsbereich von Sprachen differenzieren und Aussagen auf jeweils eine der drei Teilwelten beziehen. Für die meisten Philosophen wäre etwa der Satz „Sherlock Holmes wohnte im Haus Bakerstreet 121" falsch oder er erhielte keinen Wahrheitswert, weil kein physisches, also kein Welt-1-Objekt dieses Namens existierte. Beziehen wir den Satz jedoch auf Welt 3, so ist er wahr, im Unterschied zu „Sherlock Holmes war verheiratet". Eine solche Auf-

spaltung des *universe of discourse* bringt wiederum eine Reihe interessanter Probleme mit sich, auf die ich hier ebensowenig eingehen kann wie auf historische Bezüge.

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ANMERKUNGEN

1 Popper (1973), S. 174. Der Begriff ‚Welt' ist nicht wörtlich zu verstehen. Popper will nicht die Welt zu einer Vielfalt von Universen multiplizieren, sondern ontologische Unterschiede von Teilbereichen der Welt betonen.

2 Dies ist offenbar eine extrem realistische Position. Ich gehe hier nicht auf Einwände gegen realistische Ontologien im allgemeinen ein, sondern nur auf jene Probleme, die für Poppers Ontologie spezifisch sind.

3 Laut Eccles (1974), S. 351, faßt Popper diese psychischen Phänomene unter dem Begriff ‚dispositional intentions' zusammen.

4 Popper (1973), S. 37. Vgl. auch Popper (1973), *passim*, und Popper (1974), S. 1028.

5 Dies betont gerade Popper; vgl. Popper & Eccles (1977).

6 Popper (1974), S. 1051. Da wir nur einen verschwindend kleinen Teil von Welt 3 erfassen können, hält sie Eccles (1970), S. 166, für außerordentlich reich. Er und Popper blähen Welt 3 jedoch m.E. so auf, daß sie zu platzen droht.

7 Popper (1974), S. 1050, unterscheidet deshalb zwischen jenem Teil von Welt 3, der in Büchern oder im Bewußtsein von Menschen „verkörpert" ist (Welt 3.1 bzw. 3.2), und unmaterialisierten Welt-3-Objekten (Welt 3.3). Mit dieser Unterscheidung verwischt Popper genau jene ontologischen Unterschiede, die er mit seiner Drei-Welten-Theorie herausstreichen wollte.

8 Popper (1974), S. 1051 f. Laut Popper existiert ein Objekt, wenn es kausal auf *prima facie* reale Gegenstände einwirkt; vgl. Popper & Eccles (1977), S. 9.

9 Popper (1973), S. 132, identifiziert damit nicht menschliche Theorien mit tierischen Artefakten (die zu einer Art Welt 1 gehörten!), sondern vergleicht lediglich menschliche Erzeugnisse mit solchen früherer Evolutionsstufen; vgl. Popper (1974), S. 1190, Anm. 112.

10 Popper (1973), S. 180. Ebenso entdecken wir allmählich die Eigenschaften eines Menschen, doch diese existieren bereits vor unserer Entdeckung.

LITERATUR

Eccles, J. C., Facing Reality (Berlin/Heidelberg/New York 1970).

Eccles, J. C., The World of Objective Knowledge, in: P. A. Schilpp (Hrsg.), The Philosophy of Karl Popper (La Salle, IL, 1974), S. 349—370.

Popper, K. R., Objektive Erkenntnis: Ein evolutionärer Entwurf. Aus dem Englischen übersetzt von H. Vetter (Hamburg 1973).

Popper, K. R., Replies to My Critics, in: P. A. Schilpp (Hrsg.), The Philosophy of Karl Popper (La Salle, IL, 1974), S. 961—1197.

Popper, K. R., & Eccles, J. C., The Self and Its Brain (Berlin/Heidelberg/New York 1977).

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MARGINALIEN ZU ADORNOS KRITIK AN HEIDEGGERS EXISTENZIAL-ONTOLOGIE UND DESSEN SPÄTERER KONZEPTION DER „SEINSGESCHICHTE"

Rüdiger Bender

Intention dieses Beitrages ist, hinter der Polemik A(dorno)s gegenüber H(eidegger) und hinter dessen Ignorierung der „Frankfurter Schule" die verborgenen (verdrängten?) Konvergenzen herauszuarbeiten, die Basis einer — nicht nur philosophiehistorisch — interessanten diskursiven Vermittlung beider Philosophien sein könnten. Die Praxis „philosophischer Kommunikationsverweigerung" (Mörchen), der es mehr um konturenverwischende Kritik als um systematische Auseinandersetzung geht, wurde nicht nur von den unvereinbarkeitstheoretischen „orthodoxen" Schülern sondern auch — konträr — von den, nicht minder undifferenziert vorgehenden, identitätstheoretischen Gegnern beider Philosophen versch. Couleur (z.B. G. Rohrmoser, W. R. Beyer, H. Albert u.a.), tradiert. Gegenüber den vielstimmigen Chören beider Spielarten geerbter Kommunikationsverweigerungsanfälligkeit gibt es wenige Sologesänge, die — von kritischen Schülern kommend — an einer posthumen Dialoganbahnung interessiert sind. Besonders die Arbeiten von A. Schmidt,[1] H. Mörchen[2] und U. Guzzoni[3] sind hier wegweisend, obwohl m.E. versucht werden muß, auch gegenüber den Gemeinsamkeiten beider Philosophen die kritische Reflexion fortzusetzen.

Gliederung: I. Entwicklungslinien; II. Kritik zentraler Kritikpunkte; III. Dialogansatzpunkte; IV. Nachbemerkungen. (Quellenangaben nachstehender Werke A's werden wie folgt in den Text eingearbeitet. 1. (JE, S. 20) = Jargon der Eigentlichkeit: Zur deutschen Ideologie (Frankfurt ^{7}1974), Seite 20; 2. (ND, . . .) = Negative Dialektik (Frankfurt ^{4}1973); 3. (PhF, . . .) = Philosophische Frühschriften (= Gesammelte Schriften Bd. 1), hrsg. von Tiedemann (Frankfurt 1973).

I. Nach Mörchen sind 4 Perioden der A'schen H-Kritik zu unterscheiden, nämlich a) die Zeit der frühen Vorträge (bis 1933); b) die Emigrationszeit als Pause der direkten Auseinandersetzung (1934—49); c) die verstärkten Angriffe nach der Rückkehr (1950—60) und d) der endgültige Destruktionsversuch (1961—66). Danach wurde A zunehmend durch neue Konflikte in Anspruch genommen. Nach einem Exkurs zu a) werden wir uns auf den JE und die ND, als die zentralen Werke von d), beschränken. A sah sich vor 1933 veranlaßt, einer falschen Einordnung als „stiller Heideggerianer" (Beyer) entgegenzutreten und seine positive Anknüpfung an Heidegger unter dem Begriff der „Frankfurter Diskussion" zu verbergen. Scharfe Attacken auf H und andere „moderne Ontologen" stehen in einem Kontext, der stark von einer kritischen Aneignung H'scher Gedanken geprägt ist, und sie sollen Konvergenzen nicht als solche deutlich werden lassen (zu nennen wären hier die Problematisierung der Naturgeschichte und der „üblichen Antithesis von Natur und Geschichte" (PhF, S. 345), die Positivismuskritik, die, Wertvolles bewahrende, Metaphysikkritik u.a.). Besonders problematisch scheint mir die Attacke gegen H in den „Thesen über die Sprache des Philosophen" (PhF, S. 366—71) zu sein, die mit dem Satz enden, „Alle trügende Ontologie ist sprachkritisch zumal zu entlarven" (PhF, S. 371), und deren 6. These gegen H gerichtet ist, mit dem Vorwurf, daß er zwar die „geschichtliche Problematik des Wortes" (PhF, S. 368), den Sprachzerfall erkennen würde — schon ein großes Zugeständnis — aber nur um aus der Geschichte flüchten zu wollen, mittels einer scheinkonkreten Privatsprache. A übersieht, wie gerade H durch Rekurrierung auf Begriffswurzeln und Begriffsgeschichte den Sprachzerfall erfahrbar machen wollte, und wie gerade er der A'schen Forderung nach der Plazierung alter Begriffe in neuen Konfigurationen entsprach. A und H gehen kon-

form in der Kritik der idealistischen Forderung nach Verständlichkeit, in ihrer Betonung der untrennbaren Einheit von Sprache und Inhalt. A's frühe Thesen nehmen viel von dem, was H in seiner späten Sprachphilosophie ausdrücken wollte, vorweg.

II. A, der H vorwarf, er hätte die Philologie zur philos. Instanz erhoben, verfiel leider in die pure Negation dieser, nicht unbedenklichen, philosophischen Ausrichtung. Will man zur substantiellen Kritik vordringen, muß man sich zuvor durch einen Berg von falschen Paraphrasierungen, Mißverständnissen und einer durchgängigen Verweigerung der immanenten Kritik, die A im Abschnitt „Sein und Existenz" der ND für sich reklamiert, winden — dieser Umstand hat es den Schülern H's leicht gemacht, die Kritik in ihrer Gesamtheit zu umgehen. In diesem Aufriß versuche ich, einige der zentralen Angriffe A's zu skizzieren und kurz zu kritisieren, um danach eine Basis zu haben, auf der ersichtlich ist, inwieweit A's gereinigte Kritik in der Lage ist, Grenzen und Gefahren des H'schen Ansatzes herauszustellen. Besonders erschwert wird die Aufarbeitung durch A's Verwischung der frühen und späten H'schen Positionen, sowie der H's und anderer Philosophen, die A in dessen Umkreis einordnet. Kennzeichen des Vorgehens A's ist die Verschränkung von systematischer Kritik mit sprach- und ideologiekritischen Reflexionen — die Durchführung dieses Programms wird hier kritisiert, nicht es selbst.

Als Charakteristikum der ontologischen Philosophen sieht A, daß sie ihre Gedanken mit angeblichen Grundbestimmungen des Seins selber gleichsetzen, ohne deren Entleerung vom gesellschaftlich Konkreten zu reflektieren. Der macht-kritische Impuls in H's Seinsphilosophie wird bei ihm völlig übergangen, und er sieht als Resultat „die nackte Affirmation dessen, was ohnehin ist, Bejahung der Macht" (ND, S. 136). Die H'sche Bestimmung des Daseins als ontisch-ontologisch mißversteht A als Aufhebung der „ontologischen Differenz", indem er einen zeitlosen Sinnbegriff von Sein walten sieht und unterstellt H, daß er durch die „Ontologisierung" des Seienden dieses an der — unterstellten — Ewigkeit des Seins teilhaben läßt. Richtig dagegen ist, daß H durch diese Bestimmung des Daseins hervorheben wollte, daß ein vages Seinsverständnis zum Menschen gehört — so wie auch in der Texthermeneutik ein vages Vorverständnis vorausgesetzt wird. Auch die Spätphilosophie, die das Sein und seine „Geschichte" direkt, ohne Existenzialanalyse, thematisiert, wird bei A mißverstanden, da er H's Intention, die Selbstverständlichkeit des jeweiligen Seinsverständnisses zu hinterfragen, verkennt. Sie wird uns — durch die ontische Selbstverständlichkeit des Vorhandenen — eingegeben und erstreckt sich bis in die traditionellen ontologischen Systeme, auf deren Destruierung H abzielte. A unterstellt ihm aber trotzdem ein rein affirmatives Verhältnis zur philos. Tradition. Der Vorwurf der Hypostasierung des Seienden zum Sein gipfelt in der These, daß H Sein ohne Seiendes denken würde, obwohl H spätestens seit 1943 klar auf die wechselseitige Bedingtheit beider hingewiesen hat. Daß H als Reaktion auf Mißverständnisse vom Terminus „Ontologie" zur Kennzeichnung seiner Philosophie Abstand nimmt, wird bei A nur als Manöver gewertet. Doch auch andere — gegen H's Seinsphilosophie gerichtete — Vorwürfe sind problematisch:

a) A sieht schon im Terminus „Fundamentalontologie" ein Bedürfnis nach etwas festem, ewigem walten, wobei er übersieht, daß H diesen Begriff später aufgab und daß er die Scheingewißheit des „sichernden Vorstellens" als den durchgängigen Zug zum Willen zur Macht attackierte, der die Geschichte der Metaphysik erfüllt. Die Betonung von Invarianzen, die A als Affirmation auslegt, die in einer Idee des Ewigen kulminieren sollen, und in denen er die Tendenz zur versuchten Entgeschichtlichung erblickt, ist bei H auch schon in der Existenzialanalyse geschichtlich gedacht, da die daseinsmäßige Konkretion der Existenzialien wechselt. Abgesehen davon sind gerade Leid, Herrschaft und Unglück bei A als Invarianzen anzusehen, die sich in Immergleichheit durch die Geschichte ziehen. Weitere Kritikpunkte sind Irrationalismus, tautologische Denkbestimmungen, Scheinkonkretheit und undialektisches Vorgehen, wobei die ersten beiden einen gefährlichen Bumerang darstellen, der 3. ein wirkliches Problem der Existenzialontologie ist, und zum 4. ist zu sagen, daß H in seinem Denkvollzug der dialektischen Denkstruktur A's näher stand, als manche Äußerungen vermuten lassen,

die A in ihrer ambivalenten Stellung zur Dialektik nicht reflektierte.[4] Die Analysen des JE, der nicht nur H, sondern ein Spektrum von Jaspers, Rilke, Buber, Bollnow und vielen Nachbetern umfaßt, versuchen diesen als Ideologie mittels Sprache und ohne spez. Inhalt, wobei H als Quelle der formalen Schablone fungiert, darzustellen. A steht allerdings vor dem Problem, daß er bei seinem Versuch, schon sprachkritisch aus den frühen Schriften eine Affinität zum Faschismus bei H festmachen zu können, immer zuzugeben genötigt ist, daß H „mit geschulter Strategie" (JE, S. 109) und Umsicht gerade nicht in die Einheitsanalyse paßt — weniger als spätere Antifaschisten wie Jaspers. Die, obzwar meist an H vorbeischießende, Sprachkritik des Jargons ist äußerst fruchtbar, und auch die Analysen von H's Wirkung auf den „dunklen Drang" der Intelligentsia vor 1933 (JE, S. 8) sowie die Renaissance des Jargons nach dem Kriege stellen einen weiterzuführenden Ansatz ideologiekritischer Sprachkritik vor — wie er auszubauen wäre. Gerade in Hinblick auf H's Provinzialismus und anklingenden Antiintellektualismus leistet die Analyse auch für eine H-Kritik viel, wenngleich ein gründlicherer Zugriff noch aussteht. Daß H, aus Reaktion auf den Jargon, Begriffe wie den der Eigentlichkeit (die er streng eingeführt hatte) fallenließ, wird ebensowenig bedacht, wie die permanente Gefahr einer Jargonisierung, gegen die auch die kritische Theorie nicht gefeit ist — auch dort können „signalhaft einschnappende Wörter" (JE, S. 9) „Kennmarke vergesellschafteten Erwähltseins" (ibid.) werden, „so standardisiert wie die Welt, die er offiziell verneint." (Ibid.) Gerade H hatte sich bemüht, bei seinen Schülern ein Nach-dem-Munde-reden zu verhindern. Bei all dem bleibt aber doch die Frage zurück, ob wir A hätten zumuten können, in fairer Diskussion einem gegenüberzutreten, der — zeitweilig — das Loblied des Nationalsozialismus sang, wärend A gerade noch der Ermordung entkam.

III. Ansatzpunkte eines Dialoges sollten 2 scheinbar konträre Bedingungen erfüllen, da ein hinreichendes Maß an Konvergenzen die Diskussion erst auf eine befriedigende Problemhöhe bringt und da ein hinreichendes Maß an Differenzen vonnöten ist, damit nicht gegenseitige Bestätigung an die Stelle kritischer Hinterfragung und Befruchtung tritt. Die nachfolgende Auswahl soll andeuten, daß im Falle von A und H beide Elemente in ausreichender Quantität und Qualität vorliegen. Die besondere Betonung des ersten Elementes ist dabei nur die Folge der verbreiteteren Skepsis ihm gegenüber.

Zentraler Ansatzpunkt ist die Analyse von Gesellschaft und Philosophie unter dem Aspekt der immer universaler werdenden und Subjektivität destruierenden Macht. Beide sehen in der Entwicklung von Wissenschaft und Philosophie einen Prozeß der Instrumentalisierung der Vernunft — weshalb der Positivismus (auf die Problematik der undifferenzierten Verwendung dieses Terminus bei A, der bei ihm auch den krit. Rationalismus einbezieht, kann hier nicht eingegangen werden) als Reflex der geschichtlichen Entwicklung erscheint (H sah sogar die Kybernetik den Platz der Philosophie einnehmen). An dieser Gemeinsamkeit ändert auch A's Bemühung, H selber — als getreuen Kontrapunkt — in die Nähe des Positivismus zu rücken, nichts. Beide analysieren die Tendenz zur verwalteten Welt und sie versuchen beide, das Identitätsdenken durch größtmögliche Sprachreflektiertheit zu überwinden, durch Annäherung an den zu denkenden Gegenstand ohne Fixierung in feste Definitionen. Heideggers Postulat der „Seinsvergessenheit" versucht ebenso eine Radikalisierung der Marxschen Entfremdungstheorie, wie A's Theorem des universalen Verblendungszusammenhanges, was beide dazu führt, daß das „Andere" bzw. das „Sein" sich gegenüber einer positiven Setzung sperrt, durch die es verraten wäre. Beide sind entschlossen, die Subjektivitätsphilosophie (als die „Sein und Zeit" (1927) selber interpretiert werden konnte) im Hinblick auf den Verblendungszusammenhang zu destruieren. Beide sind dabei aber „solidarisch mit Metaphysik im Augenblick ihres Sturzes" (ND, S. 400). Unter Berufung auf Nietzsche fordern beide ein Denken, das — in intellektueller Redlichkeit — auch da nicht einhält, wo es schmerzt. Philosophie bestimmt sich als „traurige Wissenschaft"; im Aushalten in der Negation trotz des Bewußtseins der eigenen Ohnmacht sieht Adorno, im bewußten Vorlauf zum Tod und im ständigen Versuch des Denkens des nicht Faßbaren sieht Heidegger

ihre Aufgabe. Die Hinterfragung der „Dialektik der Aufklärung" und der ausgrenzenden Vernunftdefinitionen ist ihnen so gemeinsam, wie die Sensibilität für Sprachzerstörung und die Gefahren der Bewußtseinsindustrie und Technologie. Für beide spielt die Ästhetik eine eminente Rolle, Literatur und Kunst sind wichtige Erkenntnisquellen, da sie, entgegen den Wissenschaften, das Nichtidentische erfahrbar machen (was für A Beckett, Kraus, Schönberg u.a., sind für H Trakl, Hölderlin, Klee u.a.). Beide betonen die Einheit von Thema und Methode und reflektieren die Problematik, etwas ausdrücken zu müssen, ohne es vergewaltigen zu wollen. Beide streben eine selbstreflektierte Reflexion des Zusammenhanges an, der auch noch ihre Reflexion mitbedingt, und beide suchten sich und ihre Schüler von systematischen Orthodoxien freizuhalten. Diese Auflistung wäre noch lange fortzusetzen, was insbesondere für eine Darstellung der Differenzen gelten würde, die, nach Abzug der Scheindifferenzen, von größter Relevanz sind, insbesondere im gesellschaftlichen Bereich. H's Blindheit gegenüber den gesellschaftlich-politischen Bedingungen des Geschichtswandels stellt den unüberwindlichen Graben zu A's radikalen gesellschaftskritischen Reflexionen dar, den es hier nicht zu verdecken gilt.[5]

IV. Nicht nur A wurde auch durch einen Zwang zur Abgrenzung zum harten Kritiker H's, sondern auch sein Freund W. Benjamin, dessen frühere sprachphilosophischen Werke von der zeitgenössischen Kritik als Heideggerianismen rezipiert worden sind. Benjamin — der mit Brecht ein Anti-H Buch geplant hatte — war für Adorno eine willkommene Möglichkeit, Konvergenzen mit H durch Berufung auf das Prioritätsrecht von Benjamin zu verdecken. Wie stark H. Marcuse, der in Freiburg H's Habilitant war, von H geprägt wurde, ist auch noch in Marcuses Spätphilosophie (siehe „One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society", Boston 1964) spürbar. Auch Horkheimer war in seinem Freiburger Studienjahr bei Husserl und H von diesem beeindruckt, ohne sich ein schnelles Urteil zu erlauben. Habermas, der seinen Ausgang im Umkreis der H-Schule nahm, kehrte dieser erst ab 1953 den Rücken (mit dem Motto: „Mit Heidegger gegen Heidegger denken!").[6] Wie wichtig war H für die krit. Theorie (als Widersacher und Anreger)?

Es ist eine philosophiehistorische Kuriosität, daß ein konstruktiver Dialog in der zweiten Generation beider Schulen zu einem Zeitpunkt aufgenommen wurde, indem eine zentrale Konvergenz aufgegeben worden war, nämlich das Theorem des universalen Verblendungszusammenhanges, welches Habermas fallenließ, und das Theorem der Seinsvergessenheit, welches Gadamer in seiner philosophischen Hermeneutik auflöste. Waren sich A und H zu ähnlich, um sich ein Eingeständnis dieser Nähe leisten zu können?

Nicht nur zwischen diesen beiden Schultraditionen, sondern auch zwischen ihnen und der von Wittgenstein inspirierten analytischen Sprachphilosophie, zeichnet sich seit Jahren ein immer intensiver werdender Dialog ab, wofür neben Habermas etwa K. O. Apel und E. Tugendhat stehen — schon wurde von der sprachanalytischen Wende der kritischen Theorie gesprochen. Eine Wende zur kritischen Überwindung der Kommunikationsbarrieren ist es sicherlich, und somit ein Schritt zu einer (selbst)kritischeren kritischen Theorie.

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ANMERKUNGEN

[1] Schmidt, A., Herrschaft des Subjekts: Über Heideggers Marx-Interpretation, in: Martin Heidegger: Fragen an sein Werk; Ein Symposion (Stuttgart 1977), S. 5.

[2] Mörchen, H., Macht und Herrschaft im Denken von Heidegger und Adorno (Stuttgart 1980).
Mörchen, H., Adorno und Heidegger: Untersuchung einer philosophischen Kommunikationsverweigerung (Stuttgart 1981).

[3] Guzzoni, U., Identität oder nicht: Zur krit. Theorie der Ontologie (Freiburg 1981).

[4] In dem Aufsatz ,,Das Ende der Philosophie und die Aufgabe des Denkens" von 1964 (in: ,,Zur Sache des Denkens", 2. Aufl., Tübingen 1976) zeigt sich H's unabgeschlossenes Verhältnis zur Dialektik, ebenso wie die Nähe zentraler Denkerfahrungen zu A. ,,Denn noch ist nicht entschieden, auf welche Weise dasjenige, was keines Beweises bedarf, um für das Denken zugänglich zu werden, erfahren werden soll. Ist es die dialektische Vermittlung oder die originär gebende Intuition oder keines von beiden? Darüber kann nur die Eigenheit dessen entscheiden, was vor allem anderen von uns verlangt, zugelassen zu werden. Wie aber soll dies uns die Entscheidung ermöglichen, bevor wir es nicht zugelassen haben? In welchen Kreis bewegen wir uns hier, und zwar unausweichlich?" (a.a.O., S. 80).

[5] Die Heideggerschule muß sich hier der Kritik an H's gesellschaftlich-politischen Reflexions- bzw. Konkretionsdefizit wirklich aussetzen, um sich vor H's unpolitischer Grundhaltung — die kurzzeitig so eindeutig politisch auftrat — zu schützen und um dem Anspruch der H-schen Gegenwartsanalysen gerechter zu werden als er selbst es vermochte.

[6] Habermas, J., Philosophisch-politische Profile (Frankfurt 1971), S. 75.

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DIE BEDEUTUNG DES ZWEIFELS ALS GRUNDLAGE DES WISSENS IN DER EXISTENZPHILOSOPHIE

Klaus K. Obermeier

Der Zweifel manifestiert sich auf verschiedenen Seins-Ebenen. Analog zu Heideggers Diktum „Das Sein des Seienden ist nicht selbst ein Seiendes“[1] kann man zwischen dem Zweifel am Sein und dem am Seienden selbst unterscheiden. Der Zweifel am Sein setzt weder das Sein als Seiendes noch den Zweifel als Seiendes voraus, er ist vor-ontisch. In diesem Sinne müßte der Zweifel a priori gegeben und erfahrbar sein, ähnlich wie die Zeit, die es gibt, die aber selbst nie „ist“ (als Seiendes). Bezieht sich der Zweifel aber auf das Sein des Seienden, so setzt er das Dasein voraus und zweifelt am Seienden als vom Menschen durch dessen Da-Sein geschaffenen Sein. Der Zweifel bedeutet ontologisch (im Sinne Heideggers) Zweifel am Sein, während er epistemologisch betrachtet Zweifel an der Erkenntnis um das Seiende selbst ist. Der Mensch konstituiert das Seiende aus dem Sein durch sein Da-Sein, und erfaßt dieses wiederum mit Hilfe von Sprache. Das anthropomorphisierende Prinzip der Phänomenologie („Zu den Dingen selbst“) bedeutet nichts anderes als die Vermittlung des Denkens mit dem Sein, und korrelativ des Ichs mit dem Nicht-Ich.[2]

Die Setzung des Seins durch das Seiende im Seienden erfolgt auf Grund der Sprache. Das Verstehen der Welt durch den Menschen erfolgt als ein Vorgang, der etwas als Etwas ausdrücklich versteht.[3] Das Sein ist die conditio sine qua non für die Existenz, aber nicht selbst existent. Zeit ist nie abwesend, sie bleibt Zeit, es gibt Zeit. Der Zweifel, so könnte man fortfahren, ist nie unabhängig vom Sein, woran könnte man sonst zweifeln? Solange es das Sein (als nicht Seiendes) gibt, gibt es den Zweifel auf der selben Stufe wie das Sein. Der Zweifel ist im Nicht-Zweifel enthalten, so wie das Nicht-Sein im Sein, ja das Sein das Nicht-Sein erst ermöglicht.

Erst im Seienden wird der Zweifel als Seins-immanenter Zweifel aufgehoben und als Seiendes im Bezug auf das Da-Sein hin bestätigt. Dann ist die Natur dieses Begriffs eine andere, da der Zustand des Zweifels gegenüber dem Zweifelnden analog zu dem des Seins zum Seienden ist. Das Da-Sein etabliert das Seiende und das Zweifelnde. Es gibt den Zweifel, so kann man fortfahren, so wie es die Zeit und das Sein gibt. Für die Ontologie ist der Zweifel um das Sein von Bedeutung, für die Epistemologie ist es das Zweifelnde im Bezug auf das Seiende, welches Bestandteil von Erkenntnislehre ist. Da das Sein durch die Sprache konstituiert zum Seienden wird, ist der Zweifel primär sprachlicher Art.

Wie kommt es zu diesem Zweifel? Wir sind fähig, etwas zu erkennen, zu wissen, das Sein des Seienden zu erfassen auf Grund des Erkenntnisprozesses, der sich mittels Sprache vollzieht und sich in der Sprache abspielt. Die Sprache hat eine ordnende Funktion, indem sie Phänomene benennen und klassifizieren hilft. Es ist wichtig festzustellen, daß nicht das Wissen um die Sprache gemeint ist, sondern Wissen auf Grund von Sprache.

Untersuchen wir diesen (Bewußtseins-) Prozeß näher, so stellen wir fest: das Sein des Seienden erscheint dem Menschen a priori in einem nicht-geordneten, da nicht-benannten Zustand. Deshalb spricht man auch vom Geworfensein des Menschen in seine Existenz. Der Mensch ist auf Grund seiner Existenz dem Da-Sein überantwortet. Die Rede ist mit Befindlichkeit und Verstehen gleichursprünglich;[4] deshalb ist sie Ausdruck des Seins des Seienden und nicht Seiendes selbst, wenn man von ihrer Reproduktion in Büchern etc. absieht. Für Sprache ist Geworfenheit wesentlich.[5] Die Sprache ordnet das Sein, indem sie das Seiende transzendiert. Sie ist als ein System von Zeichen ein Geordnetes, das ein Nicht-Geordnetes (das Sein) beschreiben (ordnen) hilft, und dabei das Seiende schafft.[6]

Befindlichkeit bezeichnet hierbei sowohl das (Wohl) Befinden, als auch das räumliche

Befinden des Menschen. Der Mensch befindet sich (nachdem er sich in der Existenz findet) zu etwas in einer bestimmten Form. Der Benennungsprozeß mittels Sprache geht nicht im Privaten vor sich, er ist öffentlich, damit auch Konventionen unterworfen. Die Konvention der Benennung von Gegenständen, die sich konstitutiv auf das Seiende auswirkt, ist dem Gebrauch der Sprache in speziellen Kontexten unterworfen. Sobald ein Gegenstand benannt wird, gebrauchen die Sprachträger das Wort in verschiedenen Kontexten und somit mit und in verschiedenen Bedeutungen. Die Abgrenzung eines Phänomens, die Enkodierung eines Vorgangs, eines Dinges, einer Entität gegenüber etwas Anderem ist die willkürliche Setzung des Seienden gegenüber dem Sein, ähnlich Fichtes Ausspruch vom Ich, welches sich selbst setzt, und damit zum Bewußtsein seiner selbst kommt, ergeht es dem Seienden gegenüber dem Sein. Das Seiende setzt das Sein und kommt dadurch zum Bewußtsein seiner selbst.

Dieser Vorgang der Etikettierung der Existenz erfolgt phylo- und ontogenetisch je für sich. Obgleich die Sprachgemeinschaft Ausdrücke für bestimmte Gegenstände hat, weichen Individuen auf Grund privater Bedeutungskonventionen und -konnotationen sprachlich von ihren Mitmenschen ab. Indem man etwas benennt, ihm also konstitutiv das Attribut eines Seienden zuspricht, hebt man es aus und von der ungeordneten, da unbenannten Masse ab.

Ich teile somit die Welt in Begriffliches und Nicht-Begriffliches ein. Das impliziert aber, daß ich das begreife, was in Begriffen begreifbar ist. Die Begrifflichkeit hängt also von meiner persönlichen (und im größeren Rahmen der von meiner Sprachgemeinschaft unternommenen) sprachlichen Segmentierung und Klassifizierung ab. Gleichzeitig vollzieht sich eine Normierung der von mir etablierten Begrifflichkeit. Ich erkenne das wieder, dem ich a posteriori zum Sein und a priori zum Seienden eine Begrifflichkeit zugewiesen habe, die mir diese Entität, nun in hypostasierter Form, begreifbar macht. Ich habe also einzelne Bestandteile des Seins zu einem Seienden erhoben, denen ich dann gleichzeitig eine Normierung hinzugefügt habe. Diese Normierung ist den Dingen nicht immanent, sondern von außen auf sie projiziert. Anschließend erreicht diese Norm das Prädikat der Intersubjektivität, die auf der Annahme beruht, daß Mitglieder einer Sprachgemeinschaft mit der Etikettierung des Seins auch gleichzeitig die Normierung des Seienden vollziehen können. Intersubjektivität beruht hier auf dem Prinzip der Masse und ihrer Beziehung zu angenommenen Werten. Ist erst einmal eine Norm etabliert, erfolgt die Wertung dieser Norm von und gleichzeitig für jeden der sie etablieren half. Zweifelt man an dieser Norm, so wird auf Grund der intersubjektiven Wertung dieser Zweifel selbst klassifiziert: „vernünftig“ oder „unvernünftig“, „berechtigt“ oder „unberechtigt“. Der Zweifel ist hier nicht primär an und auf das Wissen gerichtet, sondern auf die Norm. Der Zweifel, welcher berechtigt ist, ist dann immer systemkonform.

Dieser Dreisprung von Etikettierung über Normierung zur Wertung ist die Grundlage des Erkenntnisprozesses. Der Prozess ist grundsätzlich von dem Widerstreit oder Interessenkonflikt zwischen dem zu Erkennenden und dem Erkennenden bestimmt. Was mit Hilfe der Sprache geschaffen wurde, ist eine Benennung des Seins, mit Hilfe derer man ontologische und epistemologische Fragen behandeln kann. Die Gefahr, die durch den Prozeß der Setzung im Vordergrund steht, ist die, daß man die Bedeutung der Wörter mit den Wörtern an sich verwechselt. Wenn man das Sein schon für ein Ist hält, verschwinden gewisse Fragen von selbst, wie etwa die Frage nach dem Sein.

Probleme der Erkenntnis und des Wissens ergeben sich dann, wenn die Nicht-Ordnung des Seins zu Tage tritt. Begriffe haben eine Bedeutung gemäß ihres Gebrauchs. Die Imponderabilien des Seins, die wesentlich ein Nicht-Geordnetsein von Entitäten bedingen, können von dem „ordentlichen“ System der Sprache nicht erfaßt werden. Sobald die Diskrepanz zwischen dem Sein und dem Schein (das sich als geordnetes Seiende „scheinbar“ präsentiert) offen zu Tage tritt, kommt es zum Zweifel an dem bis dahin für sicher geltenden Wissen. Da aber dieses Wissen immanenten Problemen von einem dem Sein aufoktroyierten Benennungssystem unterworfen ist, wird der Zweifel oft als Zweifel an den Dingen selbst oder an der Sprache mißverstanden. Das Janusgesicht der Sprache wird jetzt beson-

ders deutlich: einerseits schafft sie das Sein des Seienden aus dem Sein, andererseits wird sie selbst zu einem autonomen System mit Regeln und Gesetzmäßigkeiten, die das Seiende nicht integriert, sondern eher konfrontiert.

Die Bedeutung des Zweifels als Grundlage des Wissens ist die eines Katalysators, der dem Seienden die immanente Konstituierung und Konfrontierung des Seins durch und mit der Sprache vor Augen führt. Der Zweifel greift also Raum auf der Stufe des Seins (als kategorischer Zweifel), auf der Stufe des Seienden (als methodischer Zweifel) und auf der Stufe der Sprache (als wertender Zweifel).

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ANMERKUNGEN

1 Heidegger, M., Sein und Zeit (Tübingen 151979), S. 6.
2 Bloch, E., Subjekt — Objekt: Erläuterungen zu Hegel (Frankfurt 1972), S. 60.
3 Heidegger (1979), S. 149.
4 Heidegger (1979), S. 161.
5 Heidegger (1979), S 160c.
6 Heidegger (1979), S 165.

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2. Ontologische Probleme

2. Ontological Problems

ACTS, EVENTS AND THINGS*

Kit Fine

The objects that clutter up our daily life—chairs, desks, sticks in water, bits of bees-wax—have long been the source of philosophical reflection; and I hope that I may therefore be forgiven for persisting in further reflection of this kind.

Take the statue before me. It is a handsome creation, made of bronze and in the image of Goliath. But what exactly is it? What is its nature or identity?

There are various ways in which this question may be taken. It might be, and often is, taken to concern the nature of the matter that constitutes the statue. This is, to my mind, a deep and difficult question. But let us take the identity of the matter for granted. Then the question might also be taken to concern the identity of the statue *in its relation to* the matter.

Of course, it is not as if I have a special interest in statues. I take statues to be typical specimens of the material things we ordinarily talk about. What then goes for them should, one hopes, go for those other material things.

One natural answer to our question is that the statue and its matter are one and the same. It is not as if we have a duality of thing and matter, of substance and stuff. We have merely one item, referred to indifferently as the matter or as the statue.

There are various considerations that make this answer seem so natural. First, it is suggested by our ordinary judgement that the matter, the stuff over there, is a statue. Granted that the 'is' here is the 'is' of identity and that there is but one statue over there, it then follows that the statue and its matter are identical. Second, there is what one might call a *locational coincidence* between the statue and its matter; they occupy the same place at the given time. One is therefore tempted to infer their identity from the wellknown principle that two things cannot occupy the same place at the same time. As two, the statue and the matter seem to compete for the same space; there is no room for them both.

In addition to the locational coincidence, though perhaps dependent upon it, is an enormous *descriptional coincidence*, a coincidence of descriptive properties. Observe the superficial properties of the statue and its matter; weigh them; submit them to the most refined tests. No difference will emerge; and it is, of course, absurd that it should.

Now no coincidence, no matter how vast, need imply an identity. There is, in this respect, an asymmetry in the application of Leibniz's principle of the indiscernibility of identicals; for whereas one differing property will yield a non-identity, no number of shared properties need yield an identity. But even though we concede the lack of a logical guarantee, it still might be though that, in this case, it is only the identity of the statue and its matter that can plausibly explain their coincidence of properties.

Perhaps, thought the main reason for denying a distinct identity to the statue is metaphysical. We conceive of the physical universe as consisting of matter or of whatever matter is ultimately composed. The idea of material things, in addition to the matter, then seems strange and mysterious.

This answer then is very natural. But still it is wrong. Suppose that the bronze is melted down tomorrow. Then the statue ceases to exist at that time; but the bronze does not. The one has the property of ceasing to exist tomorrow; the other lacks it. Therefore the two are distinct.

There is, of course, a standard response to this line of argument. What we have here, it is said, is an intensional context. The terms 'the statue' and 'the matter' refer to the same thing, but by means of different descriptions. What makes it false that *the statue* exists

tomorrow is that the given thing ceases to possess the description associated with the term 'the statue', while what makes it true that *the matter* exists tomorrow is that the same thing continues to possess the description associated with the term 'the matter'. Thus what accounts for the difference in the truth-value of the existence-claims is not a difference in the items referred to but a difference in the descriptions by which reference is made.

It would take too long for me to comment on this response in detail, but let me merely note the following. If we do have an intensional context here, it is not of a standard sort. A standard example of an intensional context is provided by the sentence 'the police are looking for the murderer'. Now the truth-value of such a sentence is sensitive to changes in co-referential definite description: the police are looking for the murderer; they are not, in a clear sense, looking for the mayor, even though the murderer is the mayor. However, the contexts we have been talking about are not, in this way, sensitive to variation in definite description. The statue might be my most treasured possession, the light and joy of my life, the object of all my dreams. If the statue ceases to exist tomorrow, then so does my most treasured possession, the light and joy of my life, the object of all my dreams.

If these contexts are intensional, then some new account of their intensionality must be given, one that makes them transparent to definite descriptions but not to other kinds of singular terms. Now such an account can be, and has been, developed. But it is unnatural, unwieldy and, in the last analysis, unworkable. Since there is a simple and straightforward alternative that squares so well with the linguistic data, there seems to be very little reason, philosophical prejudice apart, for not preferring it.

Let us assume then that our argument from existence-conditions establishes the distinctness of the statue and its matter. The question remains as to the identity of the statue. But a ready answer is at hand: the statue is a *temporal segment* of the bronze. Given any enduring object, we may restrict it to certain of the times at which it exists. It is as if we cut through the object at those times. The resulting object, the segment or restriction, will be like the parent object *when* it exists, but, unlike the parent, it will only exist during the moments of restriction. We may now think of the statue as the temporal restriction of the bronze to those times at which it has the right shape, (We should also insist that the shape have the right genesis; but let us, for simplicity, ignore that).

There is one slight defect in this account as it stands. It rests on the assumption that the statue cannot change its matter over time. But this is a genuine possibility, what with wear and tear and minor repairs. And even though a statue cannot completely change its matter over time, there are other kinds of object that can.

This defect, though, is easily put right. At different times, the statue is constituted by different matter. Restrict each such parcel of matter to the times at which it has the right shape (and the right causal genesis). Then let the statue be the temporal aggregate of the resulting temporal segments.

The account, as thus amended, has many merits. It explains the difference in the existence conditions of the statue and the matter; for when the bronze is melted down, it no longer has the Goliath-shape and so the temporal segment which is the statue no longer exists. The account explains the locational and descriptional coincidence betwenn the statue and the matter; for at any time at which the statue as temporal segment or aggregate exists, it will share the locational and other properties of its parent, the matter. The account would also appear to justify our ordinary judgement that the matter *is* a statue. For there is a natural sense in which a temporal segment and its parent are parts of one another at any time at which they both exist. Taking the 'is' to be the 'is', not of identity, but of mutual part then gives us the required conclusion that the matter is, at the given time, a statue.

The account, finally, is metaphysically appealing. It conforms to what one might call an extensional picture of physical reality, 'extensional' not in the logician's new-fangled sense but in the traditional sense that relates to talk of a body's extension. In effect, each material thing is conceived of in terms of its occupancy or extension in space and time, so that things with the same spatio-temporal extension are judged to be the same. Such a view then seems

to take the mystery out of the material thing as something additional to the matter. For we may think of the material things as providing us with a way of talking about different matter at different times. Or if matter in its turn is reduced to mass points, we may think of matter and things alike as providing us with a way of talking about the different congeries of mass points.

But despite these many merits, the account is still unsatisfactory. It is subject to a modal variant of our previous temporal argument. Let us suppose that the bronze always has the Goliath-shape. Perhaps God made the bronze that way and man, with uncharacteristic sloth, has left it alone. Then on the extensional view, the bronze and the statue are the same, since they fail to differ in their spatio-temporal extension.

But imagine now that the bronze *had* been melted down. Then the statue would have ceased to exist, but not the bronze. So the statue has the counterfactual property that it would cease to exist if the bronze were melted down, while the bronze lacks that property. To put it in other terms, consider a possible world in which the bronze is melted down. Then the statue, unlike the bronze, has the property of not existing at the given time in the given possible world. Thus the statue and the bronze have different modal or counterfactual properties and therefore are not the same.

As in the temporal case, one may attempt to slide out of this argument by appeal to intensional contexts. But the difficulties with this way out are the same; the given contexts are not standardly sensitive to alteration in definite description. There is also a dialectical point to be made. Some philosophers have been tempted to appeal to intensionality of context in this but not the temporal case. Yet given the complete symmetry between the two cases, it is hard to see how any such attitude can be justified.

Let us grant then that, in the imagined case, the statue and the bronze are distinct. How is the distinction between them to be explained? It is tempting, at this point, to make use of modal segments, somewhat in analogy to temporal segments. Just as we allow that an object may be restricted to some of the times at which it exists, so we allow that an object may be restricted to some of the worlds (or world-times) at which it exists. We cut through the object not just in the temporal sphere but also in what might be called the modal sphere. The resulting object, or modal segment, will then be like the parent object at those worlds (or world times) in which it exists, but will only exist in the worlds (or world times) of the restriction.

We may now think of the statue as the restriction of the bronze to those worlds, or rather world-times, at which it has the right shape. Or if we allow the matter of the statue to vary from world to world, we may let the statue be a modal aggregate of such restrictions.

The above account solves our present puzzle; for although the statue and the bronze coincide in this world, there will be many other worlds in which they do not coincide. The account also has all of the advantages of the previous account. It explains the temporal divergence in existence conditions, the coincidence of properties, and the apparent judgement of identity. In addition, it too conforms to an extensional picture, but under a broadened conception of extension for which modality also provides a sphere or dimension in which objects exist. Indeed, the progress of our theories—from the identity theory, through the temporal view, to the present modal account—can be seen as arising from a successive broadening in the notion of extension, from spatial, to spatio-temporal, to spatio-temporal-modal.

The extensional view is so appealing that it is hard to give up. But even this new account has a fundamental flaw. I have talked all along of matter constituting a material thing. But what exactly is this relation? What do we mean when we say that such and such a matter constitutes a material thing?

On the face of it, we have here a relationship of part to whole; the matter 'makes up', it a part of, the statue. Now on the segmental or extensional view, we can indeed distinguish relationships of part-whole. Assume, for simplicity, that the statue enjoys the same matter throughout its career. Then we may say without temporal qualification that the statue,

as a segment, is part of the matter. But we may also say, relative to a time at which the statue exists, that it is a part of the matter and the matter a part of it.

However, neither of these relations is the relation of constitution. The relative notion of part is two-way. However, the relation of constitution is one-way; the matter constitutes the statue, but the statue does not constitute the matter. The absolute notion of part *is* one-way, but it is the wrong way. It makes the statue a part of the matter but not, as a rule, the matter a part of the statue. The extensional view seems powerless to explain the relation of constitution.

I propose to solve this problem by making a fundamental break with the extensional view. We shall suppose that many material things have not only an extensional aspect, but also a built-in intensional aspect, 'intensional' now in the sense which applies to properties and relations. Given any object x and description (property) φ possessed by x, we shall suppose there is a new object x *qua* φ or x *under the description* φ. Thus if x is Socrates and φ the property of being a philosopher, then the new object is Socrates qua philosopher; while if x is Mrs Thatcher and φ the property of being a Prime Minister, then the new object is Mrs Thatcher qua Prime Minister.

Given such an object x qua φ, we shall call x the *basis* and φ the *gloss*. The resulting object itself will be called a *qua object*, and the operation by which it is formed *glossing*.

One should not identify a qua object with its basis—Socrates qua philosopher with Socrates, or Mrs Thatcher qua Prime Minister with Mrs Thatcher. Rather, the qua object should be regarded as some sort of amalgam of the given object and the property, like the given object but wearing the property on its face. Nor should a qua object be identified with the corresponding segment. When one restricts Mrs Thatcher to the times (or world-times) in which she is a Prime Minister, then the property of being Prime Minister has a merely external relation to the resulting object. On the other hand, in glossing, the property is integral to the resulting object; it is part of the total package.

It is also important to note that nothing has so far been said about reference to qua objects in ordinary discourse. In particular, I would not want to be saddled with the following two claims; first, that definite descriptions are used to refer to qua objects; and second, that phrases of the form 'x qua φ' are *ordinarily* used to refer to qua objects. I hold an orthodox view of definite descriptions according to which a description such as 'the Queen of England' refers to a certain person and not that person under the description of being the Queen of England. I am also happy to believe that many uses of the phrase 'x qua φ' are not referential at all but are to be broken up into a genuine subject term 'x' and a modifier 'φ'. The purpose of my theory is not to provide a reference for ordinary uses of a qua-phrase but to account for the identity of certain other objects—chairs, tables and the like—to which we clearly do refer.

Qua objects are governed by certain principles; and it is in terms of them that they are best understood.

Existence. The qua object x qua φ exists at a given time (world-time) if and only if x exists and has φ at the given time (world-time);

Identity. (i) Two qua objects are the same only if their bases and glosses are the same. (ii) A qua object is distinct from its basis (or from the basis of its basis, should that be a qua object, and so on).

Inheritance. At any time (world-time) at which a qua object exists, it has those normal properties possessed by its basis.

According to the first of these principles, a qua object exists just when its basis does and satisfies the gloss. According to the first part of the second principle, the identity of qua objects requires both identity of basis and gloss. Thus Socrates qua philosopher is distinct from Socrates qua Greek, since the properties of being a philosopher and being a Greek are distinct; while Socrates qua philosopher is distinct from Plato qua philosopher, since Socrates and Plato are distinct. According to the last principle, a qua object inherits its properties from its basis. However, not all properties are inherited. Mrs Thatcher existed ten years ago,

Mrs Thatcher qua Prime Minister did not. Again, Mrs Thatcher is not a qua object with Mrs Thatcher as basis, but Mrs Thatcher qua Prime Minister is. We exclude these cases by requiring that the property not be formal and that its application only concern the time (or world-time) in question. This is the force of the qualification 'normal'.

Armed with the theory of qua objects, we can now give an adequate account of the identity of the statue and of material things in general. Under the simplifying assumption that the matter of the statue does not change, the statue may be identified with that matter under the description of having the Goliath-shape. In case the matter is allowed to change, we should first take any matter that ever constitutes the statue; gloss it with the property of having the Goliath-shape; restrict the resulting qua object to those world-times at which the matter constitutes the statue; and then aggregate all of the resulting segments of qua objects. This then is the statue. The form of other material things will be similar, though perhaps with greater complexity in the structure of the basis and the gloss.

This account, with the help of the Existence Principle, can solve the various puzzles over the existence-conditions. It can also explain, with the help of the Inheritance Principle, the remarkable coincidence between a material thing and its matter. But, in superiority to the extensional view, it is able to provide an adequate account of constitution as a relation of part to whole. For since the qua object is built up from the basis and the gloss, it will have its basis as a proper part. Thus the matter, as basis, will be part of the statue; but the statue, as qua object, will not be a part of the matter. The asymmetry of constitution is explained.

I may have made it appear as if constitution posed an isolated threat for the extensional theory. But once we look around, we see that there are many related difficulties for that theory, all of which are readily solved on the qua object view. Let me mention one—the problem of creation. A sculptor creates a statue. Now we all know what this involves, even if we are not very good at bringing it off; the sculptor must give the material the right shape. The problem is not to say more exactly what it is to create a statue. Rather it is to give an account of creation in general and of the identity of statues in particular from which it will follow that the sculptor creates the statue just in the circumstances that we recognise as appropriate for the creation of a statue.

This problem is not as simple as it might appear. We cannot say that the statue is the matter, for the sculptor does not (as a rule) create the matter. Nor can we say that the statue is a temporal segment of the matter, for as long as the matter continues to exist, the temporal segment will be there, regardless of what the sculptor does.

On the qua object view, the problem may be solved as follows. When we say that a sculptor creates a statue it is understood that he creates it from given material, not *ab novo*; he is allowed a little help from God. Now to create one thing y from another x is to bring about, in an appropriate way, a transition from a state of affairs in which x exists to a state of affairs in which y exists. Thus should the statue be a qua object, the sculptor must bring about a transition from a state of affairs in which the matter exists to one in which the qua object, the matter under the description of having a certain shape, exists. But what is that latter state of affairs? Given the Existence Principle, it is most plausibly taken to be the state of affairs in which the matter exists and has a certain shape. Thus what the sculptor must do is to effect the transition from the matter's existing to the matter's existing and having a certain shape; and this presumably is just to give the matter that shape.

There are other problems concerning material things that our theory can help to solve. It can throw light on the identity of particular kinds of material things, such as works of art and persons, and it can also throw light on the general classification of things into sorts or kinds. But I want to pass on now to what might appear to be a different subject—the identity of acts.

I raise my arm. There is a certain act—the act of raising my arm. But what exactly is the identity or nature of this act?

Again, there are different ways of taking this question. There is the question, sometimes

called the fundamental problem of action theory, of saying exactly what goes on when I raise my arm. Does a volition cause a physical motion? Is there merely a neuro-physiological train of events? Or what? But let us take for granted the answer to this question; let us assume that we know what occurrences are involved in raising my arm. Still a question arises as to the identity of the act. Is it one of those occurrences, all of them, or something else?

The parallel with our question about material things is striking and, as we shall see, it runs very deep.

Now one very natural answer to our question is this: any act, or at least any bodily act, is identical to the underlying bodily movement. For example, underlying the act of my raising my arm is a certain bodily movement, my arm rising; these two are then the same.

What makes this answer so natural is much the same as what makes the identity theory for material things so natural. There is our ordinary judgement that the bodily movement *is* an act. There is a locational coincidence between the act and the bodily movement, although we may have some qualms over attributing exactly the same location to either one. There is also something of a descriptional coincidence; it is not as if we could observe, or discover by test, some subtle difference in the two things. Finally, there is the metaphysical mystery of the act being something over and above the bodily movement or the associated occurrences.

But natural as this answer is, again it cannot be sustained. Perhaps we cannot distinguish between the act and the bodily movement in terms of their temporal location; but there is a difference in what one might call their modal location. Take again the act of raising my arm. Suppose now that the rising of my arm had been a reflex action. Then the bodily movement would still exist, but not the act. Consider, if you like, a possible world in which the bodily movement is a reflex action. Then the bodily movement still exists in that world; but that which we call an act in this world no longer does.

There are those who claim not to detect the disappearance of the act from one world to the other. But they have, it seems to me, already decided that the act is the bodily movement; it is on the basis of this decision that they make their modal judgement. If one approaches the question without philosophical prejudice, it seems quite clear that there is something, the act, that no longer exists in the other world.

One might still suspect some intensional trickery here, of course. But without rehearsing the reasons, it seems to me that the difficulties of this approach are just as great as before.

Let us grant then that the act and the bodily movement are distinct. What should be said as to the identity of the act? We might try once more to think of the act as a modal segment of the bodily movement. But there is, it seems, a relation of underlying between a bodily act and bodily movement somewhat analogous to the relation between a material thing and its matter. The modal segment view seems as powerless in this case as in the other of explaining what that relation is.

We are therefore again led to the view that the act is a qua object—but in this case with a bodily movement as basis. There is some problem as to what the gloss or description should be. But we can take it, very roughly, to be the property of being intentional. Thus the act of raising my arm is the movement of my arm under the description of being intentional.

There is, on this account, a striking parallel between the relationship of a bodily act to its bodily movement, on the one hand, and the relationship of a material thing to its matter on the other. It is not just that the two relationships are analogous; they are exactly the same. We might put it this way: a bodily movement is the matter of a bodily act.

Our new theory of acts is able to solve our previous puzzles concerning modal location and the nature of underlying. It is also able to throw light on topics familiar from the literature on action theory: the intensionality of acts, their observability, the analysis of the by-relation. Let me discuss just one such topic, the relationship of an act to the intention with which or the reason for which it is done. Take, as an example, an act of murder. This act was done with the intention to kill. Our question then concerns the relationship between this act of murder and the associated intention to kill.

There are roughly two main views on this question. The *conceptualists* believe that there is conceptual relation between the act and its intention. It is somehow essential to the act (murder, say) that it be done with a particular intention (to kill). The *causalists*, on the other hand, take there to be a causal connection between the act and the intention. The intention is a cause or, at least, partly a cause of the act.

The most the causalist has usually been prepared to concede to his foe is that there may be a *de dicto* necessary connection between particular kinds of acts and particular kinds of intention. It is necessary, for example, if an act is to be one of murder that it be done with the intention to kill. Now all this is undeniable. But there is also, it seems to me, a more interesting *de re* connection between an act and its intention. It is essential to this particular act of murder that it be done with this particular intention; *it* would not have occurred had the intention not been present. Suppose we go to another possible world in which the same bodily movement is made but with a different intention or no intention at all. Then, in that world, there would not be what, in this world, is the act of murder.

In this respect, then, the conceptualist is right. But what of the causalist? It has commonly been supposed, by both sides to the dispute, that a *de re* essentialist connection between act and intention rules out any sort of causal connection. After all, if it is essential to the act that it be done with a particular intention, then the existence of the act necessarily requires the existence of the intention. But ever since Hume we have learned to be suspicious of any kind of causal connection between one event and another upon which it necessarily depends.

It is possible, however, to reconcile the intuitions of the conceptualist and the causalist without giving up a basically Humean position. Take the act of murder to be the bodily movement under the description of being done with the particular intention to kill which operated in that case. Then it is essential to the act, as so construed, that it be done with that intention. It is perhaps worth detailing, on the basis of the principles of our theory, why this should be so. Take any possible world in which the act exists. By the Existence Principle, the bodily movement exists in that world and is done with the given intention. Let us grant that being done with that particular intention is a normal property. Then by the Inheritance Principle, it will follow that the act is done with that intention. Thus in any possible world in which the act exists it will be done with the given intention, and the essentialist connection is established.

Let us now ask whether the intention causes (or is otherwise causally related to) the act. Let us grant that the *bodily movement* is caused by the intention. This, after all, is the fundamental intuition of the causalist. Then as long as the property of being caused by the intention is a normal property, it will follow by the Inheritance Principle that the act is also caused by the intention.

Thus by adopting a particular analysis of the act as a qua object, we can derive and hence reconcile the respective intuitions of the conceptualist and the causalist. The reason why this reconciliation is compatible with a basically Humean position in this. The acts, as qua objects, are in an obvious sense artificial and derivative. They are not genuinely 'out there' in the world, but are formed from what is out there by means of an alliance with a purely intensional element. (It is tempting to say that they are partly formed in our own minds, but this would be too psychologistic.) We may now suppose that the Humean strictures on cause apply not to these derivative or artificial events but to those that are genuinely out there.

Our analysis of acts is one that applies to events in general. Take, as an example, the event of Sir Lancelot losing his virginity. What is it? We might try the hypothesis that the event is identical to the underlying sexual activity. After all, they occur at the same place and time, and have many of their other properties in common. But this will not do for reasons that have now become familiar. It is essential to the event that it be the first of its kind; but this is by no means essential to the sexual activity itself. That

very same activity could have been part of a long history of such occurrences. Thus the event has a certain essential property, being first of its kind, that is lacking in the activity.

Such considerations as these quickly lead to our favoured hypothesis that the event is a certain qua object, viz. the activity under the description of its being the first time. In this way it is readily intelligible why the event should have the same spatio-temporal location as the activity and yet require a certain priority for its occurrence.

I should like to apply a similar analysis to most of the events that we ordinarily talk about—marriages, battles, epidemics and what have you. Indeed, I would want it to be recognised that there is a special subclass of events, call them occurrences, at the bottom of other events in much the same way as matter is at the bottom of other material things. Occurrences are the matter of events; and just as all material things are ultimately formed from matter with the help of such operations as segmentation, aggregation and glossing, so are all events ultimately formed from occurrences.

Such an account is able to throw light on a good many of the problems that have plagued the literature on events. It is, first of all, relevant to general questions as to the identity of events. Once occurrences are distinguished from events in general, it becomes clear that most of the proposed identity criteria are only plausible for occurrences. It also becomes clear, once the operation of glossing is taken seriously, that some quite distinct kind of identity criterion is required for events in general, one that is genuinely able to articulate their relevant structure.

Our account is also relevant to questions concerning particular kinds of events. A good example is emotions. There has been much dispute in the literature as to the relationship between an emotion and its object. The conceptualists hold that there is a conceptual relationship, the causalists that there is a causal relationship. By analysing an emotion as a suitable kind of qua object, we can reconcile the two positons in this dispute in much the same way as the corresponding positons on the relationship between an act and its reason were reconciled.

The theory of qua objects has some other applications worth mentioning. First, the qua objects are very like Aristotle's compounds of matter and form, with the matter corresponding to the basis and the form to the gloss. Aristotle's views, it seems to me, have not been taken seriously enough; many of his more distinctive doctrines have either been forgotten or fallen into disrepute. A modern version of the Aristotelian theory should give us the courage to embrace some of those doctrines and the means to articulate them more clearly.

Secondly, the theory of qua objects is able to throw light on the question of the ground for necessary truths. There is a tradition according to which all necessary truths are analytic, 'true in virtue of meaning'. This view flounders on the question, among others, of *de re* essentialist claims; for the meaning of the singular term by which reference is made in such claims would appear to be irrelevant to their truth. But let us take a broader view of an analytic truth. Following Russell, let us conceive of a proposition as something that may contain the objects of reference as constituents. Then we may call a proposition *analytic* if upon analysis of its constituents, including the objects, it can be seen to be true. Take now the proposition that the statue of Goliath has a certain shape. Upon analysis, we obtain the statue itself as subject and the property of having a certain shape as predicate. The statue, in its turn, breaks up into the matter and the property of being a certain shape. Thus we can discern the predicated property in the subject. It therefore seems reasonable to suppose that the proposition is analytic in our broader sense of the term. Indeed, the proposition might even be thought to be analytic in something like Kant's original sense that the concept of the predicate is included in the subject. This analyticity might then be thought to provide a relatively innocuous ground for the essential truth of the given proposition. I do not think that all essentialist truths can be reduced to analyticities in this way, but certainly a large and interesting class of them can be.

Perhaps more interesting, though, than this application to particular problems is the capacity of the theory to uncover deep analogies in widely disparate fields. The things and events of the world, for all their apparent diversity, are seen to be held together by the very same threads.

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NOTES

* This paper outlines one central strand of thought in a book on which I have been working since 1976. The reader should bear in mind that many points merely touched upon here are developed at great length in the book and that many topics considered in the book are not even mentioned here. Even the points treated in detail are not always stated with the qualifications or comment that strict accuracy would require.

The paper is written in an ahistorical style, but some of its ideas have a long history, dating back to Aristotle and re-emerging in the work of the phenomenological school. It has recently come to my attention that some other contemporary philosophers have written on related ideas. I should mention Burdick's Ph. D. thesis (Rockefeller University 1977) and K. Mulligan, P. Simons, and B. Smith (eds.) *Parts and Moments* (Munich 1982). I hope elsewhere to deal in detail with the connection between my ideas *and theirs*.

The paper would not have been possible without the help of many friends who, in lectures, seminars and discussions, helped me think through my ideas and their application to the different fields of philosophy.

* * *

PHYSICAL OBJECTS AND EVENTS

Myles Brand

Physical objects and events are ontologically similar. Among physical objects, I mean to include medium-sized macroscopic objects of ordinary experience, such as stones, chairs and tables, and automobiles; and among events, I mean to include ordinary perceptible happenings, such as falling stones, tea parties, and automobile races. Both physical objects and events are concrete, spatiotemporal particulars; they differ only in that physical objects fully occupy the spatiotemporal regions in which they exist, whereas events do not. That, at least, is the stance I will attempt to articulate in this paper.

In Section 1, I informally present this ontological picture. Some of the machinery for formal statements of ontological status is developed in Section 2. This machinery consists in stating identity conditions. In Section 3, I present identity conditions for events; I also contrast these identity conditions with those suggested by Jaegwon Kim. And in Section 4, I consider a test case for the thesis that physical objects and events are ontologically similar. Physical objects can change; events, it is argued, can change in relevantly similar ways.

1. *The Informal Picture*

Philosophers of language and logic distinguish between three broad categories of linguistic items: (i) singular terms; (ii) predicates; and (iii) sentences. Parallel ontological distinctions can be made: (i′) particulars; (ii′) properties; and (iii′) propositions. Paradigm members of the category (i′) are physical objects. Persons and other animate objects are also included in (i′). Not all members of (i′) are concrete, that is, spatiotemporally locatable; sets and numbers (if they exist) are particulars, but abstract. By contrast, properties and propositions are all abstract. Properties are attributes of objects, usually those of category (i′), but not necessarily, since there are, for example, properties of properties. Propositions, on one tradition which has Frege as a prominent member, are bearers of truth and falsity and structurally reflective of declarative sentences.

This tripartite ontological distinction may ultimately break down. Some philosophers have argued that there is no separate category of properties, that properties are collections of particulars; and some have argued that propositions can be eliminated from any categorization. Others have claimed that there is only one kind of abstract object, possible worlds, and that properties and propositions are derivative of these. Be that as it may, the distinction marked by (i′)—(iii′) is a plausible working hypothesis, and one I shall accept for the present.

It is not clear, however, into which category events fall. Indeed, there are theories associating events with each of these ontological categories. Chisholm defends the view that events are propositional.[1] Oversimplifying, events are the same as propositions, except that they are time-bound, that is, they occur (or are exemplified) on some occasions but not others. It is extremely difficult to interpolate a theory of events for Wittgenstein's *Tractatus*; but, it seems, events would be propositional on it. Goldman has argued that actions are properties of persons; and Kim has extended this view to the claim that all events are property exemplifications of concrete particulars.[2] The Kim-Goldman view can be associated with category (ii′) since properties are constitutitve of events—though, to be correct, events are a type of particular on it. Davidson has argued forcefully for the view that events are particulars.[3]

Though I disagree with Davidson's development of this ontological perspective, I agree

that events belong in category (i′). Events are in the world; they are part of the booming, buzzing confusion that confronts us. Events are concrete: a shooting or a birth is something to which we attribute spatial and temporal location. We ordinarily think that events can be recorded on film or video tape: but it is difficult to conceive of recording something abstract (that is, nonspatiotemporal) on film or video tape.

While it probably would be granted that placing events in category (i′) accords well with commonsense, it might be objected that considerations of parsimony favor the propositional view. Chisholm, for instance, says:

> We shall not assume that, in addition to states of affairs, there are also such things as 'concrete events' or 'events as particulars'. We shall assume, instead, that all discourse that is ostensibly about events may be reduced to discourse about states of affairs, relations and properties, and individual things.[4]

But a particularist need not assert that events constitute a separate ontological category. Events are spatiotemporal particulars, and thus, like physical objects, they are what Chisholm labels "individual things". Indeed, it is the propositional view that is in danger of being unparsimonous. In order to account for the events of our ordinary experience, the propositional view asserts that there exist things in each of categories (i′)—(iii′), whereas a particularist view need only assert that there exist things in categories (i′) and (ii′).

In any case, I contend that there is significant similarity between events and physical objects. Physical objects occupy spatiotemporal regions, and so do events. However, there is one crucial difference between physical objects and events. Physical objects fully occupy the spatiotemporal regions in which they exist; but events do not fully occupy the spatiotemporal regions in which they occur.

More carefully, consider the following principle:

> (P1) For any spatiotemporal region *r* and any *x*, if *x* occupies all of *r*, then, for any *y*, if *y* occupies all of *r*, *y* is *x*.

(We can add that, for any *x* and any spatiotemporal region *r*, *x* occupies all of *r* just in case all subregions of *r* are occupied by parts of *x*.) Principle (P1) is true when the range of *x* and *y* are physical objects. It is in this sense that physical objects fully occupy spatiotemporal regions. Clearly, there are spatiotemporal regions fully occupied by a lead ball; and similarly, there are regions fully occupied by an automobile, though these regions are irregular, allowing for the unoccupied spaces in the interior and under the hood.

No doubt, it is sometimes difficult to make judgments about the precise dimensions of the regions occupied by a physical object. Consider the difficulty of ascertaining the precise region fully occupied by a large wedge of swiss cheese. In some instances, the background principles needed to make these judgments are unclear or arbitrary. For example, how I am to decide whether the region occupied by my house includes the detached garage? However, these questions of judgment are epistemic and pragmatic. The difficulty in making some of these judgments does not affect the ontological point that physical objects fully occupy spatiotemporal regions.

By contrast, events do not fully occupy spatiotemporal regions. That is, principle (P1) is false when *x* and *y* range over events. A consequence is that more than one event can occupy a spatiotemporal region. The events of Esther Williams swimming the channel and Esther Williams catching a cold, we can suppose, each wholly occur within the same spatiotemporal region. Other pairs of spatiotemporally coincidental events are: it's raining in Chicago (now) and it's growing dark in Chicago (now); Ronald's taking a shower (now) and Ronald's humming "Here Comes the Chief" (now); Alex's saluting the flag (now) and Alex's daydreaming about the Presidency (now). Another example,[5] which involves events of longer duration, is a certain adolescent boy's voice becoming lower over a number of years and his facial hair growth developing during that same period.

Davidson seems to agree that more than one event can occur in a single spatiotemporal

region, though he suggests an argument against this view.[6] Consider

(1) This metal sphere's rotating (now).
(2) This metal sphere's becoming warm (now).

Though spatiotemporally coincidental on the macro-level, it might be held that (1) and (2) are not distinct, since each is identical with the same molecular motion. However, the identities required by this argument do not obtain. Macroscopic events, on some plausible accounts, are supervenient on microscopic ones. Whether that is true or not, it is highly implausible to claim that macroscopic events are identical with microscopic ones. Moreover, even if (1) and (2) were each identical with molecular events, they would not be identical with the same molecular events. The molecular activity that appears macroscopically as rotation is different from the molecular activity that appears macroscopically as the sphere's becoming warmer.

Notice that principle (P1) is false if the range of either x or y is an event. Suppose that the metal ball becomes warmer at a constant rate throughout its entire lifespan. Then, letting x be the ball and y the event of the ball's becoming warmer, (Pl) is false. Both the ball and its becoming warmer occupy the same spatiotemporal region, but the ball itself is not identical with the event of its becoming warmer. To say that physical objects fully occupy spatiotemporal regions is not to say that they *solely* occupy these regions.

In the examples so far considered, the events involved physical objects. An event e involves a physical object o just in case there is a spatiotemporal region r such that e occupies all of r and o occupies all or part of r. Not all events, however, involve physical objects. For example, there can be spatiotemporal regions devoid of physical objects in which a magnetic field or a gravitational field changes strength, or in which the temperature changes, or in which a sound increases in intensity or an odor subsides.

An important consequence of there being events not involving physical objects is that the existence of events does not depend on the existence of physical objects. Likewise, there can be physical objects that are not coincidental with events. Suppose that, for a period of time, our metal ball remains unchanged on the macro-level. It neither expands nor contracts, neither becomes warmer nor cooler, nor so on. There is no event occurring in the spatiotemporal region fully occupied by the metal ball. The ball, no doubt, is in a certain state, but being in an equilibrium state is *not* the same as something happening to the ball. Thus, physical objects do not depend for their existence on events.

As compared with physical objects, events seem evanescent. One can touch, bite, kick or kiss many physical objects; but is does not seem possible to do the same to an event. The reason for this difference is that an event is spread over an entire spatiotemporal region without fully occupying that region. Indeed, there can be indefinitely many events within a region. Likewise, the tangibility of physical objects is due to their fully occupying the spatiotemporal regions in which they exist.

In sum, the picture is this. Physical objects and events are both concrete, spatiotemporal particulars. Their ontological status is the same, neither depends for its existence on the other. The crucial difference between physical objects and events is that physical objects fully occupy spatiotemporal regions, whereas events do not. It is time now to present this view more formally.

2. *Identity Conditions*

Identity conditions are statements that encode the nature of an ontological kind. They do this by specifying conceptually significant properties of objects of that kind.[7]

One true statement of identity conditions is that sets are identical just in case they have the same members; that is,

(3) (A) (B) [if A and B are sets, then $A = B$ iff (x) $(x \in A \equiv x \in B)$].

Quine expresses this common view about sets when he says: "Classes raise no perplexities over identity, being identical if and only if their members are identical".[8]

Another true statement of identity conditions, and one central to our concerns, is that physical objects are identical just in case they occupy the same spatiotemporal regions; that is,

(D1) (o_1) (o_2) [if o_1 and o_2 are physical objects, then $o_1 = o_2$ iff (r) $(o_1 Or \equiv o_2 Or)$],

where r ranges over spatiotemporal regions and O is "...occupies...". It is important to be clear about these identity conditions for physical objects. Sometimes it is argued that spatiotemporal continuity does not provide true identity conditions, since physical objects might have discontinuous existences. Note, however, that (D1) is not stated in terms of spatiotemporal continuity; rather, it gives identity conditions for physical objects in terms of spatiotemporal coincidence. If physical object o_1 is spatiotemporally discontinuous, then it is the same object as o_2 only if o_2 has exactly the same discontinuities.

Abstracting the form for identity conditions yields:

(IC) (x) (y) (if x and y are Ks, then $x = y$ iff Fxy).

In the case of sets, F is the dyadic property of having the same members as; and in the case of physical objects, F is the dyadic property of occupying the same spatiotemporal regions as.

Identity conditions are often confounded with *identifying conditions*. Identifying conditions are criteria for judging or telling how many of a certain kind of object there are, or for re-identifying a single, enduring object of a kind. Identifying conditions serve epistemological or pragmatic functions. Consider, for instance, the claim that S and S' are the same person just in case S and S' have the same parents and siblings. This is a rule for counting persons, and for re-identifying individual persons over time. It is useful in law courts and in psychoanalysts' offices. But it does not specify the nature of persons: since parents and siblings are themselves persons, it is circular when taken to be a characterization of persons. A true statement about the nature of persons, it seems reasonable to expect, will be unique, in that no other nonequivalent statement would also specify the nature of persons. But identifying conditions for persons are not unique: there can be many nonequivalent, true such statements. In addition to sameness of parents and siblings, identifying conditions for persons can be given in terms of sameness of fingerprints, sameness of actions performed, sameness of causal histories, and so on. Identifying conditions are true, general statements about the kind of evidence that provides good support for identity claims. But since they are evidential statements, identifying conditions are not infallible guides to identity. Although sameness of fingerprints, for example, is overwhelming evidence for sameness of persons, it is possible—in fact, physically possible—that two persons produce the same fingerprints. By contrast, true identity conditions permit no exceptions.

Sometimes identity conditions are thought to be prerequisites for using the machinery of quantificational logic. In order to quantify over a domain, there must be a criterion for distinguishing one individual from another within the domain. But this objective can be gained by a very general criterion of individuation that is not relativized to ontological types, namely, *Leibnitz's Law*, (x) (y) [$x = y$ iff (F) $(Fx \equiv Fy)$], that is, for any x and any y, x and y are identical just in case they have all and only the same properties.[9] Thus, Leibnitz's Law is sufficient for quantification over both sets and physical objects—indeed, it is sufficient for quantification over any ontological type if we do not restrict the range of x and y to particulars, since it establishes the formal requirements for distinguishing among members within these domains. Leibnitz's Law, however, is not a statement that

specifies the nature of sets or physical objects, or any ontological kind. It is far too general: it fails to indicate a conceptually significant property of an ontological kind.

In (IC), *K* stands for an ontological kind. Sets, properties, propositions, physical objects, persons, actions, events are all ontological kinds; unicorns, possible fat men, sets with nine members, and saints are not, nor are self-identical objects, or objects identical with Socrates. Some necessary conditions for being an ontological kind can be stated. Ontological kinds are kinds, and hence not universal and have at least several instances. Thus, self-identical objects and objects identical with Socrates are not ontological kinds. More to the point, instances of an ontological kind are so necessarily; that is, if something is an instance of an ontological kind *K*, then it is necessary that if that thing exists, it is an instance of *K*. Thus, saints do not constitute an ontological kind: something that is a saint can exist and not be a saint. By contrast, if something is a physical object, it is not possible that it exist and not be a physical object. These two conditions, clearly, are not sufficient: the kind set with nine members satisfies these conditions without being an ontological kind. I shall not attempt to provide the additional necessary conditions here; but rather assume that the intuitive notion of an ontological kind is reasonably clear.[10]

The property *F* in statements of the form (IC) is a property of pairs of objects that are instances of the ontological kind *K*. It is not a property of each object of this kind, not one such that an object is an instance of *K* in virtue of having it. This latter type of property, which ordinarily is monadic, is related to the dyadic property *F*, but not as a matter of logic alone. The dyadic property in the identity conditions for sets is having the same members as; and the associated monadic property, having members. But "*A* has members" does not follow from "*A* has the same members as *B*", since it might be that $A = B = \Lambda$. Identity conditions specify the nature of an ontological kind in the roundabout way of indicating a relational property that is sufficient for identity of pairs of that kind.

Statements of the form (IC) are schemata. They do not, by themselves, say what can be substituted for the variables, and, thus, do not yield, by themselves, criteria for true identity sentences. Consider (D1) again. These identity conditions are not sufficient for determining whether sentences such as "Nixon = the 37th President" or "Mt. Everest = Hilary's favorite mountain" are true. In order to obtain a criterion for the truth of particular identity sentences about physical objects, it is necessary to supplement (D1) with a semantical (that is, metalinguistic) criterion. Presumably, that statement would have the form: "For any two canonical physical object descriptions α and β, $\ulcorner \alpha = \beta \urcorner$ is true iff $\ulcorner (r)\ (\alpha\, Or \equiv \beta\, Or) \urcorner$ is true." Difficult questions remain however, about the form of canonical physical object descriptions, including how to translate definite descriptions, intentional descriptions, and demonstratives into the preferred form. To emphasize the main point, identity conditions, such as (D1), encode conceptually significant properties of ontological kinds; they do not, by themselves, provide criteria for determining whether particular identity sentences are true.

3. *Identity Conditions for Events*

With regard to instances of (IC), there is no mechanical procedure for finding the dyadic property *F* given an ontological kind *K*. For each ontological kind, it is a substantive issue what *F* is (though there are some formal constraints on *F*). In order to provide identity conditions, there must be an underlying rationale as to the nature of the ontological kind at issue.

That rationale with respect to events is that they are concrete particulars that do not fully occupy the regions in which they occur. Given that (D1) expresses the identity conditions for physical objects, the natural proposal for identity conditions for events is:

(D2) $(e_1)\ (e_2)$ [if e_1 and e_2 are events, then $e_1 = e_2$ iff $\Box\ (r)\ (e_1 Or \equiv e_2 Or)$].

Identity conditions for events, that is, consist in necessary spatiotemporal coincidence.

These identity conditions permit distinct events to occur in a single spatiotemporal region. Esther Williams swimming the Channel and Esther Williams catching a cold, despite being spatiotemporally coincidental, are distinct. For it is possible that Esther Williams swim the Channel at that time and not catch a cold, and it is possible that she catch a cold at that time but not swim the Channel then. Similarly, the metal sphere's rotating and its becoming warmer are distinct, since it is possible that the sphere rotate at that time and not become warmer and it is possible that it become warmer and not rotate.

Strictly speaking (D2) alone does not yield which pairs of events are distinct. I have assumed that it does for the sake of illustration. In order to draw conclusions about the truth-values of particular event identity sentences, such as "this metal ball's rotating = this metal ball's becoming warmer", the metalinguistic correlate of (D2) must be formulated and rules for translating ordinary event descriptions into canonical form must be provided. This matter, it turns out, is quite complex, though manageable within the framework I am now sketching. I have discussed it elsewhere, and will not do so on this occasion.[11]

The type of necessity in (D2) is stronger than physical necessity. To say that p is physically necessary is to say, informally, that p is true in all possible worlds (or all counterfactual situations, or some such) that have the same laws of nature as the actual world. If the necessity operator in (D2) were interpreted as expressing physical necessity, then (D2) would give the wrong result for some cases of distinct events that are lawfully connected.[12] For instance, suppose that e_1 is this pendulum's increasing in length during an interval and e_2 is the pendulum's decreasing in period during the same temporal interval. These events are distinct, yet they co-occur in the same spatiotemporal regions in worlds having the same natural laws as the actual world. The necessity operator in (D2), rather, should be interpreted as expressing logical necessity. Under this interpretation, the pendulum's increasing in length and its decreasing in period are distinct. It seems highly reasonable to take the underlying logic of this alethic operator to be Fey's system T (or eqivalently, von Wright's M). However, it might be that the same weaker modal logic better captures the sense of this necessity operator.

Identity conditions (D2) are silent about the structure of events. Indeed, it is compatible with (D2) that events are unstructured particulars. The rationale for stating identity conditions for events in terms of necessary spatiotemporal coincidence is to specify their relationships to other ontological kinds, in particular, to physical objects. Some authors, however, urge that the nature of events is to be seen in their internal structure, how they are put together, as it were. Jaegwon Kim, for one, defends the view that events are structured particulars.

According to Kim, the structure of an event is a physical object's exemplifying a property during a time. The heart of Kim's view can be reformulated as follows:

(D3a) For any e, if e is an event, then there is a physical object o, a property F, and a duration t, such that $e = [o, F, t]$;

(D3b) For any $[o_1, F, t_1]$ and $[o_2, G, t_2]$, if $[o_1, F, t_1]$ and $[o_2, G, t_2]$ are events, then $[o_1, F, t_1] = [o_2, G, t_2]$ iff $o_1 = o_2 \wedge F = G \wedge t_1 = t_2$.

That is, (D3a) says that events are physical objects having properties during times and (D3b) says that sameness of constituent physical objects, properties and times is sufficient for event identity. The brackets are merely abbreviatory.[13]

It might be objected that these identity conditions presuppose identity conditions for properties, and *that* is very difficult to provide. However, this objection is not defeating. While it is difficult to provide identity conditions for properties, it should be pointed out that solutions to a number of central philosophical problems—such as the relationship between mind and brain, and scientific theory reduction and meaning change—depend on an adequate statement of property identity. If (D3b) is correct, some progress will have been made by assimilating the problem of identity conditions for events to that of identity for properties.

Nevertheless, there are serious difficulties that face Kim's proposal. As I noted, some events do not involve physical objects; there are, for instance, lightening flashes, loud noises, changes in magnetic fields, and so on. The most natural way to revise the theory to cover these cases is to replace (D3a) and (D3b) with the following:

(D3a′) For any e, if e is an event, then there is a spatiotemporal region r and a property F such that $e = [r, F]$.

(D3b′) For any $[r_1, F]$ and $[r_2, G]$, if $[r_1, F]$ and $[r_2, G]$ are events, then $[r_1, F] = [r_2, G]$ iff $r_1 = r_2 \wedge F = G$.

That is, an event is a property being exemplified within a spatiotemporal region; and event identity consists in sameness of spatiotemporal regions and properties.

This revision, however, significantly alters the ontological picture. On the original proposal, events and physical objects are particulars; but physical objects are ontologically more basic than events, since events could not exist if physical objects did not. On the revised version, events and physical objects are particulars; with neither being more basic than the other: events could exist even if physical objects did not, and conversely. The revised version is closer to the informal ontological picture of Section 1 than the original version.

The primary difficulty for Kim's theory, even when revised, is providing a criterion for which properties can be constitutive of events. Clearly, some properties will not do: for example, being self-identical, being an event, being equal to π. In other cases, it is not clear whether the properties can be constitutive of events: for instance, being red, being a fast running, being identical with that table. What, however, is *the underlying principle* for making the division between properties that can be constitutive of events and those that are not event-making properties? In order to provide this principle, a conceptually significant property of the kind events must be located, and that is tantamount to stating identity for events in terms other than their structure.

To put the criticism again, Kim gives identity conditions for events in terms of their internal structure. The internal structure of a (monadic) event is a physical object's having a property during a time. But (D3a) must be supplemented by a principle specifying the range of event-making properties. That principle depends on the external relations into which events enter, not their structure alone. It is a principle that would have to appeal to a conceptually significant property of events. Statement (D3b), or (D3b′), might be true, but it does not provide adequate identity conditions for events.

4. *Change: A Test Case*

I have contended that events and physical objects are concrete particulars, and that, ontologically, they are relevantly similar. If that is correct, then the types of relationships that obtain for physical objects will be mirrored by events. Let me briefly consider one test case. Physical objects sometimes change. Do events change in the same ways?

A fundamental intuition is that a physical object changes when it gains (or loses) a property.[14] Some care, however, is required in stating this intuition. A first approximation is:

(P2) For every physical object o and times t_1 and t_2, where $t_1 < t_2$, o changes from t_1 to t_2 iff there is a property G such that o has G at t_2 and it is not the case that o has G at t_1.

(Read '<' as 'is earlier than'.) The interval between t_1 and t_2 can be small, but it cannot diminish to zero, since there are no instantaneous changes. If we permit G to be negative,

then it is not necessary to complicate (P2) by adding that *o* changes when it loses a property, since something loses a property just in case it gains a negative property.

Thus, according to (P2), the metal ball changes when it gains the property of being *n* degrees, or when it gains the property of rotating, or so on. One common kind of change for physical objects is motion. An object is in motion when it gains properties of instanteous momentum and position.

Principle (P2) is not concerned with substantial change, that is, with the coming into being or passing away of physical objects. However, it is stronger than a criterion of mere accidental change, that is, change of accidental features. An object need not remain the same sort in order to satisfy (P2); but it cannot pass entirely out of existence, that is, become something other than a physical object. If a lump of clay is made into a statue, there is a single physical object that changes according to (P2), despite the fact that it is a lump of clay at one time and a statue at a later time. But if a lump of solid fuel is burned and turned into energy, then (P2) is not satisfied, since there is no physical object at the later time to have gained a property.

There are, however, several problems facing (P2). The first is not defeating. Suppose that at t_1 the metal ball is 100° C, at sometime later, but not yet t_2, it is 150° C, and then at t_2, it is again 100° C. The ball changed during the interval t_1—t_2, but the right-hand side of (P2) is not satisfied since the ball at t_2 has the same properties that it has at t_1. One solution is to say that change consists in gaining a property during some temporal sub-interval, that is, replace the right-hand side of (P2) with this: "there are times t_i and t_j, where $t_i > t_1$, $t_j < t_2$, and $t_i > t_j$, and a property *G* such that it is not the case that *o* has *G* at t_i and *o* has *G* at t_j". Notice that this solution presupposes the principle that a physical object changes during an interval if it changes during some part of that interval. Another solution, which does not presuppose this principle, is to say that the ball at t_2 *did* gain a property it lacked at t_1, namely, the property of being 150° C at t_k, where $t_1 < t_k < t_2$. Thus, (P2) yields that the ball changed. I adopt this latter solution; however, if one is happy to accept the presupposed principle, the former solution is also available.

The property said to be gained by the ball in order to resolve this problem is being 150° C at time t_k; it is not a property such as becoming warmer during a sub-interval of t_1—t_2. The latter type of property builds in change, as it were. Using such properties in the analysis would have the effect of saying little more than a physical object changes when it has the property of changing. The original intuition for (P2) was that change consists in gaining (or losing) properties *at* times, not *during* temporal intervals. Let us assume that *F* is a *static property* if it is possible that there is something *x* and a time *t* such that *x* has *F* at *t* and there is no other time *t′* such that *x* has *F* at *t′*. Some properties that are not static are dynamic. Becoming warmer is a dynamic property; being 150° C is a static property. Having an instantaneous acceleration of 16 ft./sec.^{2} is a static property. Genuine change consists in gaining (or losing) static properties.

There is another problem for (P2) that is not easily resolved. Suppose that the Eiffel Tower gains the property of being admired by me and otherwise, let us artificially assume, remains the same. We would not say that the Eiffel Tower changed. Coming to be admired by me changes *me*, not the Eiffel Tower. Yet, (P2) yields that the Eiffel Tower changed.

The Eiffel Tower, observe, could not gain the property of being admired by me unless I existed. Compare this case with one in which the metal ball is 150° C. The ball's being 150° C does not necessarily depend on the existence of any other object. A physical object genuinely changes when its changing is independent of other objects. Revising (P2), then

(P2′) For every physical object *o* and times t_1 and t_2, where $t_1 < t_2$, *o* genuinely changes from t_1 to t_2 iff there is a static property *G* such that (i) *o* has *G* at t_2 and it is not the case that *o* has *G* at t_1 and (ii) it is possible that, for any static property *H* and any other physical object *o′*, *o* has *G* at t_2 and it is not the case that *o′* has *H* at t_2.

According to (P2′), the Eiffel Tower did not genuinely change, since it is not possible that the Eiffel Tower is admired by me and I lack the property of admiring the Eiffel Tower.

Principle (P2′) precludes a type of case that warrants special attention. Suppose that I purchase a new automobile. The auto gains the property of being owned by me and otherwise, assume artifically, remains the same. The auto did not genuinely change, since it could not have gained this property unless some other object gains a property. But unlike the Eiffel Tower case, the auto gained the property in virtue of conventional rules governing ownership. No conventions were operative when the Eiffel Tower became admired by me. Or suppose that Nancy gains the property of being a stepmother when she marries Ronald. She gains this property in virtue of the common law and the initial conditions of Ronald's having had children with a former wife. Let us label cases in which the physical object *o* gains property *G* in virtue of conventional rules and, possible, circumstantial conditions, 'conventional changes'. Conventional changes are, to repeat, not genuine changes.

A physical object's changing genuinely is an event. The metal ball's increasing in temperature 50° C during a temporal interval is an event. However, we must be careful to avoid equating the class of events with genuine physical objects changes. Some events do not involve physical objects, such as a magnetic field's increasing in strength within a specified region. Moreover, there appear to be events involving physical objects that do not genuinely change. Suppose that I refrain from partaking in the conversation at the dinner table, and remain perfectly silent and still. My refraining from conversing is an event. It is something that causes other events, such as the host becoming angry, and it is the effect of prior events. But my refraining from conversing is not an event in which I gain a nonrelational property; I have, we can assume artifically, the same properties throughout.[15]

This pattern of change in physical objects is reflected in events. The analogue for the principle of genuine change in physical objects is:

> (P3) For every event e and times t_1 and t_2, where $t_1 < t_2$, e genuinely changes from t_1 to t_2 iff there is a static property G such that (i) e has G at t_2 and it is not the case that e has G at t_1 and (ii) it is possible that, for any static property H and any other event e', e has G at t_2 and it is not the case that e' has H at t_2.

The properties G and H are properties *of* events. They are properties gained by the events during the interval t_1—t_2. Kim claimed, it will be recalled, that properties are constitutive of events. Some of these properties are dynamic. But whether or not there are properties constitutive of events, (P3) concerns not these, but properties *of* events. Note also that the temporal interval t_1—t_2 need not be identical with the lifespan of the event e.

Suppose that a hurricane intensifies during some temporal period. At the beginning of the period, it is a mild tropical disturbance but at the end of that period, it is a raging storm. According to (P3), then, the hurricane genuinely changes. It gains properties that it once lacked, for example, the property of having winds in excess of 100 miles/hour and the property of being in the Gulf of Mexico. And it would have these additional properties even if other events had been different.

It might be claimed that there is no genuine change in events, since there is no one event that gains properties. Rather, there is a sequence of brief events each having its own properties. So, the storm with winds of 50 miles/hour is not the same event as the one with winds of 100 miles/hour, though they belong to the same sequence. However, this objection overlooks the manner in which events are ordinarily conceptualized. We commonly recognize the unity of storms, despite their changing features. Evidence for this stance is that we assign proper names to storms, for instance, Hurricane Alice. Long-term events such as storms are, no doubt, divisible into parts. But from the fact that an event is divisible into parts, it does not follow that it lacks unity. This situation is similar to that of physical objects. An automobile is divisible into parts that are themselves physical objects; nevertheless, an automobile is a unified whole.

Genuine change in events is not rare. When I am eating dinner, that event gains the property of, say, being an eating of meat, then the property of being an eating of dessert. When a carpenter builds a house, the event gains, rather late in its lifespan, the property of being a nailing of roofing shingles. At the time that the carpenter started to build the house, the event lacked the property of being a nailing of roofing shingles. This property is an accidental feature of the carpenter's building the house, since he could have built the house using some other roofing material.

In the case of events, nonconventional, relational changes form an important class. Prominent among this class are causal relations. Hume, indeed, thought of causality as the cement that binds the universe. Being a cause or being an effect are properties that events gain, but not ones such that gaining them consists in genuine change. In terms of (P3), clause (ii) is not satisfied: if event *e* gains the property of causing another event, *f*, to occur, it is impossible for *e* to gain this property without *f* also gaining a static property. Principle (P3) would be satisfied if an event caused itself: but that is impossible.

The issues here are complicated, and some care is necessary. There are nonrelational changes in the offering when there is a causal interaction; but these are not genuine changes consisting in events gaining properties of being a cause or being an effect. One type of case involves substantial change. Suppose that one billard ball is at rest when it is struck by a second billard ball. The event of the first ball's moving then comes into existence. Another type of case involves an event's changing genuinely as a result of a causal interaction. Suppose that a fire is fanned by a strong wind. The wind's blowing causes the fire to gain the property of burning at such-and-such rate. It is logically possible that the fire have that intensity even if there were no other events; and thus, it is a genuine change in the fire. The fire also gained the property of being affected by the wind; but the fire's gaining this relational property is not a genuine change in the fire.

As in the case of physical objects, there are nongenuine, conventional changes in events. Suppose that, when in London, Ronald drives his car on the right-hand side of the road. The event of Ronald's driving his car on the right-hand side has the property of being illegal in virtue of the conventions about driving obtaining then and there. Or suppose that Nancy finds, to her dismay, that she has bought an antique snuff-box in virtue of having stretched during an auction. Nancy's stretching gained the property of being a signal to the auctioneer in virtue of the conventions then obtaining.

The claim that events gain properties in virtue of conventions is related to the claim made by Kim and others that events conventionally determine (or generate) other events.[16] Kim's favored example is that Socrates' dying conventionally determined Xanthippe's becoming a widow. Consider

(4) Nancy's stretching is a signaling.
(5) Nancy's stretching conventionally generates Nancy's signaling.

It is plausible to hold that (4) is true if and only if (5) is true. The truth of (5) requires fine-grained identity conditions for events. Necessary spatiotemporal coincidence provides such conditions, since it is possible that Nancy's stretching occurs without her signaling, and conversely. Observe that physical objects do not generate new physical objects in virtue of gaining relational, conventional properties. Nancy does not generate a distinct object in virtue of gaining the property of being a stepmother. The reason is that the identity conditions for physical objects, spatiotemporal coincidence, are not sufficiently fine-grained. In short, physical objects and events change in the same types of ways, except where the fine-grainness of events is relevant.

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NOTES

1 For a comprehensive discussion, see Roderick Chisholm, *Person and Object* (La Salle 1976), chap. 4.

2 See: A. Goldmann, *A Theory of Human Action* (Englewood Cliffs 1970), chap. 1; Kim, "Events and Their Descriptions", in: N. Rescher *et al.* (eds.), *Essays in Honor of Carl G. Hempel* (Dordrecht 1970), pp. 198—215 and "Events as Property Exemplifications", in: M. Brand and D. Walton (eds.), *Action Theory* (Dordrecht 1976), pp. 156—177.

3 Davidson, D., "The Logical Form of Action Sentences", in: N. Rescher (eds.), *The Logic of Decision and Action*, (Pittsburgh 1967), pp. 81—95, "The Individuation of Events" in Rescher (1970), pp. 216—234, "Events as Particulars", *Nous* Vol. 4 (1970), 25—32, and "Eternal vs Ephemeral Events", *Nous* Vol. 5 (1971), pp. 335—349.

4 Chisholm, R., *The First Person* (Minneapolis 1981), p. 11.

5 Cited by Lombard, "Events," *Canadian Journal of Philosophy* Vol. 9 (1979), p. 440.

6 Davidson, "The Individuation of Events", in: Rescher (1970), pp. 230—231.

7 I argued for a stronger version of this claim in "Identity Conditions for Events", *American Philosophical Quarterly* Vol. 14 (1977), pp. 329—337. For further discussion of the issues in the next sections, see M. Brand, *Intending and Acting* (forthcoming), Chap. 2.

8 Quine, W.V.O., *Word and Object* (Cambridge 1960), p. 209.

9 'Leibnitz's Law' is a proper name for this criterion, not an historically accurate description of Leibnitz's view.

10 An excellent discussion of ontological kinds appears in Lombard, (1979), pp. 425ff. Lombard uses the label "metaphysical category," rather than "ontological kind."

11 The most comprehensive discussion of the metalinguistic correlate to (D2) is contained in Brand (forthcoming), Chap. 2. Also see M. Brand, "A Particularist Theory of Events" in the Proceedings of the 1980 Conference on *The Foundations of Science and Ethics* (Dubrovnik 1980). This issue has been discussed by Tye, "Brand on Event Identity," *Philosophical Studies* Vol. 35 (1979), pp. 81—89, Horgan, "Nonrigid Event-Designators and the Modal Individuation of Events," *Philosophical Studies* Vol. 37 (1980), pp. 321—351, and Feldman and Wierenga, "Identity Conditions and Events," *Canadian Journal of Philosophy* (forthcoming). Cf M. Brand, "On Tye's 'Brand on Event Identity'," *Philosophical Studies* Vol. 36 (1980), pp. 61—68.

12 Or rather, the metalinguistic criterion associated with (D2) would give the wrong result.

13 See J. Kim, in Rescher (1970), and in Brand and Walton (1976). Actually, (D3a) and (D3b) concern only "monadic" events, that is, events consisting of one physical object and one property. Kim has extended this view to "n-adic" events (see J. Kim, "Causation, Nomic Subsumption, and the Concept of Event," *Journal of Philosophy* Vol. 70 (1973), pp. 217—36); but since this more general formulation introduces complications without substantial change, I shall discuss only the restricted (D3a) and (D3b).

It might be thought that the brackets are a notational variation of '< . . . >.' If so, events are abstract particulars, not concrete ones. It sometimes seems that Kim would not object to viewing events as abstract particulars (e.g. Kim in Brand and Walton (1976), pp. 160—2); but his favored view is that the bracket notation is eliminable.

14 This intuition is shared by Geach, *God and the Soul* (London 1969), pp. 65ff. Geach finds this view among "...Cambridge philosophers of the great days, like Russell and McTaggart" (p. 71).

15 The assumption in this case might be *too* artificial. It is plausible to hold that a person refrains from acting only if he takes a certain attitude toward the action. Thus, refraining from acting involves a change of mental state in the agent.

Some philosophers, including Kim, countenance enduring states of physical objects as events. If they are correct, then these are cases of events involving physical objects that do not genuinely change.

16 Kim, "Noncausal Connections," *Nous* Vol. 8 (1974), pp. 41—52; see also Goldman, *A Theory of Human Action* (Princeton 1970), Chap. 2.

* * *

PROPERTIES INTENTIONALLY CONSIDERED

Roderick M. Chisholm

Introduction

I shall present what may be called an *intentional* view of properties or attributes. This means, in part, that I will discuss the nature of properties, not by reference to the *language* we use to represent them, but by reference to the kinds of *thoughts* we can have about them. In other words, I will consider them as possible intentional objects and, in particular, as possible objects of attribution and conception. By viewing properties this way, we are able to understand their structure in a way we could not otherwise do. Thus we can distinguish between properties that are affirmative and properties that are negative; we can single out certain properties as being conjunctive and certain other properties as being disjunctive; we can distinguish between properties that are compound and those that are noncompound; and we can say what it is for a property to be simple. We are also able to throw light upon the question of the criteria of property identity.

I shall make use of four undefined concepts, two of which are intentional. The concepts are: (i) exemplification; (ii) *de re* necessity (as in "x is necessarily such that it exemplifies H"); (iii) conceiving; and (iv) attributing.

What is a Property?

We could consider defining a *property* as that which is capable of being exemplified; we would then be saying that a property is a thing which is possibly such that there is something that exemplifies it. But didn't Thomas Hobbes attribute to himself the property of being able to square the circle? He was attributing *something* to himself, but not a thing which is capable of being exemplified.

Let us rather define the concept of a property intentionally. A property is something that is capable of attribution.[1] In other words,

> P is a property = Df P is possibly such that there is something who attributes it to something.

The sense of "attribution" that is here presupposed is that of so-called *de re* believing. I assume that, in the first analysis, believing is a matter, not of the acceptance of propositions, but of the attribution of properties. For example, I am such that you attribute to me the property of standing, just as you are such that I attribute to you the property of sitting.

Basic Relations between Properties

We next note certain ways in which properties may be related to each other.
One property may be said, in the following sense, to *imply* another;

> P implies Q = Df P is necessarily such that if it is exemplified then Q is exemplified.

The property *being a wife* may be said, in this sense, to imply the property *being a husband*, and conversely. Each of the two properties is necessarily such that, if it is exemplified, then the other is exemplified. We now single out this subspecies of property implication:

P includes Q = Df P is necessarily such that whatever exemplifies it exemplifies Q.

The property of being a dog includes that of being an animal: a thing cannot have the first property without having the second.

We next introduce an important intentional relation that obtains between various properties: one property may be said to *involve* another.

Consider these four properties: (i) *being either red or round*; (ii) *being nonred*; (iii) *being possibly red*; and (iv) *wanting something that is red.* All these properties are intimately related to the property *being red*, yet they neither include nor imply it. They *involve* the property red in the following sense: each is necessarily such that it is impossible for one to conceive it without conceiving the property red.

Our definition of involvement, then, is this:

P involves Q = Df P is necessarily such that whoever conceives it conceives Q.

The examples I have just cited are cases where a property involves a property it does not imply. We should also note that many properties imply properties they do not involve. *Being red*, for example, implies—but does not involve—*being either red or round*; it also implies but does not involve the property of being either red and round or red and nonround, as well as the property of being self-identical and that of being such that 7 and 5 are 12.

We add, finally, the relation of property *entailment*. We have defined *property* in terms of the intentional concept of attribution (a property is whatever can be attributed). We now define *property entailment* in terms of attribution and necessity:

> P entails Q = Df P is necessarily such that, for every x and every y, if y attributes P to x, then y attributes Q to x.

We assume that, if P entails Q, then P implies and involves Q.

But it is possible for a property P both to imply and involve a property Q without thereby entailing Q—in the present sense of "entail". The property of *being either both round and square or such that 7 and 5 are 13* implies and involves the property of *being both round and square*, but it does not entail that property. In other words: you cannot conceive the first property without conceiving the second; but you can attribute the first property to a thing without attributing the second property to that thing. Again, the property of *being red and either not colored or round* implies and involves the property of *being round*, but it does not entail that property.[2]

One property thus entails another only if the attribution of the first property implies the attribution of the second.

Identity Criteria for Properties

If, in contemporary philosophy, one discusses a type of entity that is not an individual thing, one is confronted with the question: "What *criteria of identity* are there for the type of entity you are discussing?" I shall propose an *intentional* criterion of property identity.

Let us consider four possible criteria of such identity.

(1) The first is this: A property P is identical with a property Q, if and only if, whatever has P has Q and conversely. Adoption of this criterion would have the consequence that the property of being a rational animal is identical with that of being a featherless biped, and that the property of being a unicorn is identical with that of being a mermaid. It would also have the consequence that the property of being such that all men are mortal is identical with the property of being such that 7 and 5 are 12.

(2) The second possible criterion of property identity is this: P is identical with Q, if and only if, each of P and Q is *necessarily* such that whatever has it has the other. Adoption of this criterion would have the consequence that the property being an equilateral triangle is the same as the property of being an equiangular triangle. It would also have the consequence that the property of being red is identical with the property of being either red and spherical or red and nonspherical. One cannot conceive the latter property without conceiving the properties spherical and nonspherical. But one can conceive the property of being red without conceiving the property of being either red and spherical or red and nonspherical.

(3) The third possible criterion of property identity is an intentional one: P is identical with Q, if and only if, P and Q are related by mutual involvement—i.e. they are necessarily such that whoever conceives the one conceives the other. But we have just noted that two properties may be related by mutual involvement without being related by mutual entailment. (We had observed that the property of *being either both round and square or such that 7 and 5 are 13* implies and involves the property of *being both round and square*, but it does not entail that property.) Hence, although we are looking for an intentional criterion of property identity, we want a criterion that calls for something more than just mutual involvement.

(4) We have defined the concept of property by reference to attribution. And so let us also formulate our criterion of property identity by reference to attribution: A property P is identical with a property Q, if and only if: P and Q are necessarily such that, for every x and for every y, if x attributes P to y, then x attributes Q to y, and conversely.

Consider now the following objection to our criterion of property identity. "But surely the statement 'Red is the color of ripe strawberries' is a paradigm contingent statement of property identity. And yet it is one thing to attribute the property red and another thing to attribute the color of ripe strawberries. A person who does not know what color ripe strawberries have may be able to conceive and attribute the property red—but he will not be able to conceive and attribute the color of ripe strawberries."

We should distinguish (A) that property which, as it happens, is the color property that is exemplified by all ripe strawberries and (B) that property which is *being* that color property that is exemplified by all ripe strawberries. Property (A) is the property red; property (B) is, not the property red, but a property which, as it happens, is exemplified by the property red. It is true that a person cannot conceive and attribute the property red unless he can conceive and attribute (A) that property which is the color property exemplified by all ripe strawberries. But the above objection presupposes, mistakenly, that a person cannot conceive and attribute the property red unless he can conceive (B) that property which is *being* the color property that is exemplified by all ripe strawberries. And so one *can* conceive and attribute property exemplified by all ripe strawberries without having any conception at all of a ripe strawberry.

It is one thing to know that something has the color red, but it is another thing to know that something has the color of ripe strawberries. If you know that a thing has the color red, then you may deduce that the thing has a color which is necessarily such that, for every possible world, if a thing has that color in that world then it is red in that world. But if you know that the thing has the color of ripe strawberries, then you may *not* deduce that the thing has a color which is necessarily such that, for every possible world, if a thing has that color in that world then it has the color of ripe strawberries in that world.[3]

I turn now to the intentional structure of properties.

Negations of Properties

We begin with the following two concepts: that of the *negation* of a property and also that of a *negative* property. I shall propose some definitions which will allow us to say (i) that the property of *being red* has as its (only) negation the property of *being nonred* and (ii) that the property of *being nonred*, but not the property of *being red*, is a negative property.

Let us first mark off the notion of property contradiction:

> P contradicts Q =Df P is necessarily such that, for every x, x exemplifies P if and only if x does not exemplify Q.

The properties *red* and *nonred* may thus be said to contradict each other. But so, too, for the members of each of the following pairs of properties: "red" and "nonred and self-identical"; and "red" and "either (nonred and round) or (nonred and nonround)".

What, then, is distinctive about the relation between *nonred* and *red*? Not only does *nonred* contradict *red*; it also "properly involves" it—that is to say, *nonred* involves *red*, but *red* does not involve *nonred*. Moreover, *nonred* does not properly involve anything that both contradicts and properly involves *red*. Let us use these marks to define a *negative contradictory* of a property:

> P is a negative contradictory of Q =Df P contradicts and properly involves Q; and P does not properly involve anything that contradicts and properly involves Q.

Nonred is thus the negative contradictory of *red*. But *red* is not the negative contradictory of *nonred*, for *red* does not properly involve *nonred*. The property *red* and the property *being both self-identical and nonred* contradict each other, but, since the property of *being both self-identical and nonred* properly involves something (namely, *nonred*) that both contradicts and properly involves the property *red*, it is not a negative contradictory of the property *red*. And, although *round and square* and *green or nongreen* contradict each other, neither is a negative contradictory of the other—for neither involves the other.

We will assume that no property has more than one negative contradictory. And we will assume that some properties—for, example, that of being inapplicable to itself—have no contradictories.

We are now in a position to define *property negation*:

> P is the negation of Q =Df One of the two, P and Q, is a negative contradictory of the other.

We are also in a position to say what a *negative property* is:

> P is a negative property =Df P is the negative contradictory of a property.

A mark of a negative property would be this: it is possible that everything has the property. Thus Aristotle referred to negative properties as being infinite properties.

Conjunctive and Disjunctive Properties

A *conjunctive* property may be defined as a property that entails two properties and that is implied by everything that implies those two properties. (Since we speak of *two* properties, neither will entail the other.) The two properties are the *conjuncts* of the conjunction. The property *red and round* will thus be a conjunction of the properties *red* and *round*. But it will not be a conjunction of *red* and *both round and self-identical*, for the property *red* does not entail the latter property. The expression "red and colored" will not have a conjunctive property as its sense, for the sense of "red" entails that of "colored".

I assume that for any two properties not related by entailment, there is that property which is their conjunction.

A *disjunctive* property is a property that is related in the following way to two other properties: it involves them but does not entail them, and it is necessarily such that it is exemplified by a thing only if the thing has one or the other of the two properties. The two properties are its *disjuncts.* The reference to entailment in this definition has as a consequence that such expressions as the following do not connote disjunctive properties: "either red or both red and round".

I assume that for any two properties that are not related by entailment there is that property which is their disjunction.

Simple Properties

G. E. Moore stated that *yellow* and *good* are simple properties.[4] I believe the following concepts will suggest what he had in mind. A property may be said to be *compound* if it is either a negative property or a conjunction of properties or a disjunction of properties; a property may be said to be *relational* if it entails a property it does not include; and a property may be said to be *involved* if it involves a property it does not imply. We may now say that a *simple* property is a property that is neither compound, relational, nor involved.

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NOTES

1 This definition was suggested to me by Herbert Heidelberger.
2 Compare the distinction between the "entertainment" and the "doxastic" senses of propositional entailment in R. M. Chisholm, "Events, Propositions, and States of Affairs", in: P. Weingartner and E. Morscher (eds.), *Ontologie und Logik* (Berlin 1979), pp. 27—47; see esp. p. 31.
3 Compare Wittgenstein's observation: "It is easy to see that not all colour concepts are logically of the same sort, e.g., the difference between the concepts 'colour of gold' or 'colour of silver' and 'yellow' or 'grey'." L. Wittgenstein, *Remarks on Colour* (Berkeley 1978), p. 9e.
4 Moore, G. E., *Principia Ethica* (Cambridge 1903), p. 7.

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DER ‚UNIVERSALIENSTREIT': EIN SPRACHPHILOSOPHISCHES PROBLEM IN ONTOLOGISCHER MASKE

Kurt Weinke

Der sogenannte ‚Universalienstreit' (‚U-S'), der das gesamte Hochmittelalter hindurch die philosophische Szene Europas mehr oder minder stark beherrschte, wurde vor allem als ontologisches (und metaphysisches) Problem angesehen, da es bei ihm ja auch primär um die Frage nach dem ontischen Status von Allgemeinbegriffen ging. Doch auch in der Zeit des Rationalismus und Empirismus und selbst noch im 20. Jahrhundert werden derartige Probleme im Rahmen der philosophischen Disziplinen: Ontologie, Metaphysik, Semantik besprochen, doch nicht im Rahmen der Sprachphilosophie.[1] Und somit kann eine Kritik an der Universalien-Frage an der, in vielen Fällen, gewählten Titelfrage ansetzen, die oft lautet: „Was sind Universalia?" Mit dieser sprachlichen Form wird bereits (implicite jedenfalls) ausgedrückt, daß es sich bei ihnen um phänomenologisch aufweisbare Dinge handelt, was jedenfalls für extremere Varianten der „realistischen Position", die im 20. Jahrhundert meist als Platonismus bezeichnet werden, gelten darf. Daß dies selbst bei einem der größten Erkenntnistheoretiker unserer Zeit, nämlich bei Popper, vorzufinden ist, überrascht, doch seine These von der „3. Welt" liegt auf der aufgezeigten Linie: „Wir können also sagen, es gebe eine Art Platonischer (oder Bolzanoscher) dritter Welt von Büchern an sich, Theorien an sich, Problemen an sich, Problemsituationen an sich, Argumenten an sich, und so weiter".[2] Auch wenn Popper erklärt, daß es sich dabei um Produkte des menschlichen Geistes handelt, so ist doch seine Charakterisierung dieses Bereichs so geartet, daß sie eine Interpretation im Sinne des „Realismus" gestattet.

Allein ein Abgehen von der kategorialen Frageweise und ein Hinwenden zur funktionalen, die im gegenständlichen Fall lautet: „Wie werden Universalia verwendet?", bringt viel mehr, als man unmittelbar ersehen kann, nämlich ein Zurückdrängen ontologisch-metaphysischer Begleitfragen herkömmlicher Art, etwa, ob sie „ein eigenes Bereich von Gegenständen darstellen", wie dies Scheler von Werten behauptet.[3] Universalia werden nach wie vor als wichtiges, sprachliches Instrument angesehen und benützt und keineswegs in Form eines Locke'schen Sprachreinigungsverfahrens[4] aus der Sprache eliminiert, was der natürlichen Sprache, die wir benützen, einen großen Schaden zufügte, genauso, wie der neopositivistische Versuch, die Sprache von der Metaphysik zu reinigen.[5] Worum es also nur gehen kann, ist ein Bewußtmachen der ontologisch-metaphysischen Probleme und vor allem, daß diese nicht ein „fundamentum in re" besitzen, sondern ein solches in der Sprache!

Diese Ansicht wird vor allem von der modernen Meta-Linguistik gestützt; so konnte ihr oft zitierter Repräsentant Whorf[6] zeigen, daß derartige Fragen als Produkt der Sprachstruktur des SAE (Standard Average European) anzusehen sind, Fragen, die sich im Hopi-Indianischen nicht finden ließen, und zwar deswegen nicht, weil sie in dieser Sprache gar nicht formulierbar seien. Whorf meint, daß der eher statische Aspekt aller SAE-Sprachen Abstraktionen in Form von Substantivierungen nicht nur begünstige, sondern sogar sprachnotwendig fordere, wohingegen die Indianer-Sprachen dynamisch aufgebaut seien und daher das Verbum bevorzögen, ohne Substantivierungen vorzunehmen. Selbstverständlich darf diese Tatsache nicht darüber hinwegtäuschen, daß völlig verschiedene Sprachsysteme ihre eigenen ontologischen und metaphysischen Probleme kennen, etwas, worauf Whorf kaum eingegangen ist. Wie sehr jedoch eine bestimmte Sprache determinierend wirken kann im Hinblick auf die Strukturierung des Denkens und die Klassifizierung aller Umweltphänomene, geht daraus hervor, daß viele platonische Dialoge wohl deswegen negativ gelöst werden, weil in ihnen stets in kategorialer Manier nach einem Universalbegriff (Gerechtigkeit, Tapfer-

keit, etc.) gefragt wird, worauf es, wie Sokrates stets zu Recht betont, keine befriedigenden Antworten gibt. Vielleicht auch hätte Pirsig[7] (wie er autobiographisch anmerkt) nicht verzweifelt beim Versuch, dahinterzukommen, was „Qualität" ist, wenn er bedacht hätte, daß dieser Begriff mit dieser Verwendungsweise zum ersten Mal bei Plato auftauchte, so daß es nur sinnvoll gewesen wäre, die Etymologie dieses Begriffs zu studieren. Wenn man Pirsig den Vorwurf machen möchte, er sei einer „Sprachverführung des Denkens"[8] erlegen, so muß gleich hinzugefügt werden, daß dieser Prozeß die abendländische Philosophie mindestens seit Parmenides begleitet, dessen „ousía-Begriff" genauso wie die Aristotelischen Kategorien Universalia darstellten, die eben nicht, wie derartige Begriffe physikalisch-metaphysischer Provenienz meist gesehen werden, der Natur entnommen werden, sondern der Sprache. Diese Tatsache hat Russell bezüglich der Hauptkategorie des Aristoteles klar formuliert: „‚Substanz' ist mit einem Wort ein metaphysischer Irrtum, der auf die Übertragung der Struktur von aus Subjekt und Prädikat bestehenden Sätzen auf die Struktur der Welt zurückzuführen ist",[9] eine Einsicht, die Kant (der sich kaum um sprachkritische Fragen bekümmerte) bei seiner Kritik der Kategorientafel des Aristoteles nicht hatte, wenn er nämlich seine eigene transzendentalphilosophisch begründete.[10] Gerade Probleme der Ontologie und Metaphysik legen es nahe, ihren sprachlichen Ausgangspunkt vergessen zu lassen, was zu unbefriedigenden Lösungssätzen führt und vielleicht sogar den Vorwurf des Scheinproblems in der Philosophie (wie es Rudolf Carnap formulierte) rechtfertigt. Ich möchte in diesem Zusammenhang lieber von einem „Bumerang-Effekt" sprechen: ursprünglich sprachliche Probleme kehren in entfremdeter Manier als ontologische oder metaphysische Fragen zurück, ohne den sprachlichen Ausgangspunkt erkennen zu lassen!

Wenn ich davon ausgehe, daß bezüglich des ‚U-S' vielleicht am ehesten meta-linguistische Überlegungen zielführend sind, weil sie die Sprachbedingtheit des Problems erkennen lassen, so soll damit nicht die mit viel Einsatz betriebene Forschung in ihrer Bedeutung verkannt werden, ich glaube nur — und dies wird durch die umfängliche Literatur sehr deutlich — daß jede immanente Behandlung dieser Frage nicht zu weiterführenden Lösungen kommt, nicht in der Lage sein wird, „der Fliege den Ausweg aus dem Fliegenglas zu zeigen";[11] daß dieser Ausweg weder in einer Präzisierung des „realistischen" Ansatzes, noch in einer Reformierung der „nominalistischen" Position liegen kann, dürfte bereits klar geworden sein. Und auch der resignative Rekurs auf ein in der Chomsky-Schule beliebtes Motiv, auf die Annahme einer Universalgrammatik nämlich, wie dies bei Katz zu sehen ist: „ . . . so daß die Verwendung dieser Kategorien eins der Merkmale ist, die ein linguistisches System aufweisen muß, um eine natürliche Sprache zu sein",[12] schiebt nur eine Annahme statt einer Erklärung in die Debatte.

Wenn man bedenkt, daß es das Anliegen aller metaphysischen Strömungen war, mit ihrem Begriffsinstrumentarium den Anspruch der ontischen Adäquation erheben zu können, was jedoch mit der dezidierten Anerkennung von Universalia als in einer bestimmten Sprache bereitgestelltes Kommunikationsmittel kaum realisierbar ist, da die nicht zu leugnende Inkommensurabilitätsbeziehung zwischen Ding (Sachverhalt) und Sprache anerkannt werden muß, so sieht man, daß der Weg hin zur Interpretation von Universalia als platonische Entitäten vorgezeichnet war. Ob in diesem Zusammenhang die alte, erkenntnistheoretisch interessante Adäquationstheorie, die von einer „adaequatio rei et intellectus" ausgeht, als platonisierende, ontologische Hypothese interpretiert werden müßte, da sie jedenfalls einer bestimmten Schulmeinung des ‚U-S' entspricht, sei dahingestellt, interessant dabei ist jedoch die Tatsache, daß mit Hilfe der Vorstellung einer Korrespondenzbeziehung die alternative Deutungsmöglichkeit von Universalia (als sprachliche Abstraktionen zum Zwecke des Redens über einen bestimmten Bereich) von vornherein exkludiert wird. Ein problematischer Punkt dabei besteht darin, daß dadurch die scheinbare Notwendigkeit entsteht, für einen Begriff nachträglich eine ontische Entsprechung zu suchen. Dabei machte bereits Aristoteles den vielleicht interessantesten, aber leider nicht stärker akzentuierten Vorschlag, Universalia als Begriffe zu interpretieren, die von mehreren Dingen auf Grund ihrer konstatierten „Ähnlichkeit" ausgesagt werden können.

Aaron, hat, an diesen Punkt anknüpfend, sogar eine neue Schulmeinung begründet, wenn er erklärt: „. . . not universals *in*, but universal *between*, things, not *in rebus* but *inter res*“,[13] eine Ansicht, die ich „Relationalismus“ nennen möchte, und die zumindest den Vorteil aufweist, ontologisch neutral zu sein, da es sich hier nur um Relationen handelt, allerdings nicht zwischen Begriffen, sondern zwischen Dingen, was impliziert, daß die quälenden ontologischen Probleme quasi bei der Hintertüre wieder hereingelassen werden, eine Vermutung, die er eher bestärkt, wenn er schreibt: „It is also clear that part of the explanation of how we are able to use general words successfully lies in a natural fact“.[14]

Gerade bezüglich dieser Annahme konnten Whorf und Hoijer mit ihren Untersuchungen alternativer Weltmodelle zeigen, daß man diesbezüglich nicht von einem „natural fact“, sondern nur von einem „cultural fact“ sprechen kann, da alle, von uns für zentral im Hinblick auf die Weltdeutung angesehenen Begriffe wie: Raum, Zeit, Materie, Kausalität, etc. unserer Sprachwelt entnommen sind und nicht als „natural facts“ oder als „Erkenntnisprinzipien a priori“ und nicht einmal als konstitutiv für eine natürliche Sprache angesehen werden können. Ich glaube daher, daß es zwar keine Lösung des ‚U-S‘ sein wird, wenn man in meta-linguistischer Manier auf die Sprachgebundenheit eines derartigen ontologisch-metaphysischen Systems hinweist, daß dieser Hinweis aber doch dazu führen kann, ein altes Problem mit einer völlig neuen Methode anzupacken, die vielleicht auch neue Lösungen zeitigen wird.

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ANMERKUNGEN

1 Ludwig Wittgenstein stellt diesbezüglich eine Ausnahme dar, für den ja bekanntlich „alle Philosophie Sprachphilosophie“ war.
2 Popper, K. R., Erkenntnistheorie ohne erkennendes Subjekt, in: K. R. Popper, Objektive Erkenntnis (Hamburg 1973), S. 133.
3 Scheler, M., Der Formalismus in der Ethik und die materiale Wertethik (Bern 1954), S. 37.
4 Siehe John Locke, Über den menschlichen Verstand, Bd. II, 3. Buch (Berlin 1962).
5 Siehe A. J. Ayer, Language, Truth, and Logic (London 1951).
6 Siehe B. L. Whorf, Sprache, Denken, Wirklichkeit (Hamburg 1965).
7 Siehe R. M. Pirsig, Zen und die Kunst, ein Motorrad zu warten (Frankfurt 1976).
8 Siehe F. Kainz, Über die Sprachverführung des Denkens (Berlin 1972).
9 Russell, B., History of Western Philosophy (New York 1945), S. 202.
10 Siehe I. Kant, Kritik der reinen Vernunft.
11 Wittgenstein, L., Philosophische Untersuchungen I, § 309.
12 Katz, J. J., Philosophie der Sprache (Frankfurt 1971), S. 217.
13 Aaron, R. I., The Theory of Universals (Oxford 1967), S. 23.
14 Aaron (1967), S. 231.

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PROPOSITIONS, FACTS, AND EVENTS

A. Z. Bar-On

At a meeting of the Seminar for Austro-German Philosophy, held in Oxford, in May 1981, Dr. Bell of the Sheffield University presented an excellent account of a Theory of Thought which can, as he had shown, be extracted from Frege's "Der Gedanke". He also argued that a number of requirements essential in his view for a theory of this kind were not met, and a number of problems were left unanswered in Frege's text.

In the discussion which followed Dr. Bell's presentation, I proposed tentative solutions for three of these problems. In this paper I would like to render these considerations of mine more extensively and coherently. I owe to Dr. Bell the formulation of the problems with which I am now going to deal, as well as the first criticism of the solutions I have proposed to them.

To make my arguments intelligible I shall begin with an attempt to encapsulate Frege's conception into a number of short theses. In these theses and in my subsequent discussion I shall replace Frege's term 'thought', used in the above mentioned text in a semi-technical way, with 'proposition'. Involving, as I presume, only a minor change in the intended meaning, this move will immediately reveal the relevance of Frege's theory to recent discussions on borderline problems of Logic, Ontology and Epistemology.

The following are the six theses making up the core of what I would call the Fregean Theory of Propositions:

T1. A proposition is the sense of a sentence of a kind which can be determined in at least two ways: (a) as that to which assertive force can be added, or for which the question of truth arises primarily; or (b) as that to which interrogative force can be added. The indicative sentence exemplifies the first variety, while the yes/no question illustrates the second one.[1]

T2. When expressed by a sentence, the proposition coincides fully or partly with the *content* of that sentence; the sentence-content may go beyond the proposition expressed by it or fall short of expressing it fully. The first case occurs when certain words or phrases can be removed from the sentence or replaced by some other words or phrases, without altering the proposition expressed. The second case occurs when the identity of the speaker and/or the time of uttering the sentence and/or the place of its uttering are parts of the proposition expressed.

T3. A proposition is different from things of the external, physical world, the main difference between them being that while external things can be perceived by the senses, propositions cannot be thus perceived.

T4. A proposition is different from entities of the internal, mental world, the main difference between them being that while the latter are subjective and need a bearer in order to exist, the former exist independently of any subject.

T5. A proposition is apprehended in thought-acts, but in itself it is non-temporal.

T6. There is an asymmetry in the relation between the proposition and the actual world: while the proposition itself is unchangeable, it may (indirectly) cause changes in the world.

The problems I shall discuss here are directly connected to T1, T2 and T5; indirectly however they probably tie up with the three remaining theses as well.

The first problem is that of the identifiability of a proposition and its communicability or transferability from person to person. Frege himself raises this problem explicitly. He also attempts to solve it in the text. His first move, rather Kantian in nature, refers to the very fact of the existence of the sciences. If, the argument goes, propositions were not inter-

subjectively identifiable or communicable, science would not exist. Such a move, however, may be charged with *petitio principii.* Hence the next step: let us assume that each of us has 'his own science'. It would then be, Frege argues, quite idle to talk about truth.

This sceptical, as it were, move of Frege's can be counterbalanced, I think, by a positive argument for the identifiability and communicability of propositions. It could be done by a 'self-refutation argument' similar to the one by which Aristotle defended the Law of Contradiction. We have only to examine the situation of someone *trying to deny* the identifiability and communicability of propositions. He would have to do it by putting forward the proposition expressed by an indicative sentence like 'Propositions are neither (intersubjectively) identifiable nor communicable'. Doing that, however, he would have to presuppose the identifiability and communicability of this very proposition, by which its falsehood would be implied. His denial of the identifiability and communicability of propositions turns out to be at least pragmatically, if not logically selfrefuting.

The second problem I propose to deal with is that of the truth-value-donorship, as it is suggested by T1: what does entitle one to invest a proposition with assertive force? Or alternatively, what will make one of the two possible answers to a yes/no question the proper or correct answer to it?[2]

A natural candidate for truth-value-donorship is the *fact*. It is suggested by common sense; it has also been argued for by various authors. It is however open to objection on several accounts. First of all, how are we to render the concept of a fact? Common sense would tell us that whatever happens or had happened in the physical, material, real world is a fact; and conversely, nothing may count as fact, if it did not happen in the (physical, material, real) world. 'Fact' is made here equivalent to 'event'. This is clearly too restrictive. We are left without truth-value-donors for quite a few extensive classes of propositions, like those of the formal sciences (logic and mathematics), or those which embody value judgements; perhaps all the propositions which can be labeled theoretical or philosophical.

We could try to remove this difficulty by the Wittgensteinian device sometimes called 'the quorum feature of concepts'. We would then make the 'fact' a concept the application of which is governed not by a single criterion, but selectively by a whole set of them, the equivalence with 'event' being only one of these criteria.

Even then we shall face difficulties. As Alan R. White points out,[3] there is a noteworthy difference between a fact and an event, even if we restrict the analysis to the physical, material, external world. *Any actual event has a spatio-temporal location, which a fact does not have.*

Take the event of the attempt to assassinate the Pope, John Paul II. Its *locum* was approximately 5 p.m. on May 13, 1981, at the St. Peter's Square in the Vatican City. It happened *then* and *there.* This cannot be said about the *fact* of this attempted assassination. It was certainly a fact then and there, but it also remained a fact thereafter—for all time and everywhere—that the event in question happened then and there. If facts are still to be considered truth-value-donors for that vast class of propositions which are about events, this peculiar relationship between facts and events must be accounted for.

I propose to do it by means of a conception derived from Whitehead's Theory of Events, as presented in his *Principles of Natural Knowledge.* As a starting point Whitehead takes what he calls "the ultimate experienced fact" which is supposed to be coextensive with "the given presentation which is experience", again in his language, or simply "the whole nature". Our perceptual knowledge consists, according to this view, in "breaking up" this whole by what Whitehead calls "the Diversification of Nature". This can be performed according do different procedures which will "yield different analyses of nature into component entities".[4]

Events are one kind of such entitites, sense objects are another, scientific objects still another, etc. These different analyses may be complementary or incompatible with each other; they may have a variety of applications. This aspect of Whitehead's theory is beyond our present concern. What we want to take from it is that mode of diversification of nature

which will give us events as the central type of entity. We shall consider nature as an ordered continuity of events. On a deeper level of the analysis it will eventually appear as *one whole event*.

To understand properly this Whiteheadian conception we must focus upon an intuitively grasped fundamental property of events: their being the relata in the relation of *extension*.

> It is a property so simple that we hardly recognise it as such — it of course is so. Thus the event which is the passage of the car is part of the whole life of the street. Also the passage of a wheel is part of the event which is the passage of the car. Similarly the event which is the continued existence of the house extends over the event which is the continued existence of a brick of the house, and the existence of the house during one day extends over its existence during one specified second of that day.[5]

What is needed for the explication of the relationship between fact and event in the context of the problem of truth-value-donorship is precisely this concept of one event extending and being extended over by other events. Since this concept explains the event's transcendence of its spatio-temporal location, it may also account for the way the single event affects—by its very occurrence *there* and *then*—the whole event which is the ultimate experienced fact.[6]

An event is a fact not only in so far as it possesses a spatio-temporal location, but also because it has this other characteristic, i.e. it extends and is extended over by other events. Spatio-temporal location and extending-over are both necessary conditions for something to be an event bestowed with factuality, i.e. an actual or real event. The fulfilment of only one of these conditions would not be enough. In particular, an event would not be real if it had only a spatio-temporal location. *There are no completely isolated real events*. But then the discrepancy between the concept of an event and that of a fact has been explained, and the real event made to preserve its status of a truth-value-donor.

Let us see now whether these considerations concerning the relationship between fact and event can also be used in support of the Fregean conception of the non-temporal character of the proposition, according to which a proposition if ever true is eternally true and if ever false is eternally false.

This is the third problem with which I am concerned here, that of the time-determination of a proposition. It is directly connected with T2 and T5.

Frege might have assumed that he had solved this problem by means of his ingenious distinction between the *content* of a sentence and the proposition expressed by the same sentence:

> . . . the contents of a sentence often go beyond the thought [the proposition, in our terminology] expressed by it. But the opposite often happens too, that the mere wording, which can be grasped by writing or the gramophone does not suffice for the expression of the thought. The present tense is used in two ways: first, in order to give a date, second, in order to eliminate any temporal restriction where timelessness or eternity is part of the thought. Think for instance of the laws of mathematics. Which of the two cases occurs is not expressed but must be guessed. If a time indication is needed by the present tense one must know when the sentence was uttered to apprehend the thought correctly. Therefore the time of utterance is part of the expression of the thought.[7]

Since we have restricted our discussion to propositions about events, we may ignore here what Frege identifies as the second way in which present tense is being used. We are concerned, that is, with propositions which are expressed by tensed language proper. We must distinguish however between the time of utterance of the sentence by which the proposition is being expressed and the time of the event *spoken about* in that sentence. Out of the various combinations which this distinction yields two groups are essentially distinct, as far as our problem is concerned:

1) Past or present events spoken about at present or in the future.
2) Future events spoken about in the past or at present.

Frege's non-temporality thesis holds, clearly, I think, for propositions concerning events of the first category. Since these are events spoken about either simultaneously with their occurrence or after it, they should be taken as actual events, i.e. as *facts* deserving the status of truth-value-donors. A proposition provided with a truth-value by a fact of this kind, if true cannot cease to be true, and if false cannot cease to be false.

This does not seem however to apply to events of the second category. Future events are at most possible but not actual. Hence they cannot be taken as facts in our sense of the term and they do not deserve the status of truth-value-donors.

Now, if there are no truth-value-donors for propositions about events of this category, can such propositions exist at all?

This question should, in my view, be answered in the negative. A thought-act in which a future event is thought of, or a speech-act in which it is spoken about, does not yield a proposition in the strict sense of the term. They may yield a prediction, an anticipation, a guess, a supposition, but not a proposition. These are in important respects *different intentional objects* than propositions. It should therefore not surprise us that they turn out, when adequately inspected, neither to raise the question of truth nor be able to become the sense of a yes/no question. A prediction may succeed or fail, but not be or become true or false. A guess may be a happy or a disappointing one, but again, never true or false. A supposition, in planning for example, may turn out to have been justified or, say, fanciful, but once more, not true or false.[8]

If so, we must put a restriction on the use of the adjective 'eternal' in connection with the noun 'proposition', Whatever its application to formal or axiological or theoretical propositions, there is no point in calling propositions *about events* 'eternal'. Such propositions are rather—to use a similar metaphor—'immortal'. That is to say, with the occurrence of an event a whole cluster of propositions *emerges*, some of them true and some false. Having once emerged, however, these propositions continue to exist (or 'subsist' if you prefer) forever after, in spite of the fact that the events in question are no longer.

These concepts of the emergence and immortality of propositions, if allowed to be incorporated into Frege's theory, would bring it very close to Karl Popper's theory of the Third World.[9] As a matter of fact, on a more basic level Popper's theory could be said to be derived from "Der Gedanke", to which T3, T4 and T5 bear witness. Still, Popper expanded Frege's theory considerably, attempting to develop it into a theory of objective knowledge or even into a general theory of cultural growth and creativity. But he probably could not have accomplished this without mitigating Frege's Platonism by introducing change and emergence into the Third World. We have seen that even a restricted theory of propositions, about events only, requires a modification of the same sort.

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NOTES

1 See M. Dummet, *Frege: Philosophy of Language* (London 1973), Ch. 11 for an extensive discussion of this thesis in all of Frege's writings.

2 Cf. Dummet (1973), Ch. 10. My answer to this question, however, goes beyond Frege's position as interpreted by Dummet.

3 In A. R. White, *Truth* (London-Basingstoke 1971), p. 79ff. Cf. also D. J. O'Connor, *The Correspondence Theory of Truth* (London 1975), p. 59ff.

[4] See A.N. Whitehead, *An Enquiry Concerning the Principles of Natural Knowledge* (Cambridge 1919), Ch. 5.

[5] Whitehead (1919), p. 75.

[6] This conception is not incompatible with the one proposed by White (1971), p. 85. His solution, however, is much more ambitious. He attempts to give an analysis of 'fact' which would hold for all possible kinds of fact. As a result he arrives at a rather vague explication of the concept: ". . . *fact* is a notion which applies neither to items in the world, such as features, events, situations, etc., nor to what is said about the world, like (true) statements, but to *what* the world is like, to *how* things necessarily, or contingently, are". What my conception loses in generality, it gains, I hope, in definiteness.

[7] A. M. Quinton's translation; see *Mind*, QVol. 65 (1956), p. 297.

[8] See Dummet (1973), p. 382ff. Here too Dummet's discussion is much more extensive, referring to all of Frege's writings. As far as I can judge, my solution would be in accord with one of the possible ways of analysis suggested by Dummet. Also see Ryle, "It was to be" in G. Ryle, *Dilemmas* (Cambridge 1956).

[9] Cf. K. R. Popper, *Objective Knowledge: An Evolutionary Approach* (Oxford 1972), Chs. 3 and 4; esp. p. 155ff.

* * *

SÄTZE, SACHVERHALTE, TATSACHEN UND DAS PROBLEM DER ‚WAHRHEITSTRÄGER'[1]

Winfried Franzen

Die Frage nach den Wahrheitsträgern (truth bearers) ist hauptsächlich im Zusammenhang mit der Korrespondenztheorie der Wahrheit erörtert worden. Wenn man Wendungen wie „Wahrheit = Übereinstimmung mit der Wirklichkeit" explizieren will, ist zunächst, wie es jedenfalls scheint, zu klären, von welcher Art denn dasjenige ist, dem eine solche Relation oder relationale Eigenschaft zugesprochen wird. Ziemlich klar ist dabei noch, daß es nicht einfach die Sätze sind, von denen ‚wahr' ausgesagt wird; denn bei Sätzen mit indexikalischen Ausdrücken muß man die durch die konkrete Sprechsituation festgelegte Referenz dieser Ausdrücke kennen, d.h. in der Lage sein, sie durch sprecherunabhängige Angaben zu ersetzen. Man erhält dann das, was Quine ‚eternal sentence' nennt[2] und was andere einfach als ‚Aussage' bezeichnen. Damit ist das Problem für manche Autoren wie z.B. Quine erledigt, für andere dagegen nicht. Wenn nämlich — so könnte man argumentieren — jemand sagt: „Es ist wahr, daß Schnee weiß ist" — bezieht sich ‚wahr' dann wirklich auf einen Satz bzw. eine Aussage oder nicht vielmehr auf den Gehalt, auf das, was der Satz/die Aussage ausdrückt? Und wäre das dann nicht ein Sachverhalt (eine Proposition)? Aber wenn es sich so verhielte: hätte das dann nicht eine aufgeblähte Ontologie zur Folge, die zumindest all jenen unangenehm wäre, welche sich Occamsche Sparsamkeitsmaximen zu eigen machen?

Gibt es einen Ausweg aus diesem Dilemma? Es gibt ihn, allerdings nur so, daß man die Wahrheitsträger-Frage ihrerseits in Frage stellt. Es ist nämlich ein Irrweg zu meinen, man müsse fürs Wahrsein in ähnlicher Weise einen Träger ausfindig machen, wie man etwa fürs Rotsein ausgedehnte Gegenstände als Träger bestimmen kann. In der sprachanalytischen Philosophie gibt es nun seit einiger Zeit Ansätze, denen es vor allem um die Einsicht geht, daß Wahrheit mitnichten eine echte Eigenschaft oder Relation ist. Man könnte dieser Richtung den Namen ‚Nicht-Prädikativitätstheorie der Wahrheit' geben: sie besagt im Kern nichts anderes, als daß ‚wahr' entgegen dem äußeren Anschein kein Prädikat ist. Innerhalb dieser Theorie kann man eine Zweiteilung vornehmen, je nachdem ob bloß der genannte negative Befund herausgearbeitet wird (Ramsey, Ayer, neuerdings Williams), oder ob zusätzlich die Frage angegangen wird, welche positive Funktion ‚wahr' denn dann hat (Strawson, neuerdings Grover, Camp und Belnap).[3] Da ich aber auf Einzelheiten hier nicht eingehen kann, muß ich selber kurz versuchen zu zeigen, wie im Sinne einer wohlverstandenen Nicht-Prädikativitätstheorie die Grundfunktion des Wortes ‚wahr' in der natürlichen Sprache beschrieben werden muß. Zum normalen Behaupten oder Aussagen braucht man nicht das Wort ‚wahr'. Vielmehr äußert man einfach den jeweiligen Satz, z.B. „Es regnet". Aber neben diesem Normalfall gibt es einen Sonderfall, nämlich das Aussagen oder Behaupten unter Rückgriff auf bereits Gesagtes bzw. unter Rückgriff auf Sachverhalte, insofern sie bereits zur Debatte gestanden haben. Dazu muß ich aber auf das Gesagte, das ich meine, bzw. den Sachverhalt, den ich meine, identifizierend bezugnehmen. Dies bewerkstelligt die Sprache zum einen durch daß-Sätze („daß es regnet"), zum anderen mit denselben Mitteln, die sie bereits für die Bezugnahme auf Einzeldinge entwickelt hat, nämlich durch Kennzeichnungen („was Peter gesagt hat") und, wenn der Kontext eindeutig genug ist, durch Pronomina wie ‚das' und ‚es'. Die besondere Situation besteht nun darin, daß man auf Gesagtes bezugnimmt, um dann nichts weiter zu tun, als es selbst zu sagen, bzw. daß man auf Sachverhalte bezugnimmt, um dann nichts weiter zu tun, als sie selbst zu behaupten. Diese besondere Situation sprachlich auf möglichst einfache Weise zu bewältigen: genau *das* ist die Funktion des Wortes ‚wahr'. Am Beispiel: ich beziehe mich auf einen Sachverhalt bzw. auf Gesagtes, indem ich sage „daß es regnet" oder auch

„was Peter gesagt hat", und um dann nichts weiter zu tun, als selbst die betreffende Aussage zu machen bzw. den Sachverhalt zu behaupten, füge ich nur hinzu „ist wahr", also: „Daß es regnet, ist wahr" oder „Was Peter gesagt hat, ist wahr".

Dies ist natürlich nur ein sehr einfacher Fall, aber er reicht aus, um nun zur Wahrheitsträgerfrage zurückkehren zu können. Klar ist für die Nicht-Prädikativitätstheorie, daß es nicht um die Suche nach etwas geht, was als förmliches Subjekt einer förmlichen Prädikation fungiert. Freilich ist damit das Problem nicht einfach zum Verschwinden gebracht. Bei meinen Überlegungen habe ich mehrfach eine doppelte Ausdrucksweise verwendet, indem ich etwa vom Rückgriff auf Gesagtes *bzw.* auf Sachverhalte sprach. Die Erklärung für dieses ‚bzw.' sieht so aus:

Wenn man fragt, auf was für Entitäten ‚wahr' angewendet wird, muß man sich Einzelbeispiele vor Augen führen. Von was sage ich, daß es wahr ist? Z.B. davon, daß Cäsar 44 v. Chr. ermordet wurde oder daß Schnee weiß ist. Des weiteren muß ich auch die Fälle heranziehen, wo ich sage, daß etwas nicht wahr ist. Dies sage ich z.B. davon, daß Cäsar 12 n. Chr. ermordet wurde oder daß Schnee schwarz ist. Wenn ich nun für alle diese Einzelbeispiele einen allgemeinen Ausdruck suche, kann ich den Terminus ‚Sachverhalt' heranziehen. Andererseits mache ich jedoch von ‚wahr' in der Regel nur dann Gebrauch, wenn der Sachverhalt, um den es geht, in irgendeiner Form bereits zur Sprache gekommen ist. Daher ist die Bezugnahme auf Sachverhalte zugleich immer auch eine Bezugnahme auf Gesagtes, z.B. Sätze, Aussagen, Behauptungen. Aber es wäre höchst irreführend, deshalb nun die Sätze oder Aussagen selbst zu den eigentlichen Wahrheitsträgern zu erklären. Zwar bedarf es zur Verwendung des Wortes ‚wahr' eines sprachlichen Anlasses, aber das, wovon dann gesagt wird, daß es wahr ist, ist selbst nichts sprachliches. Denn daß es regnet oder daß Cäsar 44 v. Chr. ermordet wurde, ist nichts sprachliches.

Dies alles bedeutet aber nicht, daß ich die Wahrheitsträgerfrage einfach in einem ‚propositionalistischen' Sinne beantworten würde. Sachverhalte sind nicht Träger einer Eigenschaft namens ‚Wahrheit' wie Menschen Träger der Eigenschaft ‚Zweibeinigkeit' sind, und das Wort ‚wahr' verwendet man nicht, um etwas *über* Sachverhalte zu behaupten, sondern um — auf eine allerdings besondere Weise — Sachverhalte selbst zu behaupten. Immerhin muß es aber, wenn von Sachverhalten die Rede ist, diese natürlich irgendwie geben. Aber gibt es sie unabhängig davon, ob sie behauptet oder zumindest gedacht werden? Ich meine darauf kann man schlicht und einfach antworten: einen *Teil* der Sachverhalte gibt es in dieser Weise, einen anderen dagegen nicht. Unabhängig davon, ob sie ausgesagt oder gedacht werden, sind diejenigen Sachverhalte, die bestehen: die Tatsachen. Den Sachverhalt, daß Cäsar 44 v. Chr. ermordet wurde, gibt es — als Tatsache — unabhängig davon, ob jemand ihn formuliert. Dagegen gibt es den Sachverhalt, daß Cäsar 12 n. Chr. ermordet wurde, nicht unabhängig davon, daß jemand ihn denkt oder behauptet. Cäsar wurde *nicht* 12 n. Chr. ermordet, aber es ist möglich, daß jemand dies irrtümlich meint, hypothetisch annimmt u.a.m. Der Begriff ‚Sachverhalt' hat in unserer Sprache vor allem den Zweck, zwei Arten von Verallgemeinerung zu ermöglichen. Die erste betrifft die verschiedenen Typen dessen, was der Fall sein kann: etwa daß ein Ding die und die Eigenschaft hat oder daß zwischen mehreren Gegenständen die und die Relation besteht, etc. Für alle diese Möglichkeiten ist der Ausdruck ‚Sachverhalt' ein allgemeiner, neutraler Name. Die zweite Verallgemeinerung besteht darin, daß die Alternative ‚der-Fall-sein / nicht-der-Fall-sein' unentschieden gelassen wird. Wenn ich in bezug auf irgendeine Frage offen lassen will oder muß, ob etwas sich so und so verhält, kann ich dies auf bequeme Weise mit Hilfe des Ausdrucks ‚Sachverhalt' tun. Ich kann Wendungen gebrauchen wie: „Von welchem Sachverhalt redest du?" „Stellen wir uns doch folgenden Sachverhalt vor!" etc.

Einerseits hindert uns also nichts daran, von Sachverhalten zu reden, andererseits dürfen diese aber nicht zu geheimnisvollen Entitäten hypostasiert werden. Auch wenn wir von Sachverhalten sprechen, die nicht bestehen, so liegt darin nichts Widersinniges oder Geheimnisvolles, etwa im Sinne eines eigenen Reiches ‚idealen' Seins. Wenn Cäsar *nicht* 12 n. Chr. ermordet wurde, dann gibt es den Sachverhalt, daß Cäsar 12 n. Chr. ermordet wurde, nur so, daß

jemand ihn behauptet, annimmt oder denkt, z.B. hypothetisch oder in der Absicht zu täuschen. Und daß wir etwas denken und sagen können, was nicht der Fall ist, sollte uns nicht dazu veranlassen, nach dem ontologischen Status dessen zu fragen, was da nicht der Fall ist. Vielmehr sind die Probleme, mit denen wir es hier zu tun haben, anthropologischer Natur. Sie hängen mit der Fähigkeit des Menschen zur Negation und zur Simulation zusammen.

Und wie steht es mit dem Begriff der Tatsache? Dazu nur eine kleine Andeutung. Mir scheint, daß es auch hier heilsam ist, die Fragestellung auf konkrete Einzelfälle zu beziehen. Wer etwa für die Sprachabhängigkeit von Tatsachen eintritt, muß bereit sein klarzumachen, in welchem Sinne z.B. die Tatsache, daß es regnet, sprachabhängig ist, und das heißt ja: er muß plausibel machen, wieso es sprachabhängig ist, daß es regnet. Ähnliches ist von jemandem zu verlangen, der zwar vielleicht nicht leugnet, daß es so etwas wie Tatsachen gibt, wohl dagegen, daß es Tatsachen ‚an sich' gibt. Auch hier ist die Frage zu stellen, welchen Sinn es hätte zu sagen: Es ist zwar eine Tatsache, daß es gestern geregnet hat, aber nicht eine Tatsache an sich. Und das würde wiederum darauf hinauslaufen zu sagen: Es hat zwar gestern geregnet, aber *an sich* hat es nicht geregnet. Mir ist klar, daß es zu diesem Thema noch sehr viel zu sagen gibt, aber ich meine, wenn man die Fragestellung in diesem Lichte sieht, erübrigt sich zumindest ein Teil der Diskussion.

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ANMERKUNGEN

[1] Zur Thematik vgl. ausführlich mein Buch: Die Bedeutung von ‚wahr' und ‚Wahrheit': Analysen zum Wahrheitsbegriff und einigen neueren Wahrheitstheorien (Freiburg/München 1982).

[2] Vgl. W.V.O. Quine, Word and Object (Cambridge, Mass. ^{10}1976), S. 193.

[3] Vgl. F.P. Ramsey, Facts and Propositions, auszugsweise in: G. Pitcher (Hrsg.), Truth (Englewood Cliffs 1964), S. 16f.; A.J. Ayer, Sprache, Wahrheit und Logik (Stuttgart 1970), S. 114ff.; C.J.F. Williams, What is Truth? (Cambridge/London/New York/Melbourne 1976); P.F. Strawson, Truth, in: G. Pitcher (1964), S. 32ff.; D. L. Grover, J. L. Camp Jr. und N. D. Belnap Jr., A Prosententional Theory of Truth, in: Philosophical Studies, Bd. 27 (1975), S. 73—125.

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ACTION, DESCRIPTION, AND ONTOLOGY

Willem G. J. Iemhoff

Interpretation of a set of phenomena as an action has two components, an empiririal and a formal one. The first reflects the choice of the descriptive predicates by which the action is presented, the second consists in certain general restrictions on the propositional structure of the descriptions. In this paper I am concerned with the second, formal, component. I shall try to capture my intuitions about 'social action' by proposing some general conditions on descriptions that have to be met if these descriptions are to count as descriptions of such an action. I develop my proposal by an argued inventory of four modes of individuation of social action, indicating their ontological import.

1. *Basic and social action: co-reference.* The first formal interpretative decision about a given action, say John's hand waving, is whether it is to be taken as incorporating or not incorporating an allusion to some social context. The question of this section is: What is a non-contextual, or basic, individuation of an action? The proposed answer is: A relation between a body and a behaviour. The notion of basic action seems to be a consequence of the way we normally describe actions. This standard description has the form: By (proposition)(proposition). E.g.: 'By moving the brush John applies the paint'. This form yields the 'accordion effect' of action descriptions.[1] One can extend the instrument to the right: 'By applying the paint John covers the blot'; to the left: 'By raising his arm John moves the brush', collapse it: 'By raising his arm John covers the blot', etc.

This suggests that an action description is taken as basic if the description is not readily supplied with an antecedent by-clause. In the example the raising of the arm would be basic when we are at a loss when asked to provide an action description of the form: 'By A-ing John raises his arm'. Of course we could produce sentences like 'By contracting certain muscles John raises his arm', and probe the abysmal depths of the organism by endless subdermal vagrancies: 'By stimulating certain (sub)cortical areas of the brain . . .', 'By synthesizing certain hormones . . .' etc. By pursuing thus the chain of descriptions backwards under the skin, we lose the intuition we wanted to capture, that of an action as something 'done' by 'somebody'. I think that the reason why descriptions that eclipse under the skin are felt as arbitrary and odd ways of presenting an action, is simply that subdermal facts are not available to the typical learner of the language, the child. Therefore such descriptions cannot be part of the general competence of the socialized person to conceive of actions. Such a conception must refer, basically, to the body as a primitive datum. I shall call such a datum 'molar'. Here then we have a first condition on action descriptions. They should contain a reference to a primarily given body without subdermal parts, a 'molar body'.

One would be inclined, then, to represent the form of a basic action description as: Verb(x), where x refers to (molar) bodies. This form however would miss the point that actions, as behaviours, are events. This is also true for so-called negative actions. If we interpret John's refusal to paint the wall as an action, our description must be able to refer not only to some body but also to some behaviour, the behaviour that basically is this refusal, e.g. John's raising his arm, waving his hand, or shaking his head.

There are two general arguments for an ontology of events.[2] The first is Davidson's adaptation of an argument of Frege, concerning the reference of declarative sentences, to action sentences.[3] On this argument, given some plausible principle of substitution, all true action sentences would stand for one object, the (one) Event. This seems absurd. Davidson concludes that an action sentence does not describe an event, but that whenever such a

sentence is true there is an event that makes it true. There is, he writes, an "unrecognized element of generality in action sentences".[4] Representation of this element seems to require addition of an extra variable, for 'events', to the habitual ones for things or substances, to predicates expressing actions. For actions that are potentially social, this would mean that their basic form should contain reference to a behavioral event y, as well as to a body x.

The second general argument for an ontology of events proceeds from the phenomenon of explanation. Every explanation presupposes the possibility of redescription of 'the same' datum. To understand that the local rise in temperature explains the melting, we must be able to redescribe this rising and this melting in certain ways (talk of molecular movements). To understand that this love explains this hatred, we must be able to redescribe both in certain ways (talk of projections and desires). Now the addition of descriptions characterizing social aspects of the action to the basic action description can be seen as explanations of the social nature of the action. But then these other descriptions must refer to the same action; that is, their formal representation should contain a symbol that guarantees co-reference with the basic description. This is the logical function of the basic individuation form Verb(x, y): to fix points of co-reference for the further descriptions required to elucidate the social character of the action. From these considerations it follows, first, that there is no class of 'basic' actions but that every social action can be individuated in part by a 'basic' relation of a (molar) body and a (molar) behaviour, as Verb (x,y); and second, that this basic form yields two possibilities of co-reference for further descriptions: by reference to molar behaviour y or to molar body x. I shall argue in the next two sections that these two possibilites of co-reference with a basic description define two further modes of individuation of an action: intention (2) and motivation (3).

2. *Means and ends: intention.* A second formal interpretive decision concerning a given description is whether it is to be taken as description of a means or of an end. The question of this section is then: How can the distinction between means and end conceptions be represented? In answer to this question I introduce a distinction between the object of action as argument of a simple relation on the one hand, and as index-term within a complex predicate on the other hand.[5] Typically (not always, but in cases that offer criteria for the notion 'social action') an action is instrumentation and/or production. It follows that an action not only introduces 'bodies' and 'behaviours' as basic wholes, but also objects of action. The argument of this section proceeds from Kenny's distinction between activity and performance verbs.[6]. In my view this distinction is functional, not lexical. Verbal constructions can function in both ways. Take John's knitting a sweater: is it an activity or a performance? On Kenny's main criterion both can be the case. Does the fact that John is knitting a sweater today imply that tomorrow 'John has been knitting a sweater yesterday' will be true? Yes: Knitting a sweater is knitting-a-sweater, that is after all the action he is engaged in. No: Knitting a sweater may produce a scarf, as even Kenny allows. An end-description of an action ('yes') absorbs the name of the object or material of the action (to be referred to as x_1) in the predicate that gives the intention of the action; we have the form '(Predicate-x_1) (y)'. In the interpretation as a means ('No') the action is represented as a relation of an object or material with the basic behavioral event y: '(Predicate) (x_1, y)'. One way, then, to 'socialize' an action, is to add the description of some intention to its basic form. Such a description can be taken as rendering a means or as giving an end. These two modes correspond to two ways of representing a new ontological item, the 'matter' of the action, as, respectively, argument of a simple relation of matter and basic behaviour, or as index-term of a complex predication of the basic behaviour. Co-referentiality of the three descriptional modes encountered so far, basic, means and end, is secured by the presence of reference to the behavioral base y in each predication.

3. *Intention and motive: reflexion.* A third general decision requires a distinction of individuation of the action by its material intention, as discussed in section 2, from indi-

viduation by its emotive concern. The former mode I call simply 'intention', the latter 'motivation'. Why do we need this distinction, and how are we to represent these modes in such a way that our intuitions about their similarity and their difference are captured? The answer is that we need it to account for our competence to understand phenomena of reflexion, and that motives are partly analogous to intentions but differ from them in a general way. Our ability to recognize phenomena of conduct that are referred to in the literature as defence, bad faith, self-deception, or neuroticism, is of utmost importance in daily life as well as in the offices of the clinical psychologist and psychiatrist. Here I take as a lead to logical representation the approach, suggested in hybrid terminology ('unconscious' means in fact 'in a certain mode of consciousness') by Freud and analytically (and prolifically) developed by Sartre, of these phenomena as strategies of an actor. This strategy is reflexion: the action is individuated here, not by basic reference of the chosen descriptions to a molar behavioral event, but by reference to a 'self', that is to the molar bodily thing that, precisely by being point of co-reference of further descriptions, is 'socialized' as a 'self', a 'person', in short as a reflexive 'I'. The intuited similarity of intention and motivation is caused by the fact that motivational individuation of an action also shows a kind of means—end structure: whereas in the mode 'intention' we approach the conduct primarily as instrumental manipulation of things x_1 towards some productive end, we take it in the motivational mode rather as reflexive expression of behavioral events y_1 (blushing, trembling, etc.) towards some end, the motive. According to this view motivational individuation of action has ontological import analogous to intentional individuation: both 'add' particulars to the basic ontology of the action. Intention enmeshes things or materials x_1, other than basic bodies x, in the action; motivation weaves events or behaviours y_1, other than basic behaviours y, into its texture. Concerning now the representation of the 'added' particulars y_1, we have the same ambiguity as the one we considered in section 2 for x_1: is the motivational event y_1 (the 'expression' or 'emotion', etc.) argument of a simple relation of added event y_1 and basic body x, or index within a (then complex) predicate of body x? Let us summarize this in a nice little scheme: Intentional (material) individuation of an action is attributing the forms (Predicate) (x_1, y) and (Predicate-x_1) (y); motivational (reflexive) individuation is attributing the forms (Predicate) (y_1, x) and (Predicate-y_1) (x) to a basic form (Verb) (x, y).

4. *Situation and fact: conditioning.* The overstretching of the descriptive accordion to the left has its counterpart on the right hand side: By covering the blot John wins the contest, thus the princess, thus the crown, etc. Whereas left hand overstretching tends to reduce the action to mechanism, right hand extensions run the risk of an opposite eclipse of the action in cosmic consequences. The actor would have his dreams realized: by a simple manipulation he becomes a demiurge. On the left hand side we saw reason to stop at the level of the skin; where are we to stop here? I suggest that this question marks another requirement on individuation of an action, the decision to interpret it either as a final 'fact', or as component of a 'situation' that is still compliant to further descriptive stretch. Logic knows of two ways in which propositions can be related inferentially: as sufficient or as necessary conditions. Let us take 'moving the brush' as a means description, and 'applying the paint' as an end description. If we interpret the conduct under consideration as being such that without this moving of the brush there would be no application of the paint, we take the means, the brushmoving, as necessary condition for the end, the paint application. Conversely, we can take the conduct as being such that the conception of this brush moving here permits the conception of the action as paint application. In that case we take the means to be sufficient for the end. Now consider a description p: 'By moving the brush John applies the paint', and a description q: 'By applying the paint John covers up the blot'. Let p render the action as primarily considered, and q its interpretive context or background; call a form C (p, q) a 'context' of p, where 'C' is a relation of conditioning of descriptions. Then a context originates in the interpreting of an end-conception of a primarily considered action p as a means-conception of its interpretive background q.

If means and end conceptions of the first action, p, are related in the same mode of conditioning as those of the second, q, we have transitivity of conditioning. It that case the relation C (p,q) collapses into a new conception of the action, say r: 'By moving the brush John covers up the blot'. In this case I say that the action p is individuated, by absorption of its background q, as the fact r. In the other case, where intransitivity of means-end conditioning of action p and background q prohibits situational collapse we have to stay with the concept of situation.

Valuation is primarily concerned with actions in context, therefore with this last mode of individuation. This mode is however based in the other three modes. These other modes introduce ontological kinds. Therefore, valuation has indirect ontological import.

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NOTES

1 Feinberg, J., "Action and Responsibility", in: Alan R. White (ed.), *The Philosophy of Action* (Oxford 1968), p. 106.

2 The general arguments are backed up by observations in linguistics (nouns like 'birthday' or 'wave'), epistemology (time relations in general, and causal relations in particular, suggest events as particulars) and logic (an ontology of events permits a treatment of adverbs analogous to adjectives: as first order predicates).

3 Davidson, D., "The Logical Form of Action Sentences", in: N. Rescher (ed.), *The Logic of Action and Decision* (Pittsburgh 1967a), p. 81—95; and Davidson, D,. "Causal Relations", *The Journal of Philosophy*, Vol. 64 (1967b), p. 691—703.

4 Davidson, D. (1976b), p. 691.

5 This difference between a name as argument and as index was indicated twice by L. Wittgenstein, *Tractatus Logico-Philosophicus* (London 1921, 1961), § 5.02, and Wittgenstein, L., *The Blue and Brown Books* (Oxford 1958), p. 21.

6 Kenny, A., *Action, Emotion, and Will* (London 1963), p. 171 ff.

* * *

TOWARDS A GENERAL THEORY OF INDIVIDUATION AND IDENTIFICATION

Jaakko Hintikka and Merrill B. Hintikka

1. *The importance of possible worlds*

By far the most important recent development falling under the scope of this meeting, "Language and Ontology", is the somewhat amorphous body of ideas, conceptualizations, and results which is best known as *possible-worlds semantics.*[1] Its eminence is well founded. We consider it as self-evident as anything in philosophy that we cannot do justice to actual human experience without a conceptual system that includes *possibilia.* It does not suffice to speak of different objects, different properties, different relations etc.; at some point we also have to speak of different things that can happen or could have happened. Our life is intrinsically and inevitably acted against a backdrop of unrealized possibilities. Jaakko Hintikka has articulated this idea by connecting the use of unrealized *possibilia* with the concept of intentionality in which several philosophers, notably Husserl, have seen the gist of human thinking, and outlined a theory of intentionality based on this relationship.[2]

The need of considering unactualized *possibilia* means that our logic must be such that in it we can handle different and incompatible entities of the same logical type as facts: possible states of affairs and possible courses of events. And the model theory of these counterfactual entities is (in its basic aspects) precisely what is known as possible-worlds semantics. This theory therefore ought to be an absolutely vital part of every philosopher's repertoire. Its power is shown in a dramatic way by the way it can be used to solve the basic problems concerning nonextensional contexts which Frege thrust to the center of attention of logicians, philosophers of language, and ontologists.[3] These problems have paradigmatic manifestations in the failure of the plausible-looking logical principles of the substitutivity of identity and existential generalization in intensional contexts. The suspicions of possible-worlds semantics which are still frequently voiced in the literature are not only unfounded; they amount to a monumental refusal to follow some of the most promising insights in contemporary philosophy.

2. *Some main problems of possible-worlds theory*

This does not mean, however, that a philosopher cannot entertain well-founded reservations vis-à-vis possible-worlds semantics. Indeed, possible-worlds semantics is certainly not the last word on the subjects with which it deals. On the contrary, it quickly leads in almost every direction to further problems which are deep, important, and far from easy to solve. It would be a serious mistake, however, to take these problems to constitute an objection to the basic ideas of possible-worlds semantics. On the contrary, we consider it a tremendous advantage of possible-worlds semantics that it leads us to raise these profound and profoundly significant problems and to formulate them with a clarity which typically promises further insights into them and in some cases even definitive solutions. We see one of the major merits of possible-worlds semantics in the fact that it has prompted these problems. Possible-worlds semantics has said the last word on a number of limited problems. This is not its claim to importance, which rather lies in the fact that possible-worlds semantics has said the first serious word on a large number of deep problems.

This paper can be seen as a case study, illustrating the general diagnosis just proposed.

The one particular problem we shall mainly discuss is that of cross-identification. In spite of its apparent narrowness, it soon leads to some of the most central issues in contemporary philosophy, including philosophy of language, metaphysics, and philosophy of science. It also overlaps with two other general problems which arise natually within possible worlds semantics. They are the problem of basic semantical relationships, mentioned as problem (iv) below, and the interrelations of individuation and identification, mentioned as problem (v) below.

In order to put our enterprise into a perspective, it may nevertheless be in order to illustrate the general diagnosis we have offered by means of examples of parallel problems.

(i) Even though the basic ideas of possible-worlds semantics appear unproblematic, they lead to serious problems as soon as one tries to absolutize them in the sense of considering complete possible worlds and complete sets of *possibilia*.[4] This second attempt turns out to be especially dubious for sharply defined concurrent logical reasons. The idea of a fixed set of possible worlds, so dear to Leibniz who even conceived of the god as choosing between the members of such a "logical space" of all possible worlds, is hence extremely dubious, and well-nigh incoherent. Other problems arise in trying to think of the different alternatives which have to be considered together in possible-worlds semantics as entire (complete) worlds. Hence the customary label "possible-worlds semantics", originally inspired by Leibniz, has proven seriously misleading. Perhaps we should rather speak of *possibilia*-semantics or the semantics of alternative scenarios.

One possible cure lies in limiting the class of possible worlds to those which are accessible to our conceptualizations and knowledge-seeking activities. Such a "transcendental" limitation on the class of possible worlds would parallel in an interesting way Kant's program in his *Transzendentalphilosophie*, but this modern counterpart to the Kantian program has scarcely been formulated, let alone carried out.[5]

(ii) One of the stock objections to a possible-worlds analysis of such intensional (and intentional) notions as knowledge, belief, memory, and indeed all the other propositional attitudes is that it seems to give rise inevitably to the problem of "logical omniscience": each person is asserted to know all the logical consequences of what he or she knows, to believe all the consequences of what he or she believes, etc., and even to know and believe that his or her neighbors do so.

A possible cure has been suggested by Jaakko Hintikka, first along proof-theoretical lines[6] and later—using Rantala's seminal concept of an urn model[7]—also along semantical (model-theoretical) lines.[8] This solution, as well the problem to which it is a solution, turns out to have an intimate connection to several central classical problems and doctrines in the history of philosophy, especially the philosophies of logic, mathematics, and psychology. They include, prominently, Kant's views on mathematics, space, time, and the analytic-synthetic distinction,[9] Aristotle's logic and his theory of action,[10] and Peirce's "first real discovery".[11]

(iii) On the basis of possible-worlds semantics, one can build a genuine semantical theory of questions and answers.[12] However, particularly in its applications to natural languages, this theory turns out to be handicapped by certain hidden limitations. The most important limitation turns out to be the assumption of compositionality which is often ascribed to Frege and which says that the meaning of a complex expression is a function of the meanings of its constituent parts.[13] In spite of being a cornerstone of much of twentieth-century logical and linguistic theory, this assumption is arguably inadequate to handle the semantics of natural languages. (An argument has in fact been produced by Jaakko Hintikka.[14]) This motivates a critical look at the foundations of most of twentieth-century thinking on the logical analysis of language.

(iv) Perhaps the most general new (new in this context) problem is the question of the basic representative relations between language and the world. What the logicians are wont to do is to assume one such set of basic referential relations as being given at any one time, and study what happens to the references of complex expressions on the basis of these

fundamental relations of reference. A case in point is the logic and ontology of Wittgenstein's *Tractatus*, where the basis of language is one given fixed set of name-object relations.[15] Both the other leading ideas of *Tractatus*, the so-called picture theory of language and the theory of truth-functions, can be viewed as (eminently successful) efforts to spell out how the meaning of atomic propositions (picture theory) and complex propositions (truth-function theory) is determined on the basis of those name-object relations.[16]

In a relativized form we find the same situation in Tarski-type theories of truth, which all operate in terms of unanalyzed "valuations" or "assignments".[17] They are not related to each other in any significant way or analyzed so as to enable us to see what they consist in. Basically, all that happens in logical semantics is an examination of how the references (including truth-values) of complex expressions are determined on the basis of such primitive valuations.

In possible-worlds semantics, we have to consider the references of our expressions in more than one "world". This means that, if we follow the received research program of logicians and logical semanticists, we have to take much more for granted than we do in extensional languages. It does not suffice to specify the references of all our expressions in the actual world, i.e., to assume one valuation function which assigns a reference to each basic symbol. Instead, we have to assume, for each primitive expression of our language, a (partial) function ("meaning function") which specifies its reference (if any) in different possible scenarios ("worlds"). For instance, what was a name with a single individual as its reference now has as its meaning (reference) a function ("individuating function") which for each given world defines the embodiment of the particular individual in question in that given world.[18] (A way of visualizing such a function is in the form of an imaginary "world line" which connects those several embodiments of the same individual with each other.) The totality of such world lines defines what counts as (correct) *identification* of individuals.

If we do this, it is indeed possible to extend the Tarski-type approach to possible-worlds semantics. Indeed, Montague semantics is but this observation writ large.[19] However, it becomes more and more unsatisfactory to leave this whole complex network of basic meaning functions, world lines, etc. totally unanalyzed.

Worse still, as some critics of possible-worlds semantics have not been slow to point out, the way in which to draw the world lines is more strongly dependent on the context of use and other pragmatic factors than most of the other aspects of natural-language semantics.[20] This is in reality no ground for criticism, however, only a pointer to supplement present-day formulations of possible-world semantics by a theory of how world lines are to be drawn —and how the other types of meaning functions are actually chosen in our own conceptual system. The context-dependence of these choices shows that other factors are at work here than are considered in traditional logical semantics.[21]

Once again, the new problems into which possible-worlds semantics leads us are highly interesting. On the one hand, the specific differences between different ways of drawing world lines (identifying individuals) are often highly interesting. The differences are sometimes of a logical nature, as in Jaakko Hintikka's distinction between identification by acquaintance and identification by description.[22] Sometimes they are connected with problems in the philosophy and even the substantive theory of various disciplines. For instance, the differences between different conceptions of the self can often be interpreted as being differences between different methods of identification.[23]

On the other hand, the study of identification opens the door for understanding ideas and theories which had not been connected with the theories in logical semantics. Later in this work, we shall try to indicate one important connection of this kind.

In spite of this potential value of an inquiry into the principles of human identification procedures, logicians tend to brush them under the rug. For instance, Kripke has recently claimed that the concept of a permanent (enduring) material object must be taken for granted and not analyzed in some more basic terms.[24] We shall later in this paper show that this claim is not well founded. Maybe the criteria of identification must be taken for granted

if one is only interested in doing traditional logic and logical semantics. However, this does not mean that the problem of identification does not present a most important challenge to philosophers. This is one of the challenges to which we are trying to rise in this paper.

(v) This challenge is connected with another item of unfinished business. We have been speaking of the problems of identification. They comprise both the problem of cross-identification (identification of the inhabitants of different "worlds") and the problem of re-identification (identification of entities at different times of the same temporal course of events). It is not hard to believe, even apart from Jaakko Hintikka's specific arguments,[25] that the two problems are interrelated.

In both problems, a sweeping assumption is being made, an assumption which possible-worlds semantics helps us to uncover and to question. In both cases, it is assumed that the structures whose members are being compared with each other for identity—in the one case, possible worlds, in the other, different temporal cross-sections of one world history—have as it were already been articulated categorically into individuals, their properties and relations, etc. We shall refer to this articulation as the *individuation* of the ingredients of the "world" in question. The problem here is not just that this presupposition of the enterprise of identification has not been spelled out. There is no reason to think that identification can be understood in isolation from individuation, and some *prima facie* reasons to think that they are not independent. Hence even those happy few philosophers who have as a matter of fact discussed the problems of identification have missed a relevant piece of their puzzle.

A modest attempt to correct this state of affairs will be made later in this paper.

3. *The problem of cross-identification*

The problem which we shall use as one guideline in this paper is precisely the problem of cross-identification. Perhaps the simplest (and at the same time highly important) context in which it comes up is the possible-worlds explanation why existential generalization (EG) fails in intensional contexts.[26] Formulated in abstract terms, EG seems unproblematically valid. If something, say A (b) is true of a suitably specified individual, say of b, then surely we can infer that the same thing is true of some individual or other, i.e., infer $(\exists x)\ A\ (x)$. Looked upon in the light of an example, however, EG appears trivially invalid. From

(1) Victoria knows that her favorite book is written by Lewis Carroll

(where "Lewis Carroll" plays the role of "b" in the abstract formulation) we obviously cannot infer

(2) $(\exists x)$ Victoria knows that her favorite book is written by x.

Indeed, (2) obviously says the same as

(3) Victoria knows who her favorite book is written by,

which makes it completely clear that (2) ($=3$) does not follow from (1).[27]

The possible-worlds explanation of the failure of EG is that the term 'b" may pick out different individuals in different worlds we are considering in intensional contexts. If so, there is no single individual whose existence can be asserted in the way this is done in the alleged conclusion $(\exists x)\ A\ (x)$.

This is precisely what happens in (1)—(2). For there the worlds involved are Victoria's knowledge worlds (worlds compatible with everything she knows). But if so, the *nom de plume* "Lewis Carroll" picks out different individuals in some of Victoria's knowledge worlds

unless she knows who Lewis Carroll is. If she does, the truth of (2) does follow from that of (1). If she does not, as is eminently possible, the conclusion does not follow.

The one aspect of this elegant and powerful explanation which interests us here is that in it an appeal was made to the notion of identity and non-identity of individuals in different worlds. In brief, one of the basic moves of possible-worlds semantics—the explanation of the failure of EG—thus strongly presupposes the possibility of cross-identification.

If possible worlds semantics is on the right track, we do in our conceptual system somehow manage to cross-identify. One way of seeing this is to note the equivalence of (2) and (3). By the same token, the simpler sentence

(4) $(\exists x)$ Victoria knows that Lewis Carroll is x

which says model-theoretically precisely that "Lewis Carroll" picks out one and the same individual x in all of Victoria's knowledge-worlds, is synonymous with

(5) Victoria knows who Lewis Carroll is.

From these examples it is seen that propositions of the type *knowing* + a wh-word have objectively defined truth-conditions (objectively defined meaning) precisely to the same extent that we can cross-identify.[28] Even though the former objectivity is *prima facie* not beyond question—as Quine has aptly brought out[29]—we are in any case dealing with down-to-earth questions of meaning here.[30] Closer examination will convincingly show, we believe, that we do follow objective principles of cross-identification, even though our choices between them are more heavily dependent on pragmatic factors than the rest of our semantics.

Assuming, then, at least for the sake of argument, that we can cross-identify, how do we manage to do so? This is one of the places where the too grandiose connotations of the term "possible world" seem to have misled some philosophers.[31] They have thought of possible worlds as entire universes, each self-sufficient, without any communication or overlap. Then it is hard to see how one can identify individuals in so discrepant frames of reference. We don't believe it to be entirely accidental that Leibniz, the most influential adherent of the undiluted possible-worlds idea, ended up considering any two individuals occurring in two different worlds as different.[32]

4. *Cross-identification by spatiotemporal continuity*

But if the *possibilia* between which we are cross-identifying are alternative states of affairs or courses of events in a small part of the world, it is a different story. For one reason or other, the "possible worlds" we are considering typically have a relatively large part in common, or else can be extended so as to share such a common part. For instance, in considering a small part of the universe, we usually keep the rest of the world fixed. In making alternatives to different parts comparable with each other, we have to extend them; and in so doing we normally have to rely on assumptions which result in the extensions sharing a sizable common part. In an extreme but not atypical case, the different possible worlds are different possible continuations of a shared past history.[33]

Such a common ground can be used for the purposes of cross-identification. Suppose that we are given a (manifestation of a) physical object i_1 in a world w_1 and another physical object i_2 in another world w_2. How can we try to find out (in principle) whether or not i_1 and i_2 are the same individual? What one can do is to follow each of them in space and time in its respective world toward the common ground by means of spatiotemporal continuity. If they coincide there, they are identical, if not, not. If we cannot trace them to the common ground, this method fails. In such a case, we are likely to consider the two individuals different.

Being able to follow an individual in space and time is essentially what the task of re-identification is addressed to. Hence the account just outlined due to Jaakko Hintikka amounts to a partial reduction of *cross-identification* to re-identification. For the main burden in cross-identification falls in Jaakko Hintikka's scheme on being able to follow in principle an individual in space and time toward the common ground. Here the advantages of not considering each possible world in splendid isolation from others are beginning to tell.

This account has to be supplemented by further considerations concerning the cross-identification of abstract objects, which we will not try to provide here. However, that problem of cross-identifying abstract entities clearly is not the direction in which the major problems lie. It is not the abstract objects like numbers whose cross-identification is likely to be problematic in the first place.

This admittedly partial account of cross-identification can serve as a basis of highly interesting arguments concerning the role of the origin of an individual in cross-identification, which John Locke[35] and later Saul Kripke[36] have made so much of; concerning the role of causation in cross-identification; concerning the special position of events (including actions) vis-à-vis cross-identification (they cannot be moved around space-time, and hence can be cross-identified only when they are on the common ground of the worlds we are considering on a certain occasion); and concerning the consequences of this special position (the cross-identification of events relative to a propositional attitude; the problem of contingent future events reappears as a difficulty of cross-identifying them; etc.). However, we shall discuss these conclusions only after we have first secured a better foundation for the underlying theory.

Hence we shall for the time being focus on the even more central problem of precisely how cross-identification can take place. The account just outlined was suggested by Jaakko Hintikka. Recently it has been justifiably criticized from two different directions. On the one hand, Saul Kripke[37] and W. V. Quine[38] have pointed out how difficult it is to make precise sense of the idea of spatiotemporal continuity on which the first part of Jaakko Hintikka's account was based. The second part has been criticized by Esa Saarinen,[39] who has argued that the identity of even such individuals as make their appearance on the common ground of a number of possible worlds is not always well defined for all those worlds. His point is undoubtedly well taken. For instance, in epistemic contexts these individuals are all those of which the knower in question positively knows something under some description or other. If world lines passing through them were unproblematic, we would know of all of them what or who they are. This is clearly not the case in real life, however. Hence Saarinen's point is well taken.

Moreover, the idea of a "common ground" shared by a number of possible worlds has to be handled with care. Primarily, we are not dealing with a common part of space-time, but a shared store of facts. For instance, in the case of knowledge, the "common ground" is the totality of known facts. ("Common ground is a totality of facts, not of objects", we could say, parodying Proposition 1.1 of Wittgenstein's *Tractatus*.) It is only by courtesy of further assumptions that we can hope to reify the former totality into a shared spatio-temporal part. And when we cannot do so, the use of continuity in cross-identification seems to be a lost cause.

All this shows that a deeper account of cross-identification is badly needed. It is our self-imposed task in this paper to present the basic ideas of an alternative, detailed account of re-identification and thereby also of cross-identification.

5. *A differential-equation model of the re-identification of mass points*

Jaakko Hintikka's account has nevertheless persuaded some critics in one major respect, perhaps even to a slightly higher degree than he originally intended. Both W. V. Quine and

Saul Kripke appear to be saying now that we would be able to cross-identify (at least up to a point) if we only could re-identify.[40] (Of course these two philosophers draw opposite conclusions from this predicament. Quine now considers re-identification as a highly suspect enterprise, while Kripke urges us to take the re-identification of physical objects for granted.) Hence it is not entirely misleading to illustrate the general problem of cross-identification by a simplified version of the re-identification problem. This is Flatlander's[41] re-identification problem, the problem of re-identifying two-dimensional objects in a changing two-dimensional world.

To simplify (or perhaps rather to complicate) the problem further, let us imagine first that our Flatlander's world is a world of (two-dimensional) hydrodynamics. At each geometrical point there is at each time a point mass. These are moving around in some way or other. They can of course have properties and relations. Since we are here restricting our attention to re-identification by spatiotemporal continuity, these properties and relations will not play any role in what follows, however.

Now it is obvious that simply by comparing the states of our Flatland at different moments of time there is absolutely no hope of re-identifying between these time-slices by anything like continuity. Even a Leibnizian God couldn't decide who's who and what's what in the different successive states of our Flatland just by looking at these states one by one completely frozen and unrelated to each other. Something else has to be given for re-identification by continuity or anything like that to make sense. What is that additional information?

It is here that our main suggestion comes in.

By way of a thought-experiment, we shall assume that the imaginary Leibnizian God sees something over and above the different frozen momentary states of the world. Let's assume that He (or She) also sees how each state is changing at the time in the sense of seeing the velocity vectors of each mass point at the time. Less metaphorically expressed, we are assuming that for each point mass with co-ordinates x, y, we are given the components of its velocity vector in the form of given functions f, g:

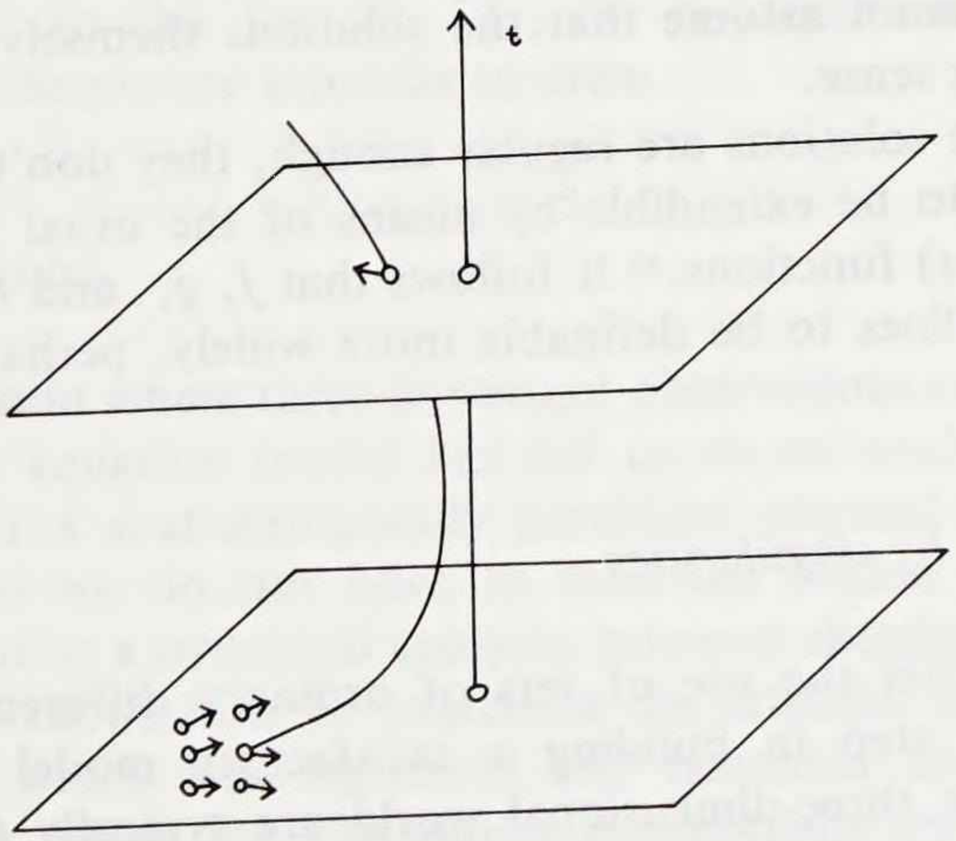
$$(6)\quad \frac{dx}{dt} = f(x, y, t)$$

$$\frac{dy}{dt} = g(x, y, t)$$

Does (6) help our Leibnizian God to re-identify (identify mass points between different time slices of Flatland)? Yes, provided that God can solve the pair of ordinary differential equations (6). For *its solutions are precisely the world lines of Flatlander's mass points.* These solutions are a family of pairs of functions $x(t)$, $y(t)$, each pair giving the co-ordinates of one point mass at different times.

A graphic representation of the situation might look like this:

Fig. 1



Only some velocity vectors and only one solution have been depicted here.

It is clear that the "real" re-identification problem in three-dimensional space instead of Flatland can be handled in the same way. The only difference is that the situation is more difficult to envisage and to depict graphically. The equations (6) now of course become

$$(8)\quad \frac{dx}{dt} = f(x, y, z, t)$$

$$\frac{dy}{dt} = g(x, y, z, t)$$

$$\frac{dz}{dt} = h(x, y, z, t)$$

What we have here is a first step in building up a differential-equation model of reidentification and cross-identification. There is of course an element of abstraction and simplification in any such model. Precisely how much, will be commented on later. The best evidence for the realism of our model lies in the light it throws on the actual problems of re-identification and cross-identification. The first stage we have so far reached already enables us to draw some interesting conclusions.

6. *Conclusions from the model*

For one thing, our simple observations in a sense vindicate the possibility of using something like continuity successfully for the purpose of re-identification. At the same time, we can now see that the situation is much more complicated than simple references to continuity can possibly do justice to. Later, we shall uncover further complications. They show jointly that earlier suggestions to the effect that re-identification of physical objects takes place by means of continuity in space and time are seriously oversimplified and in that sense deserve the criticisms that have been levelled at them.

For another thing, it is known from the existence theorems for ordinary differential equations that there exist solutions for (8) as soon as f, g and h satisfy certain technical conditions.[42] This reflects the ease with which we in real life carry out (in principle) re-identifications.

The solutions, even when they exist, nevertheless need not be analytic functions or functions which in some other sense admit of an explicit definition.[43] This point is relevant to Kripke's recent criticisms of the role of continuity in cross-identification.[44] It has been indicated that there is much to be said for such criticism. Kripke seems to assume, however, that continuity theorists ought to be able to *define* explicitly the relations which are represented by world lines. This requirement is far too strict, however. We have seen that world lines can be defined implicitly in a perfectly satisfactory sense via the differential equations to which they are solutions. We cannot assume that the solutions themselves are in general explicitly definable in any interesting sense.

At the same time, if the solutions are regular enough, they don't have to be defined everywhere in order for them to be extendible by means of the usual mathematical sense of extending (sufficiently regular) functions.[45] It follows that f, g, and h don't have to be defined everywhere for the world lines to be definable more widely, perhaps even everywhere (apart from singularities).

7. *Objects as being defined by singularities*

It is nevertheless clear that the use of sets of ordinary differential equations like (6) or (8) can only be the first step in building a satisfactory model of re-identification. The ordinary individuals of our three-dimensional world are typically three-dimensional objects,

and even Flatlander's objects are two-dimensional. In neither case are they like the mass points we have so far dealt with.

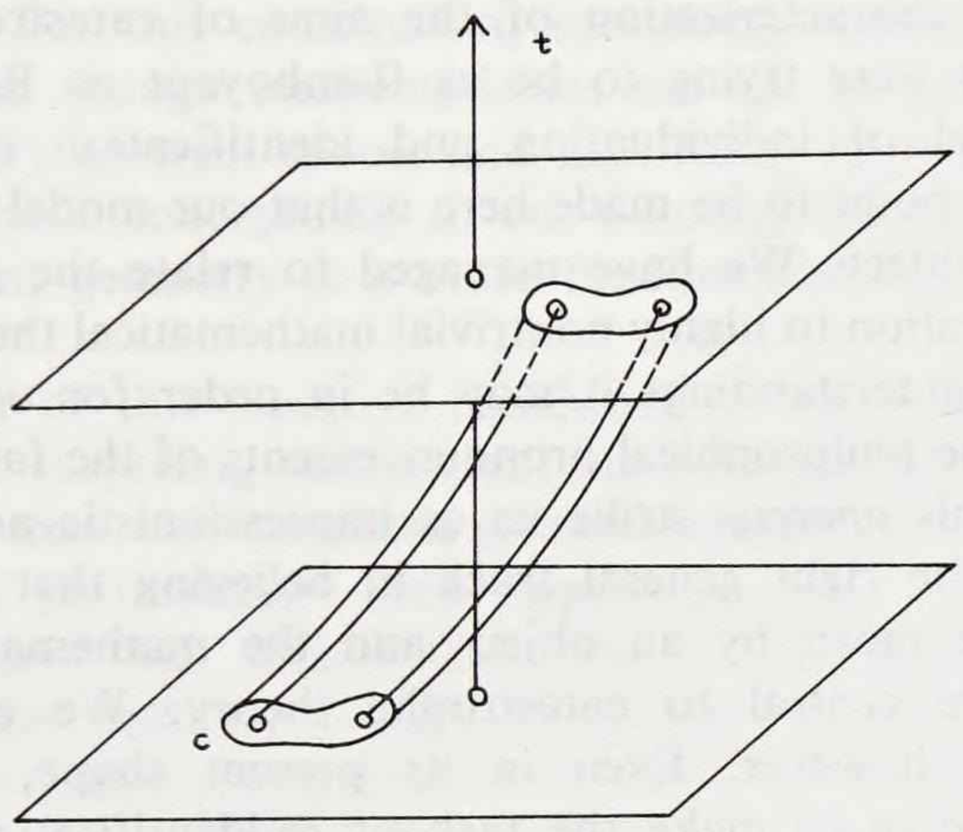
One possible mathematical formulation of this observation is to say that over and above the "state variables" x, y, z, t we also have certain additional "important variables" u_i which are functions of the state variables:

$$(9)\quad u_i = u_i(x, y, z, t)$$

These can encode such information as which object occupies the point (x, y, z) at the time t plus possibly other relevant information about the objects. The task of re-identification of objects is to study the variables (9) on the basis of the differential equations (8).[46]

In practice this means to study the singularities of the solutions of the ordinary differential equations (8). The basic idea is simple and intuitive enough. For the sake of illustration, it is clear what a normal "physical object" is for a Flatlander. It is a connected, smooth set of solutions to (6) (world lines) bounded by a region of singularities whose cross-section with each time slice t (= constant) is a closed curve C. The points on the curve are all singularities. The following picture may illustrate the situation:

Fig. 2



Only a couple of world lines have been depicted here to illustrate the idea that inside the closed curve the world lines run smoothly, e.g., change into each other continuously. The region inside such a closed curve C of singularities is precisely what an *object* is for a Flatlander. The counterpart to this for (8), i.e., for re-identification in three-dimensional space, is clear, even though the picture is harder to draw.

8. *Some properties of the model*

Here we have reached a point where three important observations can be made.

(i) First, our differential equation model has led us to an analysis, however rough and tentative, of the concept of a spatiotemporally persistent physical object. Saul Kripke notwithstanding, in our model we do not have to take the notion of an enduring physical object for granted; we can offer a structural analysis, however sketchy, of it.

(ii) Second, this analysis shows how to overcome the artificial separation between identification and individuation which was registered and lamented above. As figure (2) graphically shows, the way in which the Flatlanders conceptually cut up their flat land (i.e.,

divide it into those regions which correspond to our three dimensional objects) is determined by singularities in the very same solutions to differential equations as define lines of re-identification of mass points (and *a fortiori* define the re-identification of objects). In this sense, individuation (in our model, the articulation of time-slices into separate objects) is inseparable from identification (in our model so far, re-identification). This result is perhaps not surprising in one respect. It is not entirely surprising that the way differences between different objects are as it were first created is connected with our recognition of these same objects later. The bite of our observations lies, not in the mere existence of a link between individuation and identification, but in enabling one to begin to see what that link is.

(iii) The third main observation we can make is perhaps the most interesting one. It is seen by asking: what is the conceptual and mathematical nature of the link between individuation and identification which we have found? How are persistent physical objects constituted? The answer which is implicit in what has been said is that a decisive role is played by *singularities* in the solutions of certain sets of ordinary differential equations. Moreover, these singularities have to be *stable* in some intuitive sense. Now the study of such stable singularities happens to be an interesting and sophisticated mathematical subject. One branch of such mathematical theorizing has recently received intensive attention under the somewhat sensationalistic title "catastrophe theory".[47] Indeed, our general formulation above (in terms of the variables (9)) of the task of individuation is very nearly identical with Sussmann's interim characterization of the aims of catastrophe theory in his useful expository paper.[48] If we were trying to be as flamboyant as René Thom, we would undoubtedly call our model of individuation and identification the catastrophe theory of reference. The substantial point to be made here is that our model turns out to be interesting also as a mathematical object. We have managed to relate the philosophical problems of individuation and identification to highly nontrivial mathematical theories.

In order to avoid misunderstandings it may be in order for us to disassociate ourselves in so many words from the philosophical pronouncements of the father of catastrophe theory, René Thom.[49] Many of his *aperçus* strike us as impressionistic and opinionated. However, we do believe he is on the right general track in believing that there is a very real connection between what we mean by an object and the mathematical concepts of stability and singularity which are central to catastrophe theory. We cannot pursue the details of this connection here, however. Even in its present shape, the connection we have uncovered may at least serve to make the task of re-identification respectable in the eyes of those philosophers who, like Quine, seem to doubt the possibility of making interesting objective sense of the processes of re-identification actually presupposed in people's conceptual practice.[50]

(iv) In particular, there is an idea which is important in catastrophe theory and which is obviously crucial for our concept of an object, explicated along the lines we are following here. It is the idea of *stability*.[51] Not only do we have to have singularities in the solutions to the differential equations (6). For each t constant, the singularities must define a closed curve for each object to be "constituted", and these curves must change continuously with time. Stability phenomena of this kind are especially important for the concept of a physical object, it seems to us.

(v) It is nevertheless clear that "classical" catastrophe theory alone will not suffice here, as useful conceptually as it is likely to be. In the theory, various relatively strong regularity assumptions are in effect imposed on our functions f, g, h. It is fairly clear that not all functions we have to consider in real life satisfy these conditions. What we are hence offered by catastrophe theory is an ideal case of individuation and identification of objects which is not likely to be found in practice.

In general, the course of individuation—including its success or failure—depends heavily on the functions f, g, and h. These are of course given empirically, not *a priori*. Hence the abstract mathematical theory of individuation cannot tell everything about the extent to which our

individuation processes—processes that constitute our ontology—are at the mercy of brute facts. There cannot be a transcendental deduction of the existence of ultimate simples like the "objects" of the *Tractatus*.

10. *The primacy of space and time*

Another general suggestion of our model is that the conceptual priorities of most philosophers' ontology are topsy-turvy. Ever since Aristotle (or perhaps rather Democritus), philosophers have typically tried to find the basic, mutually independent building-blocks, the true individuals, which form the basic units of the world. Aristotle postulated substances which were according to him characterized by "particularity and 'thisness'"; Leibniz postulated monads; and the young Wittgenstein postulated the "objects" of the *Tractatus*. Nor have mathematicians and logicians been immune to such atomism. Many of them have seen in set theory, with its discrete elements of sets, the true foundation of mathematics. Logicians have almost all used as their paradigm predicate calculus whose interpretation involves a "universe of discourse" consisting of discrete individuals.[52]

If our analysis of the concept of a physical object is on the right track, philosophers' given discrete individuals are not such basic stuff as our world is made of, conceptually speaking, but are constituted out of re-identified mass points as bunches of solutions to sets of differential equations. For this constitution, something essentially like a spatiotemporal framework is needed, even though mathematicians are apt to generalize our old-fashioned Euclidean space into sundry abstract spaces and manifolds. Hence there is a sense in which space and time are more basic conceptually to our ontology than the notion of an individual object. By the same token, geometry is a more fundamental branch of mathematics philosophically than set theory.[53]

One further implication of this tentative conclusion of ours is that good old Immanual Kant receives a somewhat surprising vindication. He believed that we can conceive of individuals only in space and time. All intuitions (*Anschauungen*), which he defined as representations (*Vorstellungen*) of particulars,[54] must appear to us in space and time, Kant says. Jaakko Hintikka has argued that Kant's basic line of argument for this tenet of his is fallacious,[55] for he assumes that the process by means of which we come to know particulars is sense-perception (sense-perception, the whole of sense-perception, and nothing but sense-perception) whose forms Kant identifies with space and time. Now we can see that Kant arguably has a second line of defense for the primacy he assigns to space and time even if this fallacious assumption is removed. He could have argued for the primacy of space and time by analyzing the concept of a persisting physical object. If we are on the right track in our analysis, such an analysis must rely on the framework provided to us by space and time, which are therefore more basic ideas than that of an individual physical object.

The conceptual priority of space and time has other important implications. Among other things, it shows that the term "possible world" is in one respect strikingly inappropriate. If we are to be able to speak of some of the actually existing individuals as members of other possible states of affairs, and if the cross-identification between them and the actual worlds happens by and large as our model prescribes, all those alternative "worlds" must share at least part of space-time with the actual world. In so far as "worlds"—whatever is meant by this term in other respects—are considered as spatiotemporal systems and identified by this system, these different states of affairs we have just considered *cannot be labelled different worlds*, for they have a space-time in common. Perhaps it would be better for philosophers to speak of different possible courses of events in one and the same world than to use the metaphysically loaded term "possible world".

This terminological change does not make any difference to what we have said in this paper (or elsewhere) about the ill-named "possible-worlds semantics", but it may perhaps

remove some of the wrong connotations which philosophers have associated with the term. In particular, it helps to make more intuitive why cross-identification need not be a mysterious, almost paradoxical enterprise.

11. *The primacy of matter*

The spatiotemporal framework is nevertheless only a tool in the actual identification and individuation of physical objects. What determines the outcome of the process is the set of functions *f*, *g*, *h*. What these functions specify is in our model essentially the totality of motions of mass points. They are the rock bottom of identification and individuation. In this way, it is seen that in actual applications the semantical articulation of the world is not based on abstract logical considerations, but on material reality and its laws of motion. Identification and individuation are rooted firmly in the material realities.

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NOTES

[1] This approach exists in many different variants. Here we have in the first place in mind the versions formulated by Richard Montague (see R. Thomason (ed.), *Formal Philosophy: Selected Papers of Richard Montague* (Yale 1974); D. R. Dowty, R. E. Wall, and Stanley Peters (eds.), *Introduction to Montague Semantics* (Dordrecht 1981); D. Lewis, "General Semantics" in: Donald Davidson and Gilbert Harman (eds.), *Semantics of Natural Language* (Dordrecht 1972), pp. 169—218; J. Hintikka, *Models for Modalities* (Dordrecht 1969); and J. Hintikka, *The Intentions of Intentionality* (Dordrecht 1975).

[2] See J. Hintikka, "The Intentions of Intentionality" in: Hintikka (1975); and J. Hintikka, "Degrees and Dimensions of Intentionality" in: Rudolf Haller and Wolfgang Grassl (eds.), *Language, Logic, and Philosophy: Proceedings of the Fourth International Wittgenstein Symposium* (Vienna 1980), pp. 69—82.

[3] Cf. here J. Hintikka, "On Sense, Reference, and the Objects of Knowledge", *Epistemologia,* Vol. 3 (1980), pp. 143—164.

[4] These problems have been discussed in: J. Hintikka, "Is Alethic Modal Logic Possible?", *Acta Philosophica Fennica* (1982); and in J. Hintikka, "Standard vs. Nonstandard Logic", in: E. Agazzi (ed.), *Modern Logic: A Survey* (Dordrecht 1980), pp. 283—296.

[5] Cf. here J. Hintikka, "The Paradox of Transcentendal Knowledge" (forthcoming).

[6] See J. Hintikka, "Knowledge, Belief, and Logical Consequence", in: Hintikka (1975), Ch. 9 and J. Hintikka, *Logic, Language-Games, and Information* (Oxford 1973), especially ch. 7 and 11.

[7] Rantala, V., "Urn Models", *Journal of Philosophical Logic*, Vol. 4 (1975), pp. 455—474; reprinted in E. Saarinen (ed.), *Game-Theoretical Semantics* (Dordrecht 1979), pp. 347—366.

[8] Hintikka, J., "Impossible Possible Worlds Vindicated", *Journal of Philosophical Logic*, Vol. 4 (1975), pp. 475—484;

[9] See J. Hintikka, *Logic, Language-Games, and Information* (Oxford 1973), Ch. 7—9; J. Hintikka, *Knowledge and the Known* (Dordrecht 1974), Ch. 6—10.

[10] See J. Hintikka, "Aristotle's Incontinent Logician", *Ajatus*, Vol. 37 (1978), pp. 48—65.

[11] See J. Hintikka, "C. S. Peirce's 'First Real Discovery' and its Contemporary Relevance", *The Monist*, Vol. 63 (1980), pp. 304—315.

[12] See J. Hintikka, *The Semantics of Questions and the Questions of Semantics* (Amsterdam 1976); J. Hintikka, "New Foundations for a Theory of Questions and Answers", forthcoming in the proceedings of the 1980 Visegard Conference on questions and answers (Stockholm 1982).

[13] On the importance of this principle, cf. e.g. B. Hall Partee, "Possible Worlds Semantics and Linguistic Theory", *The Monist*, Vol. 60 (1977), pp. 302—326 and pp. 306—308; B. Hall, "Montague Grammar and Transformational Grammar", *Linguistic Inquiry*, Vol. 6 (1975), pp. 203—300.

[14] See J. Hintikka, "Theories of Truth and Learnable Languages", in: S. Kanger and S. Öhman (eds.), *Philosophy and Grammar* (Dordrecht 1981), pp. 37—57.
[15] Wittgenstein, L., *Tractatus Logico-Philosophicus* (London 1961).
[16] Cf. here our forthcoming work on Wittgenstein's *Tractatus*.
[17] Cf. A. Tarski, "The Concept of Truth in Formalized Languages", Woodger (ed.), *Logic, Semantics, Metamathematics* (Oxford 1956); and the German version, A. Tarski, "Der Wahrheitsbegriff in den formalisierten Sprachen", *Studia Philosophica*, Vol. 1 (1936), pp. 261—405. Tarski's procedure in defining truth for quantified sentences even involves quantifying over evaluation functions, which hence cannot be said to be analyzed by means of truth-definitions.
[18] This analysis of meanings is the crucial idea of possible-worlds semantics.
[19] The role of Tarski-type truth-definitions as the main inspiration of Montague has not been fully spelled out in the literature.
[20] See e.g. W. V. Quine, "Worlds Away", *Journal of Philosophy*, Vol. 73 (1976), pp. 859—863.
[21] Cf. J. Hintikka, "Quine on Who's Who", in: *The Philosophy of W. V. Quine*, The Library of Living Philosophers (forthcoming).
[22] See especially J. Hintikka, "Knowledge by Acquaintance—Individuation by Acquaintance", in: D. Pears (ed.), *Bertrand Russell: A Collection of Critical Essays* (Garden City 1972), pp. 52—79, reprinted in: Hintikka (1978), pp. 212—233.
[23] This promising idea has never been pursued in the literature. For the materials to be dealt with, cf. A. Kaplan, *In Pursuit of Wisdom* (Los Angeles 1977), § 46 and 47.
[24] Kripke, S., "Identity Through Time", paper delivered at the Seventy-Sixth Annual Meeting of APA Eastern Division (New York 1979).
[25] See especially J. Hintikka, "Quine on Quantifying *In*", in: Hintikka (1975).
[26] Cf. here Hintikka (1980).
[27] Note that this problem is completely independent of the possible nonexistence of Lewis Carroll.
[28] In this way, we can obtain a general logical analysis of natural-language semantics of the form *knows* + a *wh*-construction.
[29] See Quine (1976).
[30] Philosophers have confused here two different questions, on the one hand the question as to whether there are objective criteria of meaning for sentences involving such constructions as *knows* + interrogative clause, and on the other hand such questions as to whether those criteria are constant from one application to another or whether they are contextually determined or whether the criteria are precise or not. Partial contextual dependence and imprecision are undoubtedly facts of life here, but it would be a major fallacy to take them to show that the criteria themselves are not objective or that they cannot remain constant throughout a "local" application. For instance, if Jaakko Hintikka is right that the contrast in natural languages between the construction *knows* + interrogative clause and *knows* + a direct object is largely a distinction between two essentially different ways of drawing world lines of cross-identification, then to deny the reality of the distinction between the two ways of cross-identifying is to deny that the contrast between the two constructions in languages like English has any objective meaning. Only Quine seems to have the courage of his convictions and to be willing to draw such conclusions, which of course would relegate large parts of natural-language semantics to the waste-paper basket.
[31] Ian Hacking has aptly pointed out the kinship between Leibniz and such modern possible-world theorists (in effect) as Rudolf Carnap. See e.g. I. Hacking, "The Leibniz-Carnap Program for Inductive Logic", *Journal of Philosophy*, Vol 68 (1971), pp. 597—610. What remains to be added is merely that this emphasis on "large worlds" is not intrinsic to the contemporary twentieth-century possible-worlds approach, only to some particular forms of it (such as Carnap's).
[32] See B. Mates, "Leibniz on Possible Worlds", in: B. van Rootselaar and J. F. Staal (eds.), *Logic, Methodology, and Philosophy of Science III* (Amsterdam 1968), pp. 507—529; reprinted in: H. G. Frankfurt (ed.), *Leibniz: A Collection of Critical Essays* (Garden City 1972), pp. 335—364.
[33] The representativeness of this case is seen, for example, from the fact that branching time trees are the most common type of a model structure used in the semantics of tense logics. This case is nevertheless subject to important limitations which greatly reduce its usefulness as a general paradigm.
[34] Cf. e.g. "Quine on Quantifying *In*", in: Hintikka (1975).
[35] Locke, J., *An Essay Concerning Human Understanding*, Book II, p. 440 of the A. C. Fraser edition.
[36] See e.g. S. Kripke, "Naming and Necessity", in: Davidson and Harman (1972), pp. 253—355, especially p. 314.
[37] See Kripke (1979).
[38] See Quine (1976).
[39] Saarinen, E., "Continuity and Similarity in Cross-Identification", in: Esa Saarinen *et al.* (eds.), *Essays in Honour of Jaakko Hintikka* (Dordrecht 1979), pp. 189—215.
[40] See Quine (1976) and Kripke (1979), respectively.
[41] Abbott, E. A., *Flatland: A Romance of Many Dimensions* (New York 1952).
[42] See e.g., E. L. Ince, *Ordinary Differential Equations* (New York 1956), pp. 71—72.
[43] Trivially, if the functions f, g, h do not have higher order derivatives, then the solutions $x(t)$, $y(t)$, and $z(t)$ don't either. Hence the solutions can be analytic only if the functions f, g, and h are. Yet the solutions exist on much weaker conditions.

44 Kripke (1979).
45 For the basic ideas, see e.g. E. T. Whittaker and G. N. Watson, *A Course of Modern Analysis* (Cambridge 1927), pp. 96—98.
46 Cf. here H. J. Sussmann's useful survey paper, "Catastrophe Theory", *Synthese*, Vol. 31 (1975), pp. 229—270, especially pp. 230—232.
47 See e.g., Yung-Chen Lu, *Singularity Theory and an Introduction to Catastrophe Theory* (New York/Heidelberg 1976), or P. T. Saunders, *An Introduction to Catastrophe Theory* (Cambridge 1980).
48 Sussmann (1975).
49 Cf. e.g., R. Thom, *Structural Stability and Morphogenesis* (Reading 1975), (but cf. H. J. Sussmann and R. Zahler, "Catastrophe Theory as Applied to the Social and Biological Sciences: A Critique", *Synthese*, Vol. 37 (1978), pp. 117—126). Thom comes closest to our present subject in his papers R. Thom, "Topologie et Linguistique", in: *Essays on Topology, Dedicated to G. de Rham* (New York/Heidelberg 1970), pp. 226—248; and R. Thom, "Language et Catastrophes: Eléments pour une Sémantique Topologique", in: M. M. Peixoto (ed.), *Dynamical Systems* (New York/London 1973), pp. 619—654.
50 Cf. Quine (1976).
51 Cf. e.g. Sussmann (1975).
52 For the role of this paradigm in recent language theory and for logicians' gradual disenchantment with it, see J. Hintikka, "Semantics: A Revolt Against Frege", in: Guttorm Floistad and G. H. von Wright (eds.), *Contemporary Philosophy: A New Survey*, Vol. I (The Hague 1981), pp. 57—82.
53 This is of course a radical and controversial perspective on the foundations of mathematics, which in the last hundred years has been dominated by formal logic and set theory. We cannot explore the implications of our new perspective here.
54 Cf. J. Hintikka, "On Kant's Notion of Intuition (*Anschauung*)", in: T. Penelhum and J. J. MacIntosh (eds.), *The First Critique: Reflections on Kant's "Critique of Pure Reason"* (Belmont 1969), pp. 38—53.
55 See J. Hintikka, "Quantifiers, Language-Games, and Transcendental Arguments", in: Jaakko Hintikka, *Logic, Language-Games, and Information* (Oxford 1973); J. Hintikka, "Kant on the Mathematical Method", in: Jaakko Hintikka, *Knowledge and the Known* (Dordrecht 1974); J. Hintikka, "Semantical Games and Transcendental Arguments" and "Transcendental Arguments Revived" (forthcoming).
56 For the semantical history of the term "world", see C. S. Lewis, *Studies in Words* (Cambridge 1967), chapter 2.

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MINDS, BODIES, AND UNIVERSALS: A META-ONTOLOGICAL APPROACH

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There seem to be at least two different ways to practice ontology. One consists in first assuming certain basic principles or procedural maxims and then applying them in a systematic fashion to the various traditional areas of philosophy. The other involves discussing certain specific problems and attempting to decide each case on its own merits. The great empiricist, rationalist and more recent unity-of-science programs are good examples of the first way. Many discussions of the mind-body problem, the nature of proper names and the problem of free will may serve as examples of the second sort of procedure. Let us note that it is often hard to stick to just one procedure. Many philosophers, in fact, use both of these strategies at different times. In this discussion, I shall be concerned however to discuss only the second general sort of approach to ontology.

So let us consider ontology in so far as it results from a study of particular problems. I shall assume here that there is a set of metaphysical problems which philosophers appropriately address. I realize that some philosophers have claimed that there are no metaphysical problems. The reason that is given is that there is no metaphysics. But I do not take these claims seriously. We need only consider that for the philosophers in question the existence of metaphysics *as a whole* is a problem that they consider important. So it seems that even for these philosophers there *is* a set, albeit a rather small one, of metaphysical problems. To repeat, I assume that there is such a set of metaphysical problems. The question that I want to concentrate upon here is this: is there any truly general way in which we can approach all (or a good many) of these problems? That is, is there any general strategy for solving metaphysical questions? In what follows I shall explore such a strategy.

I

I take as a cue some recent discussion in the philosophy of mind. The late James Cornman in discussing the mind-body problem distinguished two different approaches to defending materialism. One of these he labeled *reductive materialism*, the other he called *eliminative materialism*. Let me briefly explain the difference. The reductive materialist is one who argues that the mental aspect of human life is physical in nature. Such a materialist claims that this mental aspect can be *reduced* to the recognizably physical aspects of human existence. The eliminative materialist, on the other hand, argues that discussion of the mental aspect of human existence is such that it entails the existence of non-physical entities (such as spiritual souls). Such a materialist claims that the correct approach to the mind-body problem is to abandon the traditional conception of the mental, to eliminate it, to jettison it in favour of some more adequate set of physical concepts.

Both of these sorts of materialism are to be contrasted with the dualistic approach to the mind-body problem. This approach may take one of a number of different forms. But, the central claim is that the mental aspect and the physical aspect of human existence are both important, irreducible and ineliminable elements in any correct ontological accounting of the world.

We are thus presented with three different ways to approach the mind-body problem: a reductive approach, an eliminative approach and a dualist approach. There are, to be sure, other solutions to the mind-body problem, for example, idealism, which I have not yet mentioned. But is seems to me that idealism involves either a reductive or an eliminative

approach to the mind-body problem. That is the idealist either (i) tries to show how the allegedly separate physical aspect of human life can be *reduced* to non-physical mentalistic elements, or (ii) argues that the concept of the physical aspect of reality is so fraught with difficulties that it needs to be eliminated in favor of mental elements. I shall have more to say about certain other mind-body solutions later on.

Now what I want to suggest is that this set of distinctions from the discussion of the mind-body problem is a *useful* one in that the dualist-reductivist-eliminativist distinctions may be applied to many other traditional ontological problems. To demonstrate this I shall briefly consider five common philosophical problems.

(1) Let us begin with philosophy of religion. The central problem of the philosophy of religion concerns the existence of God. The *eliminativist* approach to natural theology is well-encapsulated in Laplace's well-known remark to the effect that he had no need to postulate God in order to account for the workings of the world. For the eliminativist (or atheist) the concept of God is the concept of an entity with certain distinctive characteristics. Yet, the eliminativist claims that there is no such entity. The dualist approach to natural theology, by contrast, claims that there is a special divine entity in addition to the natural world. God and the natural world are on this view two distinct, existent sorts of things. Both are required for an adequate ontology. The eliminativist and dualist approaches on this topic are surely the most common in the philosophical tradition. However, they are not the only alternatives. There is also the reductive approach. For there are those who attempt to reduce the world to God (*e.g.*, Spinoza) and there are those who attempt to reduce the traditional God to some more naturalistic conception. Thus, the traditional problem of the existence of God may be cast as the attempt to decide between a dualist, an eliminativist or a reductivist program.

(2) The Free-Will Problem may also be seen in this light. The traditional dualist approach is taken by those who argue that human freedom and the common causal order are separate and distinct from each other. According to this view, free human action must have an etiology which is different in kind from the causal account of ordinary physical activities. The two different sorts of causal relations are, however, both required for an adequate ontology.

There is an equally important *reductive* tradition with respect to the problem of free will. According to this reductive view human freedom is compatible with the thesis that every event has a sufficient antecedent causal condition. The task for the compatiblist is to establish the case for the reduction of free human actions to some *special* set of events with antecedently sufficient causal conditions.

In addition to dualist and reductivist positions there is also an eliminativist position with respect to free will. The eliminativist argues that the scientific causal order of the world is such that there can be no free human action. Such an eliminativist (for example, Skinner) argues that free human action would require that certain specific conditions be satisfied. However, since these conditions are not satisfied, the eliminativist concludes that there is no human freedom.

(3) A third interesting philosophical topic concerns the existence of bodies. There are several ways in which the existence of bodies may be called into question. One question arises with respect to the relation between bodies and the micro-objects of contemporary physics. One eliminativist approach is that which holds that there really are no bodies, that the correct ontology of the physical world only concerns the esoteric subatomic particles of physics. The dualist (perhaps, e.g., Eddington) views commonsense bodies and micro-particles as distinct sorts of entities. The reductivist approach involves reducing the bodies of commonsense to the objects of contemporary physics.

(4) So far we have considered philosophical problems involving relations between different kinds of particulars. The sort of approach we are discussing may also be applied to relations between abstract entities and concrete entities. Consider, for example the debate between realists and nominalists concerning the existence of universals. The dualist representative

in this discussion argues that both abstract entities and their concrete manifestations are required for an adequate ontology. By contrast, the reductive nominalist attempts to show how the work of universals can be done by some specific system of particulars. The eliminative nominalists (perhaps represented by those who hold what D. M. Armstrong calls "ostrich nominalism") are not concerned to account for universals at all. They would argue that the problems inherent in positing such entities are insurmountable and that one should not try to accommodate universals for this reason.

(5) As a last case let us consider one of the problems of causation. A preoccupation of many metaphysicians is to account for causal relations between events. The dualist in this debate argues that causality is a *sui generis* relation which is not reducible to other sorts of relations and is furthermore an eliminable element from the correct ontology. The reductivist, following in the tradition of Hume, argues that causality is not irreducible, that it can be satisfactorily explained in terms of some specific set of conditions (including, perhaps, necessitiy and sufficiency). There is also an eliminativist position on this issue. Some (for example, Russell) have argued that there is no need to include causation in one's ontology for there is an adequate general account of the world (for Russell, physical theory) which makes no reference to causality. Causality, it is claimed, is ontologically superfluous.

II

These five different situations demonstrate, I think, that a wide variety of discussions of philosophical problems can be cast in a dualist-reductivist-eliminativist framework. I would now like to consider some further aspects of the general framework itself. Let us begin with the dualist position for it is certainly the easiest to characterize. In holding this position on a particular issue one is maintaining that the various elements under consideration are distinct, that they all exist and that none is to be regarded as ontologically more fundamental than any other. Another perhaps more appropriate name for this strategy would be that of *separatist* (for there may be perhaps *more* than two elements). To put the position schematically, suppose the philosophical problem concerns the relation between A's and B's. The dualist (or separatist) position holds that A's and B's are distinct, ineliminable and irreducible. In order to establish such a position, one effective procedure is to produce some important irreducible characteristic C which the A's have and which the B's lack.

What about the other two kinds of positions? Perhaps the clearer of the two is the eliminativist position. For the eliminator, the question as to the relation between A's and B's is to be answered by arguing that there first are no A's. It is interesting to note a characteristic strategy that the eliminator may use. The eliminator usually argues (i) that the A's have feature N which the B's lack and (ii) that feature N is such a problematic property that nothing with this property needs to be seriously considered.

The reductivist strategy is the hardest to characterize. The problem here concerns the nature of reduction. For our schematized question concerning the relation between A's and B's, the reductivist holds that A's "are just" B's, that A's are reducible to B's. Now what is it for such a reduction to be the case? One way of trying to make the notion of reduction clear is to appeal to language. Thus, for A's to be reducible to B's according to such a linguistic criterion is for the concepts utilized in presenting A to be semantically constructible out of the concept utilized in presenting B. According to this criterion, ontological reduction becomes a matter of *conceptual analysis*. This criterion has the advantage of being relatively clear. However, according to this criterion, the possibility of reductions would be much more restricted than many ontologists would like.

Instead of a reduction of concepts, what is sometimes proposed is a more complicated sort of procedure. Let me here sketch what I take to be one example of such a procedure. First, one argues that the extension of A is contained within the extension of B. Then one argues that the key features of A are to be explained or accounted solely in terms of the features

of *B*. Among the problems that remain are those concerning the notion of "key features". It is often disputable (i) whether all of the important properties have been identified and (ii) whether a particular discussion of some feature does amount to a satisfactory explanation or account. And indeed it may appear that some reductions actually amount to partial eliminations. For suppose that one produces an account for features F_1, F_2, and F_3 of *A* in terms of *B*, yet eliminates features F_4 and F_5 as ontologically problematic. Thus one might conclude that the boundary between the reductive strategy and the eliminative strategy is not sharp. But this would be, it seems to me, a misleading way to view the matter. It is better to say that ontological strategies of the sort that we have been considering are not always exclusively reductive or exclusively eliminative. It is sometimes argued that one should reduce some aspects of a problem and eliminate others. So that the net result is a *mixed* approach.

There is one other related strategy that I would like to mention. Consider as an example the recent discussion by Bunge of the mind-body problem. According to my understanding of Bunge, the mental is not to be reduced to the elements of physics but rather to aspects of the neurophysiology of the central nervous system. The position advanced by Bunge is thus *intermediate* between the standard separatist (dualist) account and a more radical reductivist position. The general form of this sort of strategy seems to be the following. With respect to the relation between *A* and *B*, there is an intermediate element *I* such that *A* is reducible to *I*, but *I* is separate from and *not* reducible to *B*. (It seems that one could produce other examples of this sort of position.)

Thus, we have now come to 5 different sorts of strategies: (i) the dualist or separatist, (ii) the reductivist, (iii) the eliminativist, (iv) the mixed reductivist-eliminativist, and (v) the intermediate separatist-reductivist. (Perhaps there are other intermediate strategies.) It seems to me that these five characterize many important ontological discussions.

There remain two questions to be considered here. The first is this: is it possible for one to be ontologically consistent in using the same strategy with respect to all ontological problems? Some philosophers have been fairly consistent reductivists. Some, for example, have insisted that everything is just sense-data; others that all existents are physical particles. But for such reductivists, they must remain non-reductive at least with respect to that element to which all else is to be reduced. The same point can of course be made in connection with the extreme eliminativist, who must preserve something from being eliminated, in order to have something to use to eliminate other alleged entities.

With regard to an extreme separatism, a meta-ontological position which accords ontological legitimacy to all sorts of purported entities, it is hard to imagine this as a philosophically serious consistent stance. First of all, most philosophers are willing to eliminate or reduce some purported entity, at least those entities favored by views that they disagree with. Secondly, it seems that one is bound to fall into contradictions if one accepts all purported entities for this would include such problematic creatures as sets which are not members of themselves, and so on.

The answer to the question about the possibility of a consistent stance with respect to ontological strategy must, therefore, be in the negative. The reason for this is that an accurate attempt to portray reality seems to demand that we adopt different strategies for different problems.

This answer then leads to the last question that I want to raise which is: what is the ontological value of the sort of distinctions that I have been raising here? I would like to suggest some reason for thinking that these distinctions are important ones to keep in mind. To begin with, it is useful to be aware of exactly what sort of position one is defending, be it reductive, eliminative or separatist. For this may help suggest additional reasons and arguments. Secondly, these distinctions are useful in evaluating the overall strength of a general philosophical system. For if the system is, for example, reductive at some points and eliminative at others we should be sure that the reductive methods employed cannot be carried further and also that the separatist methods utilized in the system are not applicable elsewhere as well.

A final reason is that an awareness of these distinctions may well help in suggesting novel solutions to certain ontological problems. Although it is perhaps excessive to concentrate a large measure of one's efforts on meta-ontology, an awareness of some basic distinctions is, I believe, often useful for the practice of ontology proper.

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REFERENCES

Armstrong, D. M., *Nominalism and Realism* (Cambridge 1978).
Bunge, M., *The Mind-Body Problem: A Psychological Approach* (Oxford 1980).
Cornman, J. W., *Materialism and Sensations* (New Haven 1971).
Eddington, A. S., *The Nature of the Physical World* (London 1928).
Russell, B., *Mysticism and Logic* (London 1918).
Skinner, B. F., *Beyond Freedom and Dignity* (New York 1971).

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SORITES "PARADOXES" AND ONTOLOGY

John Troyer

1. *Introduction*

Tradition attributes discovery of Sorites arguments to everyone's favorite philosopher, Eubulides of Miletus. History leaves much to guesswork, but Eubulides seems to have argued roughly as follows:

i) One bean is not a heap of beans

ii) If a collection of beans is not a heap of beans, then that collection plus an additional bean is not a heap of beans

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Therefore there are no heaps of beans.

If we assume that there are in fact heaps of beans, we will tend to view this argument as a conundrum rather than a revelation. This tendency will probably be reinforced if we reflect that a similar line of reasoning will yield the conclusion that there are no tables or chairs. Consider, for example, the following version of one of Peter Unger's "Sorites of decomposition":

i) If a thing is a table, then there is some way to remove a molecule from it so that the resulting thing is still a table

ii) If *i* is true, and if there are tables, then there can be tables which are only one molecule in size

iii) There cannot be tables which are only one molecule in size

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Therefore there are no tables.

Unger has formulated similar arguments purporting to show that there are no people, and therefore no beliefs, no desires, etc. However Unger views these arguments not as conundrums, but as proofs that the world is bereft of most of the entities we believe to exist.[1]

Of course Unger and his followers realize that their arguments are more apt to meet with ridicule than serious consideration, but they attribute this to an irrational ontological conservatism.[2] And indeed it is difficult to see how Sorites arguments can or should be met, given that one decides to take them seriously. In fact I am sometimes tempted to throw in the towel to Eubulides. It is consoling to think that better philosophers may have had similar feelings of defeat, and I therefore draw some comfort from the following passage:

> But if we accept these conclusions, we must be prepared to acknowledge that Aristotle was aware of an important paradox which he did not explicitly answer. And this gives one pause. Not only is the Sorites more important than many paradoxes and fallacies he does deal with in the *Sophistic Refutations*, it is, as we shall see, *prima facie* damaging to his own theory of the mean. Failure to answer such a paradox is not characteristically Aristotelian, and calls for an explanation. Why, if he was aware of the

> Sorites, as he now appears to have been, did he not answer it? Anyone who has attempted to solve the Sorites can produce a ready reply—not even Aristotle could solve this paradox. Not being able to solve it, he ignored it, it might be said. And this is not entirely implausible, since Eubulides was said to have got the better of Aristotle in their controversy.[3]

2. *Some steps toward a solution*

It is tempting to respond to Unger's Sorites by thumping a stout oak table and announcing "I refute him thus". The trouble with such responses is that they don't do anything to counter the appeal of the Sorites arguments themselves. A similar problem faces attempts to resolve the paradoxes by pointing out that terms like 'heap' and 'table' are "vague" or "fuzzy": the problem here is that it is not clear that any of the Sorites' premisses conflicts with vagueness. In fact it is easy to interpret vagueness in a way which supports the problematic Sorites. To see this, consider the following version of the "camel's back" Sorites:

> i) A camel can carry one straw
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> ii) If a camel can carry a quantity of straw, then it can carry that quantity plus an additional straw
>
> ———————————
>
> Therefore a camel can carry any quantity of straw.

This argument generates no paradox because we are willing to admit that a straw can break a camel's back, despite the *prima facie* implausibility of this. Given that one straw can make a difference, we are able to deny the "inductive premiss" (premiss ii) of the argument. That we are not able to take this track with the other Sorites arguments results from our intuition that a bean or a molecule *can't* make a difference. And vagueness may appear to support this intuition. One might, for example, take the vagueness of the term 'tall man' to entail the absence of a sharp line between tall men and men who are not tall, and take the absence of such a line to entail in turn that if a man is tall there must be some very small unit of height, say a micron, such that if a tall man shrinks only a micron he will still be tall. This reading of vagueness, of course, amounts to an endorsement of the crux of the problematic Sorites arguments.

One step toward resolution of the Sorites paradoxes can be made by pointing out that vagueness, properly understood, provides no support for the inductive premisses of Sorites arguments. To see this, imagine that France and Germany are at war, and that the battle is being conducted in Alsace-Lorraine. It may be that some areas (e.g. Nancy) are clearly under French control and some (e.g. Strasbourg) are clearly under German control, but that still others are such that it is unclear whether either side controls them. If the unclear areas are suitably located, it may be that no short step will take one from an area which is clearly under French control to one which is clearly under German control. But this will not entail that if a soldier takes very tiny steps eastward from Nancy he will be able to drag French control along with him all the way to Strasbourg.

Here it might be objected that my account of vagueness is inadequate because it posits a sharp transition between areas which are clearly under French control and areas such that it is unclear whether they are under French control. But my account makes no such posit. There may be areas such that it is unclear whether they are under French control and also unclear whether it is unclear that they are under French control, and if there are such areas then there may be cases in which it is unclear whether a small change makes a difference. Of course my account of vagueness *does* conflict with the inductive premisses of problematic Sorites, but this is not because those premisses embody a reasonable alternative account

of vagueness. It is surely just wrong to take the vagueness of 'tall man' to entail that tallness will survive any amount of shrinkage, provided that shrinkage proceeds via sufficiently small increments.

I hope these remarks do something toward showing that vagueness neither entails nor supports the inductive premisses of the problematic Sorites. Unfortunately such considerations do little to counter the *prima facie* plausibility of those premisses. What we need at this point is some explanation of how these false premisses can appear so obviously true. It may help to point out that the absence of sharp boundaries does not entail that small steps will carry French control with them, but why does it continue to seem so plausible to think that a *very* small change can't make any difference *at all*?

The answer, I think, is that a relation which is not transitive nonetheless seems to be transitive. It seems to us that if Jones is clearly tall, and we can't tell by looking whether Smith is taller or shorter than Jones, then Smith must be clearly tall as well. Of course we won't endorse the same sort of argument in the case of height, but determining height requires measurement, while determining tallness, at least in some cases, requires only looking. And surely if looking can establish that Jones is tall, and looking can not distinguish Smith's height from Jones's, then Smith must also be tall. This all seems eminently reasonable, but it is also demonstrably false. It assumes that "are indistinguishable, by looking, in respect of tallness" is a transitive relation when we know it is not. There are classes of 3000 men of differing heights which can be ordered so that I cannot tell which of any adjacent pair is the taller, but such that for some non-adjacent pairs I need only a glance to tell that one is clearly taller than the other. Such facts are perplexing and bothersome, but they are also well established. Human perception, as far as I am aware, is such that "*X* is indistinguishable from *Y*" fails of transitivity throughout the sensory modalities. The moral is that since we are better detectors than discriminators, we ought to base our attributions of "sensory qualities" on detection, rather than extrapolating wildly on the strength of a relation we know is not sufficiently sturdy to carry such inferences.

If I am correct, what explains the seductiveness of problematic Sorites arguments is our inability to imagine how two things which are sensorily indistinguishable can still fail to share all their sensory properties. This explanation of course commits me to the claim that two things which are sensorily indistinguishable *can* fail to share some sensory properties, a claim which many will find mysterious and paradoxical. Here I can only point out that however mysterious or paradoxical the claim, it is empirically well grounded. If I had more space I *think* I could develop models which would remove *some* of the air of mystery. But I don't have more space.[4]

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NOTES

[1] See P. Unger, "Why There are No People", *Midwest Studies in Philosophy*, Vol. 4 (1979), pp. 177—222, and his references.

[2] See S. C. Wheeler, "On What There is Not", *Synthese*, Vol. 41 (1979), pp. 155—173. Wheeler claims that resistance to the claim that there are no people rests only on "a negative emotional response to the disappearance of loved ones" (p. 171).

[3] Moline, J., "Aristotle, Eubulides and the Sorites", *Mind*, Vol. 78 (1969), p. 399.

[4] If I had more space I would also explain why I think different Sorites should be treated differently, even if they all have the same root. I would also say more about my modal-epistemic account of vagueness and how it relates to attempts to meet Sorites arguments by appeal to non-standard logics or semantics.

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MOMENTS AS TRUTH-MAKERS

Peter M. Simons

Russell wrote in 1918 in *The Philosophy of Logical Atomism*:

> When I speak of a fact . . . I mean the kind of thing that makes a proposition true or false. If I say 'It is raining', what I say is true in a certain condition of weather and is false in other conditions of the weather. The condition of weather that makes my statement true (or false as the case may be), is what I should call a 'fact'. If I say, 'Socrates is dead', my statement will be true owing to a certain physiological occurrence which happened in Athens long ago.[1]

This classic statement of Russell's version of the correspondence theory of truth is defective on one point only: Russell was unwise to use the word 'fact'. Objects which perform the semantic role Russell accords to facts I shall call simply *truth-makers*. They are to be contrasted with propositions, or whatever is considered to *bear* the properties of truth and falsehood, which may be called truth-*bearers*. Facts, if they are anything, are not truth-makers but truth-bearers: Ramsey was right to count facts simply as true propositions.[2] I shall leave propositions, true and false, on one side. Arguments for or against the existence of propositions are irrelevant to the question whether there are truth-makers in Russell's sense.

That Russell counted common weather conditions and physiological occurrences as truth-makers is not a weakness but a strength of his theory. It means that a realist theory of truth for elementary predications about the real world requires only concrete entities well known under other names, such as *state, condition, process* and *event*, and well known in other philosophical contexts, such as causality and action theory. Most, if not all truth-makers are, I hold, *moments*.[3] The notion of a moment, or ontologically non-self-sufficient object, may be traced back to Aristotle's *Categories* I^{a}20: "By 'in a subject' I mean what is in something, not as a part, and cannot exist separately from what it is in". Medieval and early modern philosophers called moments 'modes' or 'accidents'. The notion is no longer so prevalent, but moments emerge here and there under various names, such as the 'characters' of G. F. Stout.[4] The term 'moment' is taken from Husserl, whose theory is the most comprehensive in modern philosophy.[5] Husserl also pointed out that not all moments are particularised qualities, but include also boundaries.[6] The formal concept *moment* may be defined as follows:

> *a* is a moment $=_{Df}$ *a* is possibly such that it exists, and *a* is necessarily such that, either it does not exist, or there exists an object *b*, which is possibly such that is does not exist, and *b* is not a part (proper or improper) of *a*.[7]

The objects on which the existence of a moment thus depends we call its *fundaments*, and say that the moment is *dependent on* its fundaments. The concepts *moment* and *ontologically dependent object* thus coincide.

Russell's weather conditions and deaths are clearly moments. Rainy weather cannot exist without masses of air and water; a death cannot occur unless there is an organism that dies. Many, perhaps all states, events and processes involve substances, and are thus moments. Moments, like the substances they involve, fall into kinds, some natural, like collisions and births, others artificial, like weddings and salutes. Some kinds of moment involve a fixed number of participants or require a fixed number of fundaments, others require a minimum, yet others are freely variable. What kinds of moments there are, and what their characteristics are, is not something to be decided by armchair methods. A great deal of scientific investigation concerns moments, such as energy distributions, chemical reactions, volcanic

eruptions, diseases, courtship rituals, traffic accidents, intonation patterns, and so on throughout *all* the sciences.

The notion of ontological dependence can be applied to Wittgenstein's *Tractatus.* It is the keystone of Wittgenstein's logical atomism that no *Sachverhalt* is the fundament of any other.[8] I differ from Russell and Wittgenstein in rejecting the thesis, most potently active in the *Tractatus*, but already present in *The Principles of Mathematics* of 1903 that "All complexity is conceptual in the sense that it is due to a whole capable of logical analysis".[9] This is the fatal error in their logical atomism. John's headache, which is dependent on him, is logically no more complex than its connected parts. Similarly, the surface of a plane wall is logically no more complex than the connected parts of this surface.

Having tried to sketch out a case for the ontological and scientific respectability of moments, I shall indicate their advantages for the role of truth-makers. Firstly, if we are already convinced that moments exist, then we need not introduce further entities simply to perform the truth-maker role. Secondly, a still sparser ontology than that envisaged here, namely a reistic ontology such as those of Brentano and Kotarbiński, while this still is a sufficient basis for a Tarskian theory of truth, requires, if the theory is to be adequate, a more elaborate metalogical machinery of sets. A truth-theory using moments offers a way of avoiding the heavy commitment to set-theoretical entities which so many philosophers and logicians seem to find so innocuous. A reistic theory further goes no way towards explaining the connection between truth and scientific investigation. According to the realist theory I hold, the kind of moments which go to make an elementary sentence true is in general a matter for *empirical* investigation. Medical science has shown, for instance, that there are several kinds of hepatitis. The sentence 'Cyril has hepatitis' can therefore be made true by different (but relevantly similar) kinds of moment, without exhibiting the slightest ambiguity or hidden logical complexity. Stock logical analysis, even of sentences like 'Hans and Franz are brothers', barely scratches the surface in the study of what makes them true. From the realist point of view, it is *perfectly normal* to know *that* a proposition is true and yet be in the dark as to what exactly makes it true.

The philosophical and logical side of truth theory embodies the chief insight of logical atomism, which is that we do not need to postulate truth-makers for logically complex sentences. There are no negative, conjunctive or disjunctive truth-makers, no moments of universality, existence or identity. Supporters of enterprises such as tense logic may similarly do away with moments of pastness, presentness and futurity in their account of the truth of tensed sentences.

It is then all the more important to consider how elementary propositions are made true. Consider the simplest possible case, where a present-tense elementary proposition is made true by exactly one moment. Then the moment stands to the sentence neither as an object stands to a noun or predicate under which it falls, nor as object designated to designating expression. Suppose that 'John has a headache' is made true by just one moment. What makes it true is simply John's headache itself. We must distinguish this from the fact (i.e. true proposition) *that* John has a headache. If 'that'-clauses designate anything it is propositions and not truth-makers. John's headache can be neither true nor false, but it does start, endure and fade away. That John has a headache may be true or false, but does not start, endure and fade away, nor, like the headache, does it have an intensity. Headaches and kicks fall under the nouns 'headache' and 'kick' just as cats fall under the noun 'cat'. We can form designating expressions like 'John's headache', 'the kick Hans just gave Franz' as easily for moments as for substances. Moments tend not to have proper names, but for purely pragmatic reasons: the beginnings of an explanation can be found in Locke.[10]

Truth-making is a semantic primitive, and not to be explained in terms of designation or falling under. Failure to observe this leads Davidson to suppose that sentences made true by events must quantify over events, since the relation is neither designation nor falling under:

> When we are tempted into thinking that a sentence like . . . [Amundsen flew to the North Pole in May 1926] describes a single event we are misled: it does not describe any event at all. But if [it] is true, *then there is an event that makes it true.*[11]

Certainly if moments (including events) may be named, they may be quantified over. And Davidson is right that in general such sentences may be made true by more than one event. Any event falling under 'flight of Amundsen to the North Pole in May 1926' will do. If there is just one, as here, we may designate it by a phrase such as '*the* flight of Amundsen . . .' or 'Amundsen's flight . . .'. We can use either the noun 'flight' or the verb 'flew', and get the same result. With the noun we need quantifiers, with the verb we do not, although we can add the optional quantificatory adverbial 'at least once', and for other sentences, e.g. that obtained by adding 'exactly once' to Davidson's sentence, they are indispensable. That there are obvious analogies between 'at least twice' and 'at least two' or between 'exactly once' and 'exactly one' does not imply that we can reduce the one to the other. We need, *pace* Davidson, a theory of predicate (or verb) modifiers to explain sentences involving numerical adverbials. Davidson is right that we can manage without such sentences, but wrong that we can analyse them away. Either verbs with adverbials or nouns with quantifiers will describe the same things alone, but it so happens that in English both options are available.[12]

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NOTES

1 Russell, B., *Russell's Logical Atomism* (London 1972), p. 36.
2 Ramsey, F. P., *Foundations* (London 1978), p. 44. Ramsey (p. 43) also anticipates Davidson's existential analysis of event predications.
3 Exceptions might be sentences like 'Sam is a man' or 'Sam exists'. One position on such sentences is to accept that Sam himself makes them true. Another is that the bundle of moments constituting his essence (Sam's *humanitas*) are the truth-makers. I do not discuss such cases further here.
4 For a survey of some modern uses see, N. Wolterstorff, *On Universals* (Chicago 1970), p. 137.
5 Husserl, E., *Logical Investigations* (London 1970), Investigation III. Cf. my "The Formalisation of Husserl's Theory of Wholes and Parts", in: B. Smith (ed.), *Parts and Moments* (Munich 1982).
6 Husserl, E., *Experience and Judgment* (Evanston 1973), § 32. In: G. E. M. Anscombe, *Three Philosophers* (Oxford 1961), p. 9, Anscombe changes Aristotle's particularised quality examples for a boundary example.
7 I thank Professor Roderick Chisholm for help in improving this definition.
8 This was the theme of my contribution to the previous symposium: P. M. Simons, "Logical and Ontological Independence in the *Tractatus*", in: E. Morscher & R. Stranzinger (eds.), *Ethics: Foundations, Problems, and Applications: Proceedings of the Fifth International Wittgenstein Symposium* (Vienna 1981), pp. 464—7. Whether *Sachverhalte* are moments (in my sense) of the objects they involve, depends on whether the objects are *parts* of the *Sachverhalte*. I am inclined to think they are, so the objects are not fundaments of the *Sachverhalte*. In a sense of 'founds' obtained by dropping the requirement that *b* be not part of *a*, the objects may still be said to found the *Sachverhalte*.
9 Russell, B., *The Principles of Mathematics* (London ²1937), p. 466.
10 Locke, J., *An Essay Concerning Human Understanding* (Oxford 1975), p. 465.
11 Davidson, D., *Essays on Action and Events* (Oxford 1980), p. 117.
12 This paper was presented at the Symposium in connection with those of K. Mulligan and B. Smith.

* * *

WHY THE LIAR CANNOT BE SAID

Laurence Goldstein

Wittgenstein's solution of the semantical paradoxes may be grouped with a number of recent non-classical approaches[1] in that it claims that the paradox-yielding sentences lack a truth-value. But whereas, by and large, those other solutions block the reasoning that leads to contradiction by purely formal means, Wittgenstein develops, between 1914 and c. 1944, a general theory from which the conclusion that the paradox-yielding sentences are not 'truth valued' follows as a consequence. The general theory erects a distinction between sentences and statements, and indicates the conditions under which a sentence fails to yield a statement. The paradox-yielding sentences are revealed as sentences that cannot be used to make statements, and this is why they lack truth-value.

Two approaches to the Liar can be extracted from the *Tractatus*, the first simple, not to say simplistic, the second sophisticated but obscure.

At *TLP* 4.442, Wittgenstein says "It is quite impossible for a statement (Satz)[2] to say of itself that it is true" nor, we might add, that it is false. Hence the Liar

(L) This statement is false

is a non-statement. The thought is this: Consider

(i) Snow is white.

(ii) "Snow is white" is true.

The predicate "is true" in (ii) could be said to assert the truth of what is asserted in (i), but not of what is asserted in (ii), since it is a quotation of (i) that is the subject of (ii). To say something about *itself*, a statement (subject and predicate) would need, *per impossible* to be identical to its own subject. Hence *TLP* 3.332 "No statement can say anything about itself, since the statement-sign cannot be contained within itself".

The main problem with this approach is that, although Wittgenstein's strictures on statements saying anything about themselves look plausible when we are considering examples such as (i) and (ii), in the case of the Liar, we have a self-referring device which apparently lets us do precisely what Wittgenstein says can't be done. And in a statement like

(iii) This sentence is in English.

the device works quite unproblematically.

Sentences are perceptible marks or sounds identified by observational criteria. We can refer to them but (and here begins the second approach to the Liar) we *cannot* refer to statements. It is not hard to establish that, for Wittgenstein, *statement* is a formal concept. Formal concepts cannot be expressed by means of a function (*TLP* 4.126) but only by means of variables; wherever one attempts to use words for fomal concepts in a different way (i.e. as proper concept words), nonsensical pseudo-statements (unsinnige Scheinsätze) result (*TLP* 4.1272). Now, on most occasions when the formal concept-word 'statement' occurs, we *can* express ourselves in the required way. Thus

(iv) His statement is false.

is expressed (in first approximation) by

(v) (∃ that -p) (He stated that -p and that -p is false).

But such eliminability of the formal concept-word is not possible in the case of (L), hence the Liar is a nonsensical pseudo-statement.

Thus, the doctrine of formal concepts provides a way out of the Liar paradox. The trouble is, though, that the doctrine is as puzzling as the paradox, introduced, as it is, only by metaphors (e.g. *TLP* 4.12, 4.121) and a variety of notions that Wittgenstein was right to repudiate in later writings (e.g. *PG* p. 163 and Appendix 4, *PI* §§ 97, 115ff). However, the doctrine is an excrescence of Wittgenstein's theory of showing and what cannot be said, which theory is both important and true. I need not argue this, as Peter Geach has done so already.[3] Just as Frege's famous examples reveal that we cannot refer to concepts, since the attempt to do so "points to an object and belies the predicative nature of a concept",[4] so the attempt to refer to statements points to an object and belies the statemental (saying, claiming) nature of a statement. So we cannot refer (in the philosophical sense) to statements although, in the ordinary sense we are constantly referring to them, as in (iv).[5] The point is that to make a statement one *uses* a sentence (with appropriate intentions), and usings belong in the category 'To Do'. Statements, then, are no kind of entity, so the existence of the word 'statement' as a noun is logically misleading. In most cases, as we have seen, no serious problem arises, for the word disappears, as in (v), in a suitable paraphrase. But (L) resists such paraphrase, the offending pseudo-referring expression remains. Hence (L) is a Scheinsatz. The sentence cannot be used to make a statement. Clarity demands that this be argued at length; limitations of space forbid it.

Wittgenstein returned, in later work, to the paradoxes, recognizing that the definitive, final solution had not been supplied in the *Tractatus*. In conversations with the Vienna Circle he stressed the distinction between statements and the formulae of a calculus, insisting that only when dealing with the former can we talk about contradiction. He proposed that a 'contradiction' arising in a formal calculus be called a 'Z'.[6] So a Z derived, say, from the uninterpreted formula

$$(\exists x)\,(y)\,(f(y, x) \equiv \sim f(y, y))$$

is trivial or 'harmless',[7] but a contradiction arising, say, from (L), requires diagnosis and cure.

The early treatment, that we have sketched, is somewhat refined in the 1939 *Lectures on the Foundations of Mathematics*[8] where, to a suggestion of John Wisdom's that the Liar is not a statement about itself, Wittgenstein replies: "Ah, that is the point. We might ask, 'Is it a sentence?' or 'Is it a proposition?'—Tell me, what is the criterion for making a statement?". Wittgenstein's own answer to this last question is that a statement, but not a sentence, has both reference and meaning. He introduces a notational device to distinguish a written sentence beginning with the word 'This', and a written statement in which the word 'This' is used. The statement-marking device is an arrow pointing from the word 'This' to the object which is the intended referent of this word. The arrow serves as a 'pointing gesture'. Now, says Wittgenstein, "the words in the sequence 'This is red' are what one calls an English sentence. But if I just write it on the blackboard, you may say that it has no meaning at all—because there is no pointing gesture.". On the other hand, a statement is made when reference is secured. Thus, by uttering 'This is false', I succeed in making a statement if the 'This' points to a second statement, say, 'I am a fool'. Of course, as we have seen, one cannot really point to a statement, and what is happening here is that I am pointing *through* the second statement to, in this case, me. This is what *grounds* the first statement.[9] A version of the Liar arises when the gesturing arrow from the word 'This' loops back so that it is pointing to the putative statement 'This is false' in which that putatively referring expression

occurs. Here the question of statementhood might seem undecidable. Wittgenstein writes of this example: "If the question is whether this is a statement at all, I reply: You may say that it's not a statement. Or you may say it *is* a statement, but a useless one." In later years, he seems to have dropped the 'useless statement' option,[10] perhaps for reasons remembered from *TLP* 3.328.

One can think of many plausible ways to defend Wittgenstein's claim that the Liar sentence fails to make a statement and this would constitute strong temptation to accept his solution of the paradox, but for the existence of two crucial objections. First, cannot a version of the Liar be set up in which the falsity predicate applies not to statements but to sentences? Second, is not Wittgenstein's solution, like most non-classical approaches, vulnerable to the Strengthened Liar?

Both objections may be fielded by considering (1) below, a strengthened version of the Liar, where 'T*' and 'F*' apply to sentences—a sentence is T* if it yields a true statement, F* if it yields a false one, and 'M' is a third 'value'.

SL* is the same of the sentence ~ T* SL* (1)

The Wittgensteinian proposal is that the value of SL* is M, so we have

MSL* (2)

Now, if SL* has the value 'M', it cannot have the value 'T*':

~ T* SL* (3)

So, with due acknowledgement to Tarski,

T* ⌜~ T* SL*⌝ (4)

Hence, from (1),

T* SL* (5)

But the conjunction of (3) and (5) is a contradiction, so we appear to have a *reductio ad absurdum* of the Wittgensteinian proposal (2).

Now, ignoring the commentary that attended this proof, and taking the symbols to be signs without meaning, then what we have is the derivation of a Z in a formal calculus. But the question is: if these signs are assigned their intended *meanings* then is what we have a valid deduction of a contradiction? The answer is 'No'. In order to pass from (3) to (4), it must be assumed that ⌜~T* SL*⌝ is meaningful. But this conflicts with the assumption (2) that it is meaningless, in the sense of being incapable of yielding a statement (Wittgenstein's sense for 'M'). Another way of attacking the proof is to question the move from (2) to (3). The informal justification for this move was that if SL* is M it cannot be T*. But if SL* cannot be used to make a statement, no proposition can be expressed by using it, i.e. by using ⌜~ T* SL*⌝.

It is a mistake to think that, from the fact that SL* does not yield a statement, one can validly infer that SL* is not true*. SL* is *not the sort of thing that can be* true* or false*, so to say that it is true* or that it is not true* is meaningless. Hence, if sentences are what are true* or false* then, strictly speaking, SL* and (L) are not sentences but graphemes.[11] Each has the ring of a sentence but, as Wittgenstein points out, "the mere *ring of a sentence* is not enough to give these connexions of signs any meaning".[12]

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NOTES

1 See, for example, the contributions to R. L. Martin (ed.), *The Paradox of the Liar* (New Haven 1970).
2 'Statement' is the closest one-word English translation of 'Satz'. A Satz has sense and says how things are (*TLP* 3.221, 3.3). See D. Shwayder's "Critical Notice" of Stenius' book, in: *Mind* (1963). Understanding Wittgenstein's notion of *Satz* is crucial for understanding the *Tractatus*.
3 Geach, P. T., "Saying and Showing in Frege and Wittgenstein", *Acta Philosophica Fennica*, Vol. 28.
4 In "Sense and Reference Extended", translated under the title "Comments on Sense and Meaning", in: G. Frege, *Posthumous Writings* (Oxford 1979), p. 122.
5 Kit Fine persuaded me that this point needs to be stressed.
6 McGuinness, B. F., (ed.), *Ludwig Wittgenstein and the Vienna Circle* (Oxford 1979), pp. 126, 175—176.
7 The above formula is the negation of a theorem of classical logic, so any conclusion drawn from it will be unsurprising (non-paradoxical). This way of defusing certain paradoxes is suggested by J. F. Thomson, "On Some Paradoxes", in: R. J. Butler (ed.), *Analytical Philosophy* (Oxford 1962).
8 Diamond, C., (ed.), *Wittgenstein's Lectures on the Foundations of Mathematics* (Hassocks 1976), pp. 207—209.
9 For an excellent discussion of *grounding*, see H. Herzberger, "Paradoxes of Grounding in Semantics", *Journal of Philosophy*, Vol. 67 (1970).
10 See L. Wittgenstein, *Remarks on the Foundations of Mathematics* (Oxford ^{3}1978), p. 367 and p. 396; these sections written between 1941 and 1944.
11 Objections, objections! What about exclusion negation? What about a Strengthened Liar such as S*L*:S*L* is false or fails to make a statement? I can do no more here than refer the interested reader to L. Goldstein and L. Goddard, "Strengthened Paradoxes", *Australasian Journal of Philosophy*, Vol. 58 (1980), pp. 211—221 and L. Goldstein, "Categories of Linguistic Aspects and Grelling's Paradox", forthcoming in *Linguistics and Philosophy*, Vol. 4 (1981).
12 Wittgenstein (^{3}1978), p. 123.

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PARTICULARS WITHOUT SUBSTRATA

Albert Casullo

In his earlier work, Bertrand Russell defended the view that ordinary particulars are complex entities consisting of two more fundamental kinds of entities: universals and a substratum. Russell, however, later rejected substrata and maintained that particulars are complexes of universals. The first part of this paper will briefly examine Russell's reasons for rejecting substrata, while the second will assess some criticisms of his later view.

I

Russell orignally offered the following argument for substrata:

> It is logically possible for two exactly similar patches of white, of the same size and shape, to exist simultaneously in different places . . . Now, . . . it is self evident that, in such a case, there are two different patches of white . . . Thus the fact that it is logically possible for precisely similar things to coexist in two different places, but that things in different places at the same time cannot be numerically identical, forces us to admit that it is particulars, i.e., *instances* of universals, that exist in places, and not universals themselves.[1]

This argument as it stands overlooks an obvious way of accounting for the numerical diversity of the patches without invoking instances of *whiteness*. For one might argue that since the two patches coexist in different places they must differ in their spatial relations. One might expect Russell to respond to this point by arguing that just as it is logically possible for the two patches to have all qualities in common, it is also logically possible for the two patches to have all spatial relations in common. He does not, however, utilize this argument in the case of relations. Instead, he appears to think that it can be shown independently of considerations about what is logically possible that difference in spatial relations cannot account for numerical difference. Let us assume, for example, that a patch of red is to the right of one white patch and to the left of the other. Russell argues that

> this does not imply that the patches are two unless we know that one thing cannot be both to the right and to the left of another . . . I do not mean to deny that we do know this. But two things deserve notice—first, that it is not an analytic proposition; second, that it presupposes the numerical diversity of our two patches of white.[2]

Although the argument is difficult to interpret, the leading idea seems to be that since spatial relations presuppose numerical diversity they cannot account for it. The upshot of the argument is that even if there were no possible worlds in which numerically different objects did not differ in spatial relations, spatial relations still would not account for their diversity.

These considerations yield the following argument for substrata: (1) It is possible for different particulars to have all qualities in common; (2) Relations cannot individuate particulars; (3) Therefore, we must admit instances of universals to account for numerical difference. Interpreting the conclusion presents some difficulties since "instances of universals" can be understood in at least two different ways. On the one hand, an instance of, say, *whiteness* may be viewed as what Stout has called an "abstract particular" or what others have called "tropes". On this view, in addition to the universal *whiteness*, there exist particular whitenesses one for each existing white object. On the other hand, an instance of *whiteness* may be viewed as the exemplification of the universal *whiteness* by a propertyless (or bare) substratum. On this view, there do not exist many particular whitenesses in addition

to the universal *whiteness* but only many exemplifications of the universal by many different substrata. For our purposes, we shall regard instances of universals on the substratum model since this is the dominant view in the tradition as well as the view which the later Russell took himself to be rejecting.

Russell's rejection of substrata appears to rest on two key doctrines. First, he maintained that position in the visual field is absolute and two different particulars in the same visual field always differ in their positional qualities.[3] The implications for his original argument are clear. He can now reject its conclusion by pointing out that the two patches occupy different places in the visual field not in virtue of differences in spatial relations, which cannot individuate, but in virtue of differences in their positional qualities. Second, Russell also maintained that there are complexes of universals which *in fact* do not have all qualities in common. These complexes are defined in terms of the primitive relation of *compresence*. Although the relation is primitive, Russell does tell us that it manifests itself in psychology as "simultaneity in one experience" and in physics as "overlapping in space-time".[4] A *complete complex of compresence* is then defined as a complex of universals in which 1) all members of the complex are compresent and 2) nothing outside the complex is compresent with every member of it. Since he maintains that it is a well-established *empirical generalization* that no two complete complexes have all qualities in common, he is not committed to the necessary truth of the principle of the identity of indiscernibles (PII) but only to its contingent truth. Therefore, the later Russell regarded his claims that there are no substrata and that particulars are complexes of universals as *contingent* truths. The early Russell, on the other hand, was primarily concerned with the question of whether these claims are *necessary* truths.

II

Russell's critics, however, have not been happy with his attempts to circumvent the problems generated by the PII. Indeed, most philosophers continue to maintain that the fact that the PII is not a necessary truth is the main stumbling block for any theory which analyzes particulars as complexes of universals. Since this line of criticism has been recently advanced by M. J. Loux, it will be useful to examine his arguments.

Let us suppose that there exists at the center of my visual field an object having the qualities $P_1, \ldots P_n$. According to Loux,

> Russell wants to claim . . . that if we add to $P_1, \ldots P_n$ the properties of *being central to a visual field* and *being simultaneous with sensation*, we will have a list which, while being composed exclusively of pure properties, is *individuating* in the sense that it is impossible that more than one object exemplify all the properties on the list.[5]

This answer, however, is unconvincing because

> The expanded list is individuating only if it is necessarily true both that my visual field is the only visual field and that my present sensation is the only sensation that ever occurs . . . But, of course, neither claim is true, let alone necessarily true.[6]

In assessing this criticism, it must be recalled that Russell regarded it as a contingent truth that particulars are complexes of universals. But the contingent truth of the proposition that particulars are complexes of universals entails only the contingent truth of the PII and not its necessary truth. Consequently, Loux attributes to Russell a view which is much stronger than his theory requires. Russell need not maintain that it is impossible that more than one object exemplify the properties $P_1, \ldots P_n$.

Although Loux misinterprets the theory, the actual argument he presents calls into question even the contingent truth of the PII. The problem is that although positional qualities can individuate patches within a single field, they cannot individuate patches in *different* visual fields. It seems quite possible that there could exist two white patches of the same size and

color occupying the center of two different visual fields. The possibility involved here is not mere logical possibility. It seems that I can now visualize a white patch which has all qualities in common, including its positional quality, with the patch I visualized a few seconds ago. In order to handle this difficulty, Russell must provide a way of individuating visual fields in terms of their qualities. For the only way to individuate two qualitatively similar patches occupying the center of different visual fields is in terms of differences in the visual fields which they occupy. Here Russell's second key doctrine comes into play. He maintains that complete complexes formed by the relation of *simultaneity in one experience* take the place of what we would ordinarily call a "total momentary experience". Although it may be plausible to maintain that a particular within a visual field, such as a white patch, recurs and, perhaps, that an entire visual field sometimes recurs, Russell maintains that it is quite implausible to suppose that there exist two total momentary experiences with all qualities in common. Consequently both phenomenal particulars, as well as visual fields, are ultimately individuated by their membership in complete complexes of compresence which do not in fact repeat themselves.

Loux, however, is also unhappy with Russell's claim that it is a contingent truth that particulars are complexes of universals. Two objections are offered:

> For one thing, the bundle theorist who takes this line will have to confront the persistent claims of Bergmann and his followers that the numerical diversity of qualitatively indiscernible objects is not a merely abstract possibility, but a phenomenological fact . . . But even if he could, his proposal to treat the bundle theory as a merely contingent truth only puts off the evil day when he must confront the dilemma of individuation; for while it may be true that no two objects in our world are qualitatively indiscernible, this remains a possibility.[7]

In assessing the first objection, we must first become clear about the phenomenological fact in question. Bergmann typically begins his discussion by asking us to consider two spots of exactly the same shape and color.[8] Now if the phenomenological fact is that we at least sometimes experience such objects, Russell would certainly agree. For although he often talks about the logical possibility of two sensible patches of the same color, size, and shape, it is clear that he does not regard this as a mere logical possibility. He believes that at least some of us sometimes experience such patches. This fact, of course, is not sufficient to establish that the spots are qualitatively indiscernible. For Russell contends that they occupy different positions in the visual field in virtue of differences in their positional qualities. Now is it also a phenomenological fact that there are no positional qualities and, hence, that the spots are qualitatively indiscernible? This seems dubious in light of the fact that most defenders of such qualities appeal to phenomenological considerations. Nelson Goodman maintains that "to say that a concretum is located at the center of the visual field is quite as positive as to say that it has a certain red color; arbitrary referents are no more needed in the former than in the latter."[9] And H.-N. Castañeda argues that "Objects may alter their locations and relationship and even disappear together from vision, yet the spatial structure before consciousness can remain unaltered".[10] Although these appeals may ultimately prove to be incorrect or unconvincing, they are not question-begging.

Loux's final objection can be interpreted in two different ways depending on whether we read "possibility" as "metaphysical possibility" or "epistemological possibility". On the first reading, the objection poses no difficulty for the theory. For to grant that there are possible worlds in which there exist diverse objects which are qualitatively indiscernible simply shows that it is not a necessary truth that particulars are complexes of universals. It does not establish that the particulars of the actual world are not such complexes. The second reading does present a problem which has been raised by other critics of Russell.[11] The problem, stated very generally, is that the available evidence does not appear sufficient to support the sweeping generalization that no two complete complexes have all qualities in common.

In conclusion, I want to suggest that this problem can be minimized by rejecting a key

assumption in Russell's position. Russell takes for granted throughout his discussion of this issue that relations cannot individuate. As a result, he must defend the position that no two complete complexes have all *qualities* in common. If the assumption that relations cannot individuate were to be rejected, then the theory would be committed only to the much weaker claim that no two complete complexes have all qualities *and relations* in common. But even the most severe critics of the PII appear willing to grant that it is at least plausible to maintain that no two particulars *in fact* have all *qualities and relations* in common.

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NOTES

1 Russell, B., "On the Relations of Universals and Particulars", in: C. Landesman (ed.), *The Problem of Universals* (New York 1971), p. 27.
2 Russell (1971), p. 30.
3 Russell, B., *Human Knowledge: Its Scope and Limits* (New York 1948), pp. 298—99.
4 Russell (1948), pp. 296—97.
5 Loux, M. J., *Substance and Attribute* (Dordrecht 1978), p. 136.
6 Loux (1978), p. 136.
7 Loux (1978), pp. 156—67.
8 See, for example, G. Bergmann, *Realism* (Madison 1967), p. 22.
9 Goodman, N., *The Structure of Appearance* (Dordrecht 1977), p. 139.
10 Castañeda, H.-N., "Perception, Belief, and the Structure of Physical Objects and Consciousness", *Synthese*, Vol. 35 (1977), p. 257.
11 See, for example, R. M. Chisholm, "Russell on the Foundations of Empirical Knowledge", in: P. A. Schilpp (ed.), *The Philosophy of Bertrand Russell* (La Salle 1971), pp. 439—44; and A. J. Ayer, *Russell and Moore: The Analytical Heritage* (Cambridge 1971), pp. 76—77.

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3. Formale Ontologien

3. Formal Ontologies

ONTOLOGY: WHAT NEXT?*

Czesław Lejewski

In the first paragraph of Chapter I of his *Introduction to Mathematical Philosophy* Russell reminds us that

> 'Mathematics is a study which' . . . 'may be pursued in either of two opposite directions. The more familiar direction is constructive, towards gradually increasing complexity' . . . 'The other direction, which is less familiar, proceeds, by analysing, to greater abstractness and logical simplicity'.

And in the second paragraph of the same chapter Russell continues by saying that

> 'The most obvious and easy things in mathematics are not those that come logically at the beginning; they are things that, from the point of view of logical deduction, come somewhere in the middle'.[1]

Russell's observations seem to be true not only of mathematics but also of many other disciplines and, in particular, they seem to apply to that discipline which Aristotle called the science of being *qua* being and which, centuries later, acquired the name of ontology. In this case too we can distinguish a portion that, from the systematic point of view, comes somewhere in the middle. It falls within the boundaries of philosophical enquiry. Now, the philosophical study of being *qua* being has led, on the one hand, to the emergence of a variety of specialized disciplines such as physics, astronomy, biology and so on, and, on the other, to the establishment of axiomatized systems of ontological principles. It is with the latter development that I propose to concern myself in the present paper.

The science of being envisaged by Aristotle was to be distinguished from other sciences by its universality. Its truths or principles or laws were to apply to everything that existed. And being a most general science Aristotle expected it to achieve a very high standard of exactitude and precision. However, neither Aristotle himself nor his successors can be credited with implementing his conception of ontology in strict accordance with his specification. A satisfactory implementation seems to have been arrived at much later, more than two thousand years later. I am referring to the results of the researches undertaken by Frege and Russell on the one side, and by Leśniewski on the other.

An interesting thing to note is that the problems these eminent scholars set out to solve, did not appear to be related to the science of being *qua* being as conceived by Aristotle. Both Frege and Russell were concerned with the foundations of mathematics and, in particular, with the problem of explicating the notion of number. They claimed to have succeeded in deriving the vocabulary of arithmetic from that of logic, and in deducing the presuppositions of arithmetic from logical presuppositions. Now, their logical vocabulary accommodated, among other notions, the notion of identity, the notion of difference, the notion of existence, the notion of numerical equality, and the notion of numerical infinity. These notions are ontological notions, and some of them are already mentioned by Aristotle as characteristic notions of the science of being. The statements of the logic of *Principia* exhibit the level of generality prescribed by Aristotle for the statements of his science. They are true in any 'possible world' irrespective of its size, which implies that they are true in the world that contains everything that there is. Thus the logic of *Principia* lends itself to ontological interpretation. And so do other logical theories such as the theory of quantification with identity, predicate calculus, and Aristotelian syllogistic.[2]

Leśniewski's investigations began with an attempt at solving Russell's antinomy of the class of all those classes that are not members of themselves. He saw the source of the

antinomy in the ambiguity of the notion of class as used in ordinary discourse. On distinguishing between the notion of distributive class and that of collective class, he argued that some of the presuppositions from which the antinomy was derived, were not true of collective classes although they did not appear to be obviously false. This explained to him why the argument making up the antinomy carried with it an element of cogency although, in the end, it led to a contradiction.[3] In order to give his concept of collective class a sound foundation he related it by means of definitions to the notion of proper part, which to his mind was less controversial than the notion of class. It is this notion that Leśniewski used as a primitive notion to construct an axiomatized system of a theory which, subsequently, he called *Mereology*.[4] It was a very general theory of part-whole relations, and it provided a framework within which a number of statements about collective classes could be established. Unlike arithmetic, *Mereology* was not derivable from what Leśniewski regarded as logic, but it presupposed no other theory besides logic. It is significant that when Leśniewski decided to give the form of an axiomatized system to the logic presupposed by his *Mereology*, he called that logic *Ontology*.[5] And ontology it was in the sense of being a most general theory of what there is.

It was constructed by Leśniewki in 1920, ten years after the publication of the first volume of Whitehead and Russell's *Principia*. It is not surprising that Leśniewki's *Ontology* displays certain refinements not present in *Principia*. The most notable concern the grammar of its language, definitions, and, generally, the directives, that is to say, the rules specifying the conditions under which a new thesis is allowed to be added to the system. However, all the improvements Leśniewski incorporated into *Ontology* can be adapted to *Principia*, and the difference between the two systems of logic can be reduced to the difference between the types of logical language used, respectively, by the authors of *Principia* and by Leśniewski. The meaningful expressions of the language of *Principia* can be made to form a hierarchy founded on propositions and singular referential names, whereas the hierarchy of meaningful expressions of Leśniewski's *Ontology* is based on propositions and general names, that is to say, common nouns. Some of them designate one object each, some designate more objects than one, while some others designate no objects at all. As a result of this sort of presupposition the quantifiers binding name or noun variables in the language of Leśniewski's *Ontology* have no existential import, and, in this respect, differ from the quantifiers which bind name variables in the language of *Principia*.[6] However, the differences between these two types of logical language are irrelevant as regards their power of expression. By and large, whatever can be said in the language of *Principia* can be equally well expressed in the language of *Ontology* and *vice versa*. The translations from the one language into the other will be truth preserving, but they may not necessarily preserve the identity of grammar.

As theories of what there is, neither the logic of *Principia* nor Leśniewski's *Ontology* are complete. The general description of reality they offer is open to expansion. They offer us, as it were, only an unfinished first chapter of such a description with further chapters to follow.

Now, an axiomatized system can be expanded in various ways. We can expand its vocabulary by means of definitions, which may give rise to new and important theses. Alternatively, we can expand it by strengthening its axiomatic foundations in terms of the available vocabulary. Finally, we can expand a system by introducing new vocabulary that cannot be introduced by means of definitions but involves subjoining to the system new axioms. It is this kind of expansion that I have in mind when I ask in the title of my paper what comes next after ontology, I mean, after Leśniewski's *Ontology*. To put it in metaphorical terms, the question is this: what is the second chapter in the description of reality? And the answer is already at hand. It is *Mereology*. In fact, in the case of Leśniewski, the second chapter in the description of reality had been written before the first. It cannot be denied that the theses of *Mereology* describe, in very general terms, everything that there is. And the only theory that is presupposed by *Mereology*, is logic, in Leśniewski's sense, that is to say, his *Ontology*. It is to be noted that the expansion of *Ontology* achieved by subjoining to it mereological axioms

does enrich the original vocabulary of *Ontology* but it does not affect the original grammar of the ontological language.

The logic of *Principia* can also be expanded into a system of mereology. This has already been done by Tarski[7] and by Goodman in collaboration with Leonard.[8]

Like the first chapter the second chapter in the description of reality is not finished. Tarski's system of mereology has been expanded, by Tarski himself, into a system of atomistic mereology and, more recently, a similar expansion has been discussed in the literature with reference to Leśniewski's *Mereology* as well as an expansion that turns Leśniewski's original system into a system of atomless mereology.[9] In accordance with atomistic mereology every object has an atom as its proper or improper part, an atom being an object that has no proper parts. The characteristic thesis of atomless mereology asserts that every object has a proper part.

For an object to have proper parts it is sufficient and necessary that it should be extended in time or in space. If this is the case then we have a clue as to what the third chapter in the description of reality should be. It should be, so it seems, a general theory of time or a general theory of space. General chronology,[10] which appears to be a suitable name for the former, is likely to be simpler, from the formal point of view, than general stereology, by which I understand the latter, notwithstanding the fact that time-properties characterizing objects and time-relations holding between objects are perhaps less intuitive than the corresponding space-properties and space-relations. It is for this reason that, in my view, general chronology deserves to be given priority.

The preliminary, philosophical enquiry into the nature of time has been going on for centuries, and will no doubt continue, but it is also true to say that the stage has been reached for some researchers to pursue the study of time in either of the two directions analogous to those distinguished by Russell in the case of mathematics. Indeed the progress in the direction towards precision in measuring the temporal extent of objects of minute duration, and in the direction of greater accuracy in placing various cosmic events on a time scale that extends for thousands of light years into the past and for a shorter, perhaps, but not less impressive distance into the future has been amazing, and the credit for it must go to physicists and to astronomers.

The study of time in the direction towards greater abstractness and logical simplicity seems to have been pursued along two different routes. One of them has been very busy in recent years. It has become a favourite choice of many talented researchers inspired by the ideas and enthusiasm of Arthur Prior. The results of his and his followers' researches have reached the form of axiomatized systems of what has become known as tense logic.[11] The other route has been explored by relatively few, and, at present, appears to be deserted. More about it in a moment.

The characteristic feature of tense logic is that in its framework certain notions relating to time in ordinary discourse are taken to be embedded in propositions forming functors for propositional arguments. For instance, in the expressions of the form 'it has been the case that *p*' or 'it will be the case that *p*', where '*p*' stands for a proposition, the expressions 'it has been the case that' and 'it will be the case that' are taken to be functors belonging to the same semantic category (*i.e.*, the same part of speech) to which the functor of negation, 'it is not the case that', belongs. I entirely agree with Prior that systems of tense logic developed on these lines have much in common with modal logic, and like the latter can be regarded as many-valued systems of propositional logic,[12] but I find it difficult to see with what sort of contribution many-valued systems of propositional logic can be credited as regards ontology. Faced with the choice between two-valued logic and a many-valued one, I opt for the former because compared with the world in which I live, systems of the latter strike me as very interesting and exciting pieces of deductive fiction. This does not amount to the claim that in ordinary discourse propositions with tensed expressions as their constituent parts have no role to play in describing reality. They describe things just as tenseless propositions do, but, in addition, they relate those things to the utterer. Russell saw that when

he included all forms of verbs involving tense among what he called 'egocentric particulars'.[13] Roughly speaking the additional information contained in statements involving tense is this: a statement with a verb in the past tense tells us that the object (objects) it is about, is (are) earlier than the utterer, a statement in the present tense tells us that the object (objects) it is about, is (are) contemporary with the utterer, whereas a statement with a verb in the future tense tells us that the object (objects) it is about, is (are) later than the utterer of the statement.

The notion of the temporal order of objects, the notion which is embedded in expressions such as 'is earlier than', 'is wholly earlier than', 'is later than', 'is entirely earlier than' had attracted the attention of those scholars who preferred to explore the alternative, less busy, route in the direction towards greater abstractness and logical simplicity in the study of time. And in exploring this route Woodger was one of the leading pioneers.[14] However, the study of the temporal order of things was not for him the main objective. He had set out to establish an axiomatized system of a substantial portion of biology, and he stumbled, as it were, on the problem of the temporal order of objects when he had turned to examining the presuppositions of his biological system. For in order to articulate these presuppositions he found it desirable to set up an axiomatized system of the theory of the temporal order of things,[15] a theory which he called theory **T**. Now, theory **T** relied on the theory of part-whole relations, theory **P** in Woodger's terminology. The articulation of it took the form of an axiomatized system, the presuppositions of which were finally accommodated within the framework of *Principia*. In choosing axioms for his systems of the theories **P** and **T** Woodger had the benefit of Tarski's advice. Thus the axioms for the system of **P** are an adaptation, to the language of *Principia*, of Leśniewski's axioms for a system of *Mereology* as simplified by Tarski.[16]

In terms of the language of *Principia* the axiomatic foundations of Woodger's systems of **P** and **T** can now be stated explicitly.

The notion of being a proper or improper part is the only primitive, *i.e.*, undefined notion of the system of **P**. It is embedded in expressions of the form '*a* is a part of *b*', '*a* P *b*' in symbolism.

It is assumed, axiomatically, that

WPA1. for every *a*, *b*, and *c*, if *a* is-a-part-of *b* and *b* is-a-part-of *c* then *a* is-a-part-of *c*

In symbolism:

$$(a\ b\ c)\colon a\ \mathrm{P}\ b\ .\ b\ \mathrm{P}\ c\ .\ \supset\ .\ a\ \mathrm{P}\ c$$

It is further assumed, by way of definition, that

WPD1. for every *a* and φ, *a* is-the-sum-of-all-objects-each-of-which φs if and only if ((for every *b*, if *b* φs then *b* is-a-part-of *a*) and (for every *b*, if *b* is-a-part-of *a* then there exist a *c* and a *d* such that *c* φs, *d* is-a-part-of *b*, and *d* is-a-part-of *c*))[17]

$$(a\ \varphi) :: a\ \mathrm{S}\ \varphi\ \therefore\ \equiv\ \therefore\ (b)\colon \varphi(b)\ .\ \supset\ .\ b\ \mathrm{P}\ a\ \therefore\ (b)\colon b\ \mathrm{P}\ a\ .\ \supset\ .\ (\exists\ c\ d)\ .\ \varphi(c)\ .\ d\ \mathrm{P}\ b\ .\ d\ \mathrm{P}\ c$$

Finally, it is assumed, axiomatically, that

WPA2. for every *a* and φ, if *a* φs then there exists a *b* such that ((*b* is-the-sum-of-all-objects-each-of-which φs) and (for every *c*, *c* is-the-sum-of-all-objects-each-of-which φs if and only if *b* is-the-same-object-as *c*))

$$(a\ \varphi) :: \varphi(a)\ .\ \supset\ \therefore\ (\exists\ b)\ \therefore b\ \mathrm{S}\ \varphi\ \therefore\ (c)\colon c\ \mathrm{S}\ \varphi\ .\ \equiv\ .\ b = c$$

The primitive notion of Woodger's system of **T** is embedded in expressions of the form '*a* is wholly earlier than *b*' or '*a* is entirely earlier than *b*' or '*a* is before *b* in time'. The symbolic translations of such expressions are of the form '*a* T *b*'. In terms of the primitive notion Woodger expands his system of **P** into a system of **T** by subjoining to the former the following axioms and definitions:

WTA1. for every *a* and *b*, if *a* is-wholly-earlier-than *b* then it is not the case that *b* is-wholly-earlier-than *a*

$$(a\ b)\colon a\ \mathrm{T}\ b\ .\ \supset\ .\ \sim(b\ \mathrm{T}\ a)$$

WTA2. for every φ and ψ, (there exist an *a* and a *b* such that (*a* is-the-sum-of-all-objects-each-of-which φs, *b* is-the-sum-of-all-the-objects-each-of-which ψs, and *a* is-wholly-earlier-than *b*)) if and only if ((there exist a *c* and a *d* such that (*c* φs and *d* ψs)) and for every *c* and *d*, if *c* φs and *d* ψs then *c* is-wholly-earlier-than *d*))

$$(\varphi\psi)\ ::\ (\exists\ a\ b)\ .\ a\ \mathrm{S}\ \varphi\ .\ b\ \mathrm{S}\ \psi\ .\ a\ \mathrm{T}\ b\ .\ \equiv\ \therefore\ (\exists\ c\ d)\ .\ \varphi(c)\ .\ \psi(d)\ \therefore\ (c\ d)\colon \varphi(c)\ .\ \psi(d)\ .\ \supset\ .\ c\ \mathrm{T}\ d$$

WTA3. for every *a*, *b*, and *c*, if (*a* is-wholly-earlier-than *b* and for every *d*, if *d* is-a-part-of *c* then it is not case that *a* is-wholly-earlier-than *d*) then *c* is-wholly-earlier-than *b*

In other words:

for every *a*, *b*, and *c*, if *a* is wholly earlier than *b* and it is not the case that *a* is wholly earlier than any part of *c* then *c* is wholly earlier than *b*

$$(a\ b\ c)\ ::\ a\ \mathrm{T}\ b\ \therefore\ (d)\colon d\ \mathrm{P}\ c\ .\ \supset\ .\ \sim(a\ \mathrm{T}\ d)\ \therefore\ \supset\ .\ c\ \mathrm{T}\ b$$

WTA4. for every *a*, *b*, and *c*, if (*a* is-wholly-earlier-than *b* and for every *d*, if *d* is-a-part-of *c* then it is not the case that *d* is-wholly-earlier-than *b*) then *a* is-wholly-earlier-than *c*

In other words:

for every *a*, *b*, and *c*, if *a* is wholly earlier than *b* and no part of *c* is wholly earlier than *b* then *a* is wholly earlier than *c*

$$(a\ b\ c)\ ::\ a\ \mathrm{T}\ b\ \therefore\ (d)\colon d\ \mathrm{P}\ c\ .\ \supset\ \sim(d\ \mathrm{T}\ b)\ \therefore\ \supset\ .\ a\ \mathrm{T}\ c$$

WTD1. for every *a*, *a* is-momentary if and only if for every *b* and *c*, if *b* is-a-part-of *a* and *c* is-a-part-of *a* then it is not the case that *b* is-wholly-earlier-than *c*

In other words:

for every *a*, *a* is momentary if and only if no part of *a* is wholly earlier than any other part of *a*

$$(a)\ \therefore\ \mathrm{mom}(a)\ .\ \equiv\ :\ (b\ c)\colon b\ \mathrm{P}\ a\ .\ c\ \mathrm{P}\ a\ .\ \supset\ .\ \sim(b\ \mathrm{T}\ c)$$

WTA5. for every *a*, there exists a *b* such that (*b* is-a-part-of *a* and *b* is-momentary)

In other words:

everything has a momentary part

$$(a)\colon (\exists\ b)\ .\ b\ \mathrm{P}\ a\ .\ \mathrm{mom}(b)$$

Woodger goes on to expand his system of **T** into an axiomatized system of biology, but this is outside my present concern.

An alternative and deductively stronger system of the theory of the temporal order of objects has been proposed by Tarski.[18] Tarski's system of **T**, like that of Woodger's, presupposes the theory of part-whole relations, but again the presupposed system of **P** is stronger than the one presupposed by Woodger. In fact, it is an atomistic system of **P**. The axiomatic foundations of the system include an additional definition and an additional axiom, which state, respectively, that

TPD2. for every *a*, *a* is-a-momentary-point if and only if for every *b*, if *b* is-a-part-of *a* then *b* is-the-same-object-as *a*

In other words:

for every *a*, *a* is a momentary point (or a space-time point or an atom) if and only if *a* has no proper parts

$$(a) \therefore \mathrm{momp}(a) \;.\equiv: (b): b \;\mathrm{P}\; a \;.\supset.\; b = a$$

TPA3. for every *a*, there exists a *b* such that (*b* is-a-part-of *a* and *b* is-a-momentary-point)

$$(\mathrm{a}): (\exists\, b) \;.\; b \;\mathrm{P}\; a \;.\; \mathrm{momp}\,(b)$$

For the purpose of symbolizing the primitive notion of his axiomatized system of **T** Tarski uses the same letter as Woodger, but he attaches to it a different meaning. For him an expression of the form '*a* T *b*' means that either the whole thing *a* precedes the whole thing *b* in time, or that the last slice of *a* coincides in time with the first slice of *b*. Thus '*a* T *b*' in Tarski's sense can perhaps be read as '*a* is wholly or almost wholly earlier than *b*'. In order to avoid possible misunderstanding Tarski's original '*a* T *b*' will, in what follows, be replaced by '*a* T′ *b*'.

The axiomatic foundations of Tarski's system of **T** consist of the following axioms and definitions.

TTD1. for every *a*, *a* is-momentary if and only if *a* is-wholly-or-almost-wholly-earlier-than *a*

$$(a): \mathrm{mom}\,(a) \;.\equiv.\; a \;\mathrm{T}'\; a$$

TTA1. for every *a*, *b*, and *c*, if *a* is-wholly-or-almost-wholly-earlier-than *b* and *b* is-wholly-or-almost-wholly-earlier-than *c* then *a* is-wholly-or-almost-wholly-earlier-than *c*

$$(a\; b\; c): a \;\mathrm{T}'\; b \;.\; b \;\mathrm{T}'\; c \;.\supset.\; a \;\mathrm{T}'\; c$$

TTA2. for every *a* and *b*, if *a* is-wholly-or-almost-wholly-earlier-than *b* then there exists a *c* such that (*a* is-wholly-or-almost-wholly-earlier-than *c* and *c* is-wholly-or-almost-wholly-earlier-than *b*)

$$(a\; b): a \;\mathrm{T}'\; b \;.\supset.\; (\exists\, c) \;.\; a \;\mathrm{T}'\; c \;.\; c \;\mathrm{T}'\; b$$

TTA3. for every *a*, there exists a *b* such that it is not the case that *b* is-wholly-or-almost-wholly-earlier-than *a*

In other words:

there is no such thing as the last thing in time

$(a)\colon (\exists\, b)\ .\ \sim(b\ \mathrm{T}'\ a)$

TTA4. for every *a*, there exists a *b* such that it is not the case that *a* is-wholly-or-almost-wholly-earlier-than *b*

In other words:

there is no such thing as the first thing in time

$(a)\colon (\exists\, b)\ .\ \sim(a\ \mathrm{T}'\ b)$

TTA5. for every *a* and *b*, if *a* is-momentary and *b* is-momentary then (*a* is-wholly-or-almost-wholly-earlier-than *b* or *b* is-wholly-or-almost-wholly-earlier-than *a*)

$(a\ b) \therefore \mathrm{mom}(a)\ .\ \mathrm{mom}(b)\ .\ \supset : a\ \mathrm{T}'\ b\ .\ \vee\ .\ b\ \mathrm{T}'\ a$

TTA6. for every *a* and *b*, *a* is-wholly-or-almost-wholly-earlier-than *b* if and only if for every *c* and *d*, if *c* is-momentary, *c* is-a-part-of *a*, *d* is-momentary, and *d* is-a-part-of *b* then *c* is-wholly-or-almost-wholly-earlier-than *d*

$(a\ b) \therefore a\ \mathrm{T}'\ b\ .\ \equiv : (c\ d)\colon \mathrm{mom}(c)\ .\ c\ \mathrm{P}\ a\ .\ \mathrm{mom}(d)\ .\ d\ \mathrm{P}\ b\ .\ \supset\ .\ c\ \mathrm{T}'\ d$

TTA7. for every *a* and *b*, *if a* is-momentary, *b* is-momentary, and it is not the case that *a* is wholly-or-almost-wholly-earlier-than *b* then there exists a *c* such that *c* is-momentary, and (it is not the case that *a* is-wholly-or-almost-wholly-earlier-than *c*, and it is not the case that *c* is-wholly-or-almost-wholly-earlier-than *b*)

$(a\ b)\colon \mathrm{mom}(a)\ .\ \mathrm{mom}(b)\ .\ \sim(a\ \mathrm{T}'\ b)\ .\ \supset\ .\ (\exists\, c)\ .\ \mathrm{mom}(c)\ .\ \sim(a\ \mathrm{T}'\ c)\ .\ \sim(c\ \mathrm{T}'\ b)$

I have already pointed out that the axioms proposed by Tarski for a system of the theory of the temporal order of things is stronger than the one Woodger found sufficient for his purposes. Moreover, Tarski develops his system much further by expanding its vocabulary with the aid of definitions and by deducing a considerable number of theorems. On the whole Tarski appears to be more concerned with showing to what extent his system of **T** provides a general description of things, than with using the system as a major presupposition of a system of another theory such as biology. Tarski's primitive term 'is-wholly-or-almost-wholly-earlier-than' is no doubt less intuitive than Woodger's 'is-wholly-earlier-than'. In his informal explication of it Tarski refers to the notion of being the first slice of an object and to that of being the last slice of an object. The terms encapsulating these notions are definable in both Woodger's and Tarski's system of **T**. In referring to slices of objects in his infomal explication of the meaning of T′ Tarski is guilty of no circularity of a vicious nature.

Woodger was greatly impressed by certain properties of T′. In particular he admired the way Tarski was able to define, in terms of T′, the notion of being a momentary object (see *TTD1*). Interestingly enough the system of **T** presented by Woodger in *The Technique of Theory Construction* (1939) is a sub-system of Tarski's system of **T** with Tarski's *TTD1*, *TTA1*, *TTA5*, and *TTA6* constituting its axiomatic foundations.

Except for a slightly modified account of Woodger's system of **T** given by Carnap,[19] the results obtained by Woodger and by Tarski seem to remain unknown to those who have been involved in the study of time in the last three or four decades.

One of the characteristic features which Woodger's system and Tarski's system of **T** have in common, is that either of them implies the existence of momentary objects or things. Woodger asserts this axiomatically (*WTA5*) and in the framework of Tarski's system a thesis to this effect follows from a stronger assumption included among the axioms of Tarski's system of **P**, and asserting that every object has a momentary point as its part (*TPA3*).

Now, if every objects has a momentary part then every object is identical with the complete collection of its momentary parts. This conclusion is by no means obvious. Moreover, there does not seem to be any evidence that there are such things as momentary things and, by the same token, the hypothesis which suggests that every object is extended in time, is not likely to be falsified. If I were pressed, I would support the hypothesis, but no harm will be done to my purpose if on the subject of the existence or non-existence of momentary things I remain uncommitted.

Another important feature of the two systems is that they do not take cognizance of the temporal extent of things. Some things are wholly earlier than other things but it is also a fact that some things do not last as long as other things. The temporal extent, or the duration, or the 'life' of some objects is shorter than the temporal extent of other objects, and a theory of time relations that aspires to comprehensiveness, should take this into account. A theory that does take this into account, will be called, in what follows, *General Chronology* or, simply, *Chronology*, for short.

Notions which relate the duration of one object to the duration of another are in ordinary discourse embedded in expressions of the form '*a* does not last as long as *b*' or '*a* lasts longer than *b*', or 'the duration of *a* is shorter than the duration of *b*', or 'the temporal extent of *a* is shorter than the temporal extent of *b*'. They do not seem to be definable in terms of the notions available in the theory of the temporal order of things. Thus, the required expansion of the vocabulary of the latter will have to be achieved not by means of definitions but by means of additional axioms.

The presuppositions of the system of *Chronology* to be outlined below consist of Leśniewski's *Mereology*, which, in its turn, presupposes his *Ontology*. It is in the language of Leśniewski's system that the axiomatic foundations of the proposed system of *Chronology* can now be set out, in stages, as follows:

I. *Ontology* (Leśniewski's general theory of objects)

The primitive notion of the original system of *Ontology* established by Leśniewski is embedded in expressions of the form '*a* is a *b*' or '*a* is *b*'. In symbolism: '$a \varepsilon b$'.

A single and only axiom of the system states that

OA1. for all *a* and *b*, *a* is-a *b* if and only if (for some *c*, *c* is-an *a*, (for all *c* and *d*, if *c* is-an *a* and *d* is-an *a* then *c* is-a *d*), and for all *c*, if *c* is-an *a* then *c* is-a *b*)

$$[a\ b] :: a \varepsilon b\ .\ \equiv :\ [\exists\ c]\ .\ c \varepsilon a :\ [c\ d]: c \varepsilon a\ .\ d \varepsilon a\ .\ \supset .\ c \varepsilon d :\ [c]: c \varepsilon a\ .\ \supset .\ c \varepsilon b$$ [20]

II. *Mereology* (Leśniewski's general theory of part-whole relations)

The primitive notion of the original system of *Mereology* established by Leśniewski is embedded in expressions of the form '*a* is a proper part of *b*'. In symbolism: '$a \varepsilon \mathrm{ppt}(b)$'.

The axioms and definitions, which are subjoined to *OA1*, are as follows:

MA1. for all *a* and *b*, if a is-a proper-part-of *b* then (*b* is-a *b* and it is not the case that *b* is-a proper-part-of *a*)

$$[a\ b]: a \varepsilon \mathrm{ppt}(b)\ .\ \supset .\ b \varepsilon b\ .\ \sim(b \varepsilon \mathrm{ppt}(a))$$

MA2. for all *a*, *b*, and *c*, if *a* is-a proper-part-of *b* and *b* is-a proper-part-of *c* then *a* is-a proper-part-of *c*

$$[a\ b\ c]: a \varepsilon \mathrm{ppt}(b)\ .\ b \varepsilon \mathrm{ppt}(c)\ .\ \supset .\ a \varepsilon \mathrm{ppt}(c)$$

MD1. for all *a* and *b*, *a* is-a part-of *b* if and only if (*a* is-an *a* and (*a* is-a proper-part-of *b* or (*a* is-a *b* and *b* is-an *a*)))

$$[a\ b] \therefore a \in \mathrm{pt}(b) \,.\equiv: a \in a : a \in \mathrm{ppt}(b) \,.\vee.\, a \in b \,.\, b \in a$$

MD2. for all *a* and *b*, *a* is-a complete-collection-of *b*s if and only if (*a* is-an *a*, for all *c*, if *c* is-a *b* then *c* is-a part-of *a*), and for all *c*, if *c* is-a part-of *a* then for some *d* and *e*, (*d* is-a *b*, *e* is-a part-of *c*, and *e* is-a part-of *d*))

$$[a\ b] :: a \in \mathrm{ccl}(b) .\equiv \therefore a \in a \therefore [c]: c \in b \,.\supset.\, c \in \mathrm{pt}(a) \therefore [c]: c \in \mathrm{pt}(a) \,.\supset.\, [\exists\ d\ e] \,.$$
$$d \in b \,.\, e \in \mathrm{pt}(c) \,.\, e \in \mathrm{pt}(d)$$

MA3. for all *a*, *b* and *c*, if *a* is-a complete-collection-of *c*s and *b* is-a complete-collection-of *c*s then (*a* is-a *b* and *b* is-an *a*)

$$[a\ b\ c]: a \in \mathrm{ccl}(c) \,.\, b \in \mathrm{ccl}(c) \,.\supset.\, a \in b \,.\, b \in a$$

MA4. for all *a* and *b*, if *a* is-a *b* then for some *c*, *c* is-a complete-collection-of *b*s

$$[a\ b]: a \in b \,.\supset.\, [\exists\ c] \,.\, c \in \mathrm{ccl(b)}$$[21]

III. *Chronology* (a general theory of the temporal order and the temporal extent of things)

The proposed system of *Chronology* is constructed with the aid of two primitive notions. The one is embedded in expressions of the form '*a* is an object wholly earlier than *b*'. In symbolism: '$a \in \llcorner\!\!\llcorner\!\!\llcorner\ (b)$'. The constant term '$\llcorner\!\!\llcorner\!\!\llcorner$' is a noun forming functor for one nominal argument and, in this respect, it differs from Woodger's 'T', which is a proposition forming functor for two nominal arguments. Within the framework of Chronology '$\llcorner\!\!\llcorner\!\!\llcorner$' and 'T' are interdefinable, a proposition of the form '$a \in \llcorner\!\!\llcorner\!\!\llcorner\ (b)$' being equivalent to the corresponding proposition of the form '*a* T *b*'. Thus, the two propositions can be described as syntactical variants of each other.

The other primitive notion is embedded in expressions of the form '*a* is an object whose duration is shorter than that of *b*'. In symbolism: '$a \in \diamond\!\!\!\times\ (b)$'.

The axioms, and the definitions which precede some of the axioms, are subjoined to *OA1*, *MA1*, *MA2*, *MD1*, *MD2*, *MA3*, and *MA4*, and state, respectively, that

CA1. for all *a* and *b*, if *a* is-an object-wholly-earlier-than *b* then (*b* is-a *b* and it is not the case that *b* is-an object-wholly-earlier-than *a*)

$$[a\ b]: a \in \llcorner\!\!\llcorner\!\!\llcorner\ (b) \,.\supset.\, b \in b \,.\sim(b \in \llcorner\!\!\llcorner\!\!\llcorner\ (a))$$

CA2. for all *a*, *b*, *c*, and *d*, if *a* is-an object-wholly-earlier-than *b*, *c* is-a part-of *a*, and *d* is-a part-of *b* then *c* is-an object-wholly-earlier-than *d*

$$[a\ b\ c\ d]: a \in \llcorner\!\!\llcorner\!\!\llcorner\ (b) \,.\, c \in \mathrm{pt}(a) \,.\, d \in \mathrm{pt}(b) \,.\supset.\, c \in \llcorner\!\!\llcorner\!\!\llcorner\ (d)$$

CA3. for all *a*, *b*, and *c*, if *a* is-an object-wholly-earlier-than *b* and *c* then (*a* is-an object-wholly-earlier-than *c* or for some *d*, (*d* is-a part-of *c* and *d* is-an object-wholly-earlier-than *b*))

$$[a\ b\ c] \therefore a \in \llcorner\!\!\llcorner\!\!\llcorner\ (b) \,.\, c \in c \,.\supset: a \in \llcorner\!\!\llcorner\!\!\llcorner\ (c) \,.\vee.\, [\exists\ d] \,.\, d \in \mathrm{pt}(c) \,.\, d \in \llcorner\!\!\llcorner\!\!\llcorner\ (b)$$

CA4. for all *a* and *b*, if (*a* is-an *a*, *b* is-a *b*, and for all *c* and *d*, (if *c* is-a part-of *a* and *d*

is-a part-of b then for some e and f, (e is-a part-of c, f is-a part-of d, and e is-an object-wholly-earlier-than f))) then a is-an object-wholly-earlier-than b

$$[a\ b] :: a \in a\ .\ b \in b \therefore [c\ d]: c \in \mathrm{pt}(a)\ .\ d \in \mathrm{pt}(b)\ .\ \supset\ .\ [\exists\ e\ f]\ .\ e \in \mathrm{pt}(c)\ .\ f \in \mathrm{pt}(d)\ .\ e \in \llcorner\!\!\!\lrcorner(f) \therefore \supset\ .\ a \in \llcorner\!\!\!\lrcorner(b)$$

CA5. for all a and b, if a is-an object-whose-duration-is-shorter-than-that-of b then b is-a b

$$[a\ b]: a \in \lessdot(b)\ .\ \supset\ .\ b \in b$$

CA6. for all a and b, if a is-an object-whose-duration-is-shorter-than-that-of b then it is not the case that b is-a part-of a

$$[a\ b]: a \in \lessdot(b)\ .\ \supset\ .\ \sim(b \in \mathrm{pt}(a))$$

CA7. for all a and b, if a is-an object-whose-duration-is-shorter-than-that of b then it is not the case that b is-an object-whose-duration-is-shorter-than-that-of a

$$[a\ b]: a \in \lessdot(b)\ .\ \supset\ .\ \sim(b \in \lessdot(a))$$

CA8. for all a, b, and c, if a is-an object-whose-duration-is-shorter-than-that-of b and c is-a c then (a is-an object-whose-duration-is-shorter-than-that-of c or c is-an object-whose-duration-is-shorter-than-that-of b)

$$[a\ b\ c] \therefore a \in \lessdot(b)\ .\ c \in c\ .\ \supset : a \in \lessdot(c)\ .\ \vee\ .\ c \in \lessdot(b)$$

CA9. for all a and b, if a is-an object-whose-duration-is-shorter-than-that-of b then for some c, (c is-a part-of b and it is not the case that a is-an object-whose-duration-is-shorter-than-that-of c)

$$[a\ b]: a \in \lessdot(b)\ .\ \supset\ .\ [\exists\ c]\ .\ c \in \mathrm{pt}(b)\ .\ \sim(a \in \lessdot(c))$$

CD1. for all a and b, a is-an object-separated-by-a-time-gap-from b if and only if (a is-an a and (a is-an object-wholly-earlier-than b or b is-an object-wholly-earlier-than a))

$$[a\ b]\ \therefore\ a \in \dashv\!\vdash(b)\ .\ \equiv : a \in a : a \in \llcorner\!\!\!\lrcorner(b)\ .\ \Box\ .\ b \in \llcorner\!\!\!\lrcorner(a)$$

CA10. for all a and b, if a is-an object-separated-by-a-time-gap-from b then for some c, (c is-a part-of a and c is-an object-whose-duration-is-shorter-than-that-of the-complete-collection-of objects-each-of-which-is either c or b)

$$[a\ b]: a \in \dashv\!\vdash(b)\ .\ \supset\ .\ [\exists\ c]\ .\ c \in \mathrm{pt}(a)\ .\ c \in \lessdot(\mathrm{ccl}(c \cup b))$$

CA11. for all a and b, a is an object-whose-duration-is-shorter-than-that-of b if and only if for some c and d, (c is-a-part-of b, d is-a part-of b, and for all e and f, (e is-a part-of c and f is-a part-of d then (e is-an object-separated-by-a-time-gap-from f, (a is-an object-separated-by-a-time-gap-from e or a is-an object-separated-by-a-time-gap-from f), and a is-an object-whose-duration-is-shorter-than-that-of the-complete-collection-of objects-each-of-which-is either e or f

$$[a\ b] : \cdot : a \in \lessdot(b)\ .\ \equiv :: [\exists\ c\ d] :: c \in \mathrm{pt}(b)\ .\ d \in \mathrm{pt}(b) :: [e\ f] \therefore e \in \mathrm{pt}(c)\ .\ \mathrm{f} \in \mathrm{pt}(d)\ .\ \supset\ .\ e \in \dashv\!\vdash(f) : a \in \dashv\!\vdash(e)\ .\ \vee\ .\ a \in \dashv\!\vdash(f) : a \in \lessdot(\mathrm{ccl}(e \cup f))$$

CA12. for all a, b, c, d, e, and f, if (a is-an object-whose-duration-is-shorter-than-that-of b, c is-a part-of d, e is-a part-of d, d is-a complete-collection-of objects-each-of-which-is-an a or f, and ((c is-an object-wholly-earlier-than e and a is-an object-wholly-earlier-than f) or (e is-an object-wholly-earlier-than c and f is-an object-wholly-earlier-than a))) then c is-an object-whose-duration-is-shorter-than-that-of d

$$[a\ b\ c\ d\ e\ f] \therefore a\ \varepsilon \diamond\!\!\!\times (b)\ .\ c\ \varepsilon\ \mathrm{pt}(d)\ .\ e\ \varepsilon\ \mathrm{pt}(d)\ .\ d\ \varepsilon\ \mathrm{ccl}(a \smile f) : c\ \varepsilon \sqcup\!\!\!\sqcup (e)\ .\ a\ \varepsilon \sqcup\!\!\!\sqcup (f) : \vee : e\ \varepsilon \sqcup\!\!\!\sqcup (c)\ .\ f\ \varepsilon \sqcup\!\!\!\sqcup (a) : \supset\ .\ c\ \varepsilon \diamond\!\!\!\times (d)$$

CD2. for all a, a is-a momentary-object if and only if (a is-an a and for all b and c, if b is-a part-of a and c is-a part-of a) then it is not the case that b is-an object-wholly-earlier-than c

$$[a] :: a\ \varepsilon\ \mathrm{mom}\ .\ \equiv \therefore a\ \varepsilon\ a \therefore [b\ c] : b\ \varepsilon\ \mathrm{pt}(a)\ .\ c\ \varepsilon\ \mathrm{pt}(a)\ .\ \supset\ .\ \sim (b\ \varepsilon \sqcup\!\!\!\sqcup (c))$$

CD3. for all a, a is-an object-finite-in-time if and only if (a is-an a and for some b and c, (b is-an object-wholly-earlier-than c, a is-a complete-collection-of objects-each-of-which-is-a b or c, b is-an object-whose-duration-is-shorter-than-that-of a, and c is-an object-whose-duration-is-shorter-than-that-of a))

$$[a] : a\ \varepsilon \vdash\!\!\dashv\ .\ \equiv : a\ \varepsilon\ a : [\exists\ b\ c]\ .\ b\ \varepsilon \sqcup\!\!\!\sqcup (c)\ .\ a\ \varepsilon\ \mathrm{ccl}(b \smile c)\ .\ b\ \varepsilon \diamond\!\!\!\times (a)\ .\ c\ \varepsilon \diamond\!\!\!\times (a)$$

CA13. for all a and b, if a is-an object-whose-duration-is-shorter-than-that-of b then (a is-a momentary-object or a is-an object-finite-in-time)

$$[a\ b] \therefore a\ \varepsilon \diamond\!\!\!\times (b)\ .\ \supset : a\ \varepsilon\ \mathrm{mom}\ .\ \vee\ .\ a\ \varepsilon \vdash\!\!\dashv$$

The above given axioms and definitions represent only the first stage of an enquiry into the axiomatic foundations of *Chronology*. At this stage I was concerned with the intuitiveness of the axioms rather than with their number, which is not small, or with their deductive power, which in some cases is not very great. The first ten axioms exemplify this methodological point. Axioms *CA11* and *CA12* are less intuitive, at least at the first sight, but they enable me to prove certain fairly intuitive theses, which I do not know how to prove without them.

Among the problems still to be examined is the problem of the mutual independence of the proposed axioms. An attempt at solving this problem may lead to a reduction in the number of axioms. Another task to be considered is the search for chronological theses that are independent of the proposed axioms and could be used to strengthen the axiomatic foundations of the system.

It would not be practicable for me to present, on this occasion, a list of theses that have been proved within the framework of the system as outlined above. Some indication, however, as to the chronological notions that can be accommodated with the aid of the primitive vocabulary, will not, perhaps, appear to be out of place. I mentioned earlier that Woodger's and Tarski's systems of **T** assert explicitly or implicitly the existence of momentary objects. Without entering into any existential commitment I will now introduce, informally, certain terms that could apply to objects that are not finite in time if, of course, there were such objects.

Of any object a one can truly assert either that (1) whatever two parts of a one considers, neither of them will be found to be wholly earlier than the other or that (2) there are parts of a such that the one is wholly earlier than the other. If (1) is true of a then a is a momentary object (see *CD2* above). If (2) is true of a then a is an object that lasts longer than a moment.

Now, concerning any object a which lasts longer than a moment, one can prove, within the proposed system of *Chronology* that a consists of two objects b and c (*i.e.*, that a is the complete collection of objects each of which is a b or c) such that b is wholly earlier than c.

Suppose that we have three objects *a*, *b* and *c*, of which this holds:

(1) *a* consists of *b* and *c*, and
(2) *b* is wholly earlier than *c*

On these conditions it will be true to say that

(3) *b* is an object whose duration is shorter than that of *a* or it is not the case that *b* is an object whose duration is shorter than that of *a*, and
(4) *c* is an object whose duration is shorter than that of *a* or it is not the case that *c* is an object whose duration is shorter than that of *a*

The conjunction of the two alternations (3) and (4) yields an alternation of the following four cases:

(5) *b* is an object whose duration is shorter than that of *a* and *c* is an object whose duration is shorter than that of *a*, or
(6) it is not the case that *b* is an object whose duration is shorter than that of *a* and *c* is an object whose duration is shorter than that of *a*, or
(7) *b* is an object whose duration is shorter than that of *a* and it is not the case that *c* is an object whose duration is shorter than that of *a*, or
(8) it is not the case that *b* is an object whose duration is shorter than that of *a* and it is not the case that *c* is an object whose duration is shorter than that of *a*.

Conditions (1), (2), and (6) seem to be sufficient for *a* to be an object that has no beginning but has an end, in other words, that lasts from eternity but does not last for ever.
Conditions (1), (2), and (7) seem to be sufficient for *a* to be an object that has a beginning but lasts for ever.
Conditions (1), (2), and (8) seem to be sufficient for *a* to be eternal, that is to say, to have no beginning and no end.
Finally, conditions (1), (2), and (5) are sufficient for *a* to be an object that lasts but is finite in time.

The chronological notions just mentioned are all definable within the framework of the proposed system. On subjoining appropriate definitions one can go on to prove, for instance, that nothing is earlier or later than an eternal object, and that nothing lasts longer than an eternal object. One can also prove that objects which have no beginning are all of the same duration irrespective of when they end, and that objects which last for ever are all of the same duration irrespective of when they begin. In fact it turns out that objects with no beginning or no end last as long as eternal objects.
But are there eternal objects? No answer to this question is to be found in our system of *Chronology*. However, when the existence or non-existence of momentary objects was mentioned earlier in the essay, I did not conceal my sympathy with the view that no such objects existed. And if I had to commit myself as regards the existence or non-existence of eternal objects, I would risk making an affirmative conjecture. Now, if there are any eternal objects at all then, in accordance with the proposed system of *General Chronology*, the world, which is the complete collection of objects, that is to say, the totality of what there is, is one of them.

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NOTES

* This essay is dedicated, with respect and affection, to the memory of J. H. Woodger.

1 See B. Russell, *Introduction to Mathematical Philosophy* (London 1919), p. 1 f.

2 See H. Scholz, *Mathesis Universalis* (Basel/Stuttgart 1969), pp. 399—436.

3 See S. Leśniewski, "O podstawach matematyki", *Przeglad Filozoficzny*, Vol. 30 (1927), p. 182 ff., and B. Sobociński, "L'analyse de l'antinomie Russellienne par Leśniewski", *Methodos*, Vol. 2 (1950), p. 239 ff.

4 See S. Leśniewski, "O podstawach matematyki", *Przeglad Filozoficzny*, Vol. 31 (1928), p. 261 ff., and C. Lejewski, "A Single Axiom for the Mereological Notion of Proper Part", *Notre Dame Journal of Formal Logic*, Vol. 8 (1967), pp. 279—285.

5 See S. Leśniewski, "Über die Grundlagen der Ontologie", *Comptes rendus des séances de la Societé des Sciences et des Lettres de Varsovie*, Class III, XXII Année, 1930, pp. III—132; and also C. Lejewski, "On Leśniewski's Ontology", *Ratio*, Vol. 1 (1957—1958), pp. 150—176.

6 In connection with this topic see C. Lejewski, "Logic and Existence", *The British Journal for the Philosophy of Science*, Vol. 5 (1954), pp. 104—119; and C. Lejewski, "Logic and Ontology", in: E. Agazzi (ed.), *Modern Logic: A Survey* (Dordrecht-Boston 1981), pp. 379—398.

7 See A. Tarski, "Appendix E", in: J. H. Woodger, *The Axiomatic Method in Biology* (Cambridge 1937), pp. 161—172.

8 See N. Goodman and H. S. Leonard, "The Calculus of Individuals and Its Uses", *Journal of Symbolic Logic*, Vol. 5 (1940), pp. 45—55.

9 See B. Sobociński, "Atomistic Mereology I", *Notre Dame Journal of Formal Logic*, Vol. 12 (1971), pp. 89—103; B. Sobociński, "Atomistic Mereology II", *Notre Dame Journal of Formal Logic*, Vol. 12 (1971), pp. 203—213; B. Sobociński, "A Note on an Axiom System of Atomistic Mereology", *Notre Dame Journal of Formal Logic*, Vol. 12 (1971), pp. 249—251; and C. Lejewski, "A Contribution to the Study of Extended Mereologies", *Notre Dame Journal of Formal Logic*, Vol. 14 (1973), pp. 55—67.

10 See A. N. Prior, *Papers on Time and Tense* (Oxford 1968), p. 85 f.

11 See A. N. Prior, *Time and Modality* (Oxford 1957); A. N. Prior, *Past, Present and Future* (Oxford 1967); Prior (1968); and the literature referred to therein.

12 See Prior (1957), p. 8.

13 See B. Russell, *An Inquiry into Meaning and Truth* (London 1940), p. 108 ff.; and B. Russell, *Human Knowledge* (London 1948), pp. 100 ff.

14 Woodger, J. H., *The Axiomatic Method in Biology* (Cambridge 1937), p. 55 ff.; and J. H. Woodger, *The Technique of Theory Construction* (Chicago and London 1939).

15 The words 'thing' and 'object' are used in this essay as synonyms.

16 See A. Tarski, *Logic, Semantics, Metamathematics* (Oxford 1956), pp. 24—29; and Tarski (1937), pp. 161—172.

17 'φ' is a variable that takes one place predicates as its substituends. In other words, it is an intransitive verb variable. 'φs' is, as it were, a third person singular form of that would be verb. The same applies to 'ψ' as used in what follows.

18 See Tarski (1937), pp. 161—172.

19 R. Carnap, *Introduction to Symbolic Logic and its Applications* (New York 1958), p. 213 ff.

20 See Leśniewski (1930), p. 114. In order to register the difference in meaning between the traditional quantifiers and the quantifiers in the Leśniewskian language square brackets are used in symbolizing the latter. See also Lejewski (1981).

21 Leśniewski (1928), p. 263 ff.; and also Lejewski (1981), pp. 379—398. Note that in formulating mereological theses I have slightly departed from the received mereological terminology. Thus, '*a* is a part of *b*' has been replaced by '*a* is a proper part of *b*' ('$a \varepsilon \mathrm{ppt}(b)$'); '*a* is an ingredient of *b*' and its synonym '*a* is an element of *b*' have been replaced by '*a* is a part of *b*' ('$a \varepsilon \mathrm{pt}(b)$'); finally, instead of '*a* is a class of *b*s' or '*a* is a mereological class of *b*s' I have '*a* is a complete collection of *b*s' ('$a \varepsilon \mathrm{ccl}(b)$').

* * *

SOME FORMAL MOMENTS OF TRUTH*

B. Smith

Correspondence theories of truth have, since the time of the *Tractatus* and of *The Philosophy of Logical Atomism*, fallen out of favour amongst logically minded philosophers. Theorists of truth have indeed normally avoided the issue of correspondence by averting their attentions from the basic truth-relation between individual sentence and world, and concentrating instead upon logically structured *sets* of sentences and artificially constructed set-theoretical models. In the present note I wish to give a brief account of some more or less obvious formal characteristics of this almost forgotten basic truth-relation. I shall then attempt to show how this account may be extended to provide elements of a theory of truth which is in keeping with the spirit of the *Tractatus*.

One principal reason why the correspondence theory has lost so much of its former attraction rests on the fact that philosophers have, in the last few decades, extended their interests beyond the narrow corpus of sentences for which the question of correspondence is most obviously appropriate, i.e. simple declarative sentences about the spatio-temporal world. They have sought instead to construct theories of truth which take account of the characteristic properties of sentences of other types, for example of mathematical or fictional sentences, of counterfactuals, or of sentences involving intentional or modal operators. Such experiments are of considerable interest, and they demonstrate the power and scope of set-theoretical semantics. Here however, in keeping with our more modest task, we shall restrict ourselves entirely to descriptive sentences like 'John has a headache' or 'atom *a* [at some specific instant] strikes atom *b*', which are used to make assertions about objects or object-configurations in the real material world.

Simons has argued that most, if not all such sentences are made true by entities which, following Husserl, he calls 'moments'.[1] Wittgenstein and Russell on the other hand saw the role of truth maker as being filled by specific kinds of complexes—states of affairs, or facts—complexes which may involve moments, but which manifest an essentially different ontological structure. The ideas sketched in the present note are in fact consistent with either approach and with a range of possible variants. We shall need to assume only that the relations which hold amongst truth-makers (be they moments, states of affairs, or objects of other kinds) are *ontological* rather than *logical*; that, in other words, such relations are radically distinct from the kinds of relations which hold amongst sentences, propositions, or other candidate bearers of truth. This assumption reflects a principle of the heterogeneity of logic and ontology, which has been formulated in order to forestall any too ready imputation of logical structure to the objects of the material world.[2]

The ontological relation which is most important for our present purposes is the relation of (proper or improper) part to whole. Thus it seems clear that if *a* makes *p* true, then every *b* which includes *a* as a part will also make *p* true. In symbols:

(1) $a \vDash p \rightarrow \forall b\,(a \leqslant b \rightarrow b \vDash p)$.[3]

The relation $\leqslant$ obtains only between objects (names for which occur to the left of the $\vDash$-connective). It has no analogue amongst sentences or propositions—in complete accordance with the principle of the heterogeneity of logic and ontology.

We can now go on to affirm that

(2) $a \vDash p. \rightarrow p.$

But is the converse,

(3) $p \rightarrow \exists a \,.\, a \vDash p$,

also true? Consider, say, the sentence: 'Jack and Jill went up the hill [i.e. not necessarily together]', or, alternatively: 'There were three eclipses of the moon in Erna's lifetime'. It would surely be wrong to assume that there are any single composite objects, events, or states of affairs—a *Jack's running up the hill* fused, mereologically, with a *Jill's running up the hill*, or a three-fold eclipse-fusion—which would make these sentences true. Rather we should accept, quite naively, that the given sentences are made true by a relevant manifold or plurality of truth-makers. Such a manifold is not a new, conjunctive entity. (It is not, for example, a set.) There are no conjunctive entities, any more than there are disjunctive, negative or implicative entities. A manifold is, rather, nothing more than the objects it comprehends; a manifold comprehending a single object is therefore simply that object itself.[4]

Manifold truth-makers may be represented by means of non-empty lists, '$a, b, c, \ldots, k$', of names of individual truth-makers. 'Γ', 'Δ', etc., will be used to stand in for lists of this kind. '$a \in \Gamma$' will signify that Γ comprehends or includes a or, in other words, that a name for a appears as an item in the list 'Γ'. We define the relation $\in$ of mereological inclusion between manifolds as follows:

D1. $\Gamma \subseteq \Delta := \forall\, a \in \Gamma \,.\, \exists\, b \in \Delta \,.\, a \leqslant b.$

As possible axioms for the $\vDash$-relation we might now propose:

A1. $\Gamma \vDash p. \rightarrow p.$

A2. $p \rightarrow \exists\, \Gamma \,.\, \Gamma \vDash p.$

A3. $\Gamma \vDash p. \rightarrow \forall\, \Delta\, (\Gamma \subseteq \Delta \rightarrow \Delta \vDash p)$,

(a generalisation of (1) above). *A3.* implies in particular a rule of thinning:

(4) $\Gamma \vDash p. \rightarrow \forall\, \Delta \,.\, \Gamma, \Delta \vDash p.$

A4. $(\Gamma \vDash p. \wedge \Delta \vDash q) \rightarrow \Gamma, \Delta = p \wedge q.$

A5. $(\Gamma \vDash p. \wedge p \rightarrow q) \rightarrow \exists\, \Delta\, (\Delta \subseteq \Gamma \,.\, \wedge \Delta \vDash q).$

By *A3.* and *A5.* we have:

(5) $(\Gamma \vDash p. \wedge p \rightarrow q) \rightarrow \Gamma \vDash q$,

whence, in particular:

(6) $\Gamma \vDash p. \rightarrow \Gamma \vDash p \vee q$,

from which we can infer:

(7) $\Gamma \vDash p. \vee \Gamma \vDash q. \rightarrow \Gamma \vDash p \vee q$,

the converse of which we affirm as an axiom:

A6. $\Gamma \vDash p \vee q. \rightarrow \Gamma \vDash p. \vee \Gamma \vDash q.$

By (5) we have:

(8) $\Gamma \vDash p \wedge q. \rightarrow \Gamma \vDash p. \wedge \Gamma \vDash q,$

and by *A4.* we have also:

(9) $\Gamma \vDash p. \wedge \Gamma \vDash q. \rightarrow \Gamma \vDash p \wedge q.$

We can affirm as axioms:

A7. $\Gamma \vDash \exists a \,.\, p :\leftrightarrow \exists a \,.\, \Gamma \vDash p;$

A8. $\Gamma \vDash \forall a \,.\, p :\leftrightarrow \forall a \,.\, \Gamma \vDash p.$

Logically compound sentences involving negation raise more serious problems (as may be expected within the framework of a theory constructed on the belief that there are no negative entities to which negated sentences or sentence-parts may correspond).[5] Wittgenstein solves this most fundamental of all problems facing a correspondence theory of truth by embracing two distinct types of correspondence. We have first of all the relation of *direct depiction* between *Elementarsätze* (all of which are positive) and states of affairs; and secondly a higher-level truth relation between sentences and facts. The classes of sentences and *Elementarsätze*, like the classes of facts and states of affairs, are mutually exclusive. Sentences are obtained from *Elementarsätze* by successive applications of the logical functions *it is true that* and *it is false that*. Facts are obtained from states of affairs by successive applications of the ontological functions *the existence of* and *the non-existence of*. A fact is, that is to say, the existence or non-existence of states of affairs (cf. *TLP* 2, 2.06, 2.062, 2.11).[6]

It would take us too far afield to provide a detailed account of Wittgenstein's theory here. We shall content ourselves instead with an approximation to the theory which can be constructed within the framework developed above. We define, first of all, a counterpart of Wittgenstein's relation of direct depiction, which we shall signify by $\Vdash$.

D2. $a \Vdash p :=$ (i) $a \vDash p. \wedge$

(ii) $\forall q \,(a \vDash q. \rightarrow .p \rightarrow q) \,. \wedge$

(iii) $\forall \Gamma \,(\Gamma \vDash p. \rightarrow a \subseteq \Gamma).$

Clause (i) asserts that direct depiction (being made true *elementarily*) is merely one special case of being made true. Clause (ii) is intended to capture the immediacy of the relation $\Vdash$ between the sentence p and object-configuration a. It tells us that a proposition made true elementarily involves no logical redundancy or roundaboutness (thus no disjunctive sentence, for example, is elementarily made true). Clause (iii) signifies that the atomic object or state of affairs a which elementarily makes p true is a unique common factor of all truth-makers for p.[7] Note that $\Vdash$ is defined only in relation to atomic or individual truth-makers: no sentence is elementarily made true by a manifold.

From *D2.* and the axioms above we may infer:

(10) $a \Vdash p. \wedge a \Vdash q. \rightarrow p \leftrightarrow q.$

(We cannot however affirm

(11) $a \models p \wedge q. \rightarrow p \leftrightarrow q.$

Consider the case where a is the mereological sum of two discrete individuals b and c, such that $b \models p$ and $c \models q$.)

(12) $a \models p. \wedge b \models p. \rightarrow a = b.$

(13) $a \models p. \wedge b \models p. \rightarrow a \leqslant b.$

(14) $a \models p. \wedge \Gamma \models p. \rightarrow a \subseteq \Gamma.$

The following now suggests itself as a possible definition of the concept *elementary proposition*:

D3. elem $(p) := p \rightarrow \exists a \,.\, a \models p,$

whence by clause (iii) in *D2.*,

(15) $p \wedge \text{elem } (p) \,. \rightarrow \exists\, ^{1}a \,.\, a \models p,$

—every true elementary proposition has a unique (minimal) truth-maker.

In a fully developed system we should wish to recognise also theorems like:

(16) $a \models p. \rightarrow \Diamond \sim \text{E } (a)$

—elementary truth-makers exist only contingently.

(17) $a \models p. \rightarrow \Diamond \sim p,$

a theorem which has no analogue for $\models$. (Consider, for example, the sentence 'It is raining or it is not raining'. It is not possible that this sentence be false, yet it is made true—though not, of course, elementarily—by the relevant contingently existing condition of the weather.) And:

(18) $p \wedge \Diamond \sim p. \rightarrow \exists a \,.\, \exists q \,(a \models q. \wedge p \rightarrow q).$

But there are more radical extensions of the basic theory which suggest themselves. We might, for example, wish to consider the formal moments of the relations: *is possibly true in virtue of*, *is necessarily true in virtue of*, *is made empirically probable by*, and so on. And we might wish to consider the interconnections between formal correspondence theory and the characteristic issues of epistemology. These questions must however be postponed until another place.

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NOTES

* I am grateful to Professor R. M. Chisholm, who contributed the initial idea of this paper, and to Peter Simons for indispensable criticisms.

1 See P. Simons, "Moments as Truth Makers" (in this volume).

2 I have defended this principle elsewhere: see B. Smith, "An Essay in Formal Ontology", *Grazer Philosophische Studien*, Vol. 6 (1978), pp. 39—62 and B. Smith, "Logic, Form and Matter", *Proceedings of the Aristotelian Society*, Supplementary Vol. 55 (1981), pp. 47—62.

3 $\rightarrow$, here, is at least as strong as strict implication. Our theory of part-whole relations is a generalisation of the mereology of Leśniewski; see Smith and Mulligan, "Pieces of a Theory", in: B. Smith (ed.), *Parts and Moments: Studies in Logic and Formal Ontology* (Munich 1982) and Smith and Mulligan, "Framework for Formal Ontology", *Topoi* (Special Issue on Leśniewski, forthcoming.)

4 See P. M. Simons, "Number and Manifolds", in: B. Smith (1982).

5 A sentence like 'There is no God' (if it is true) is perhaps made true by everything.

6 This interpretation of the *Tractatus*, according to which no fact is a state of affairs, is defended most rigorously by R.-A. Dietrich, *Sprache und Wirklichkeit in Wittgensteins Tractatus* (Tübingen 1974).

7 Clause (iii) is perhaps too strong, since for certain kinds of sentences we may wish to allow for a plurality of partially coincident elementary truth makers. Consider, for example, the sentence 'This tone is middle C', which may be seen as being made true elementarily not only by the tone as a whole, but also by the specific pitch from out of which (along with a specific individual timbre and loudness) the tone is constituted: See Smith and Mulligan, "Pieces of a Theory", and also Smith, Mulligan and Simons, "Truth-Makers", *Philosophy and Phenomenological Research* (forthcoming).

* * *

MODEL-THEORETIC INVESTIGATIONS IN THE THEORY OF ALGEBRAS OF INDIVIDUALS

Christine Pühringer

The aim of this paper is to prove some results about a certain first-order theory which has been investigated up until now under the name 'calculus of individuals' but which I call in a more appropriate way 'theory of algebras of individuals'. Firstly I give an exact definition of the expression 'algebra of individuals'. Then I want to prove some model-theoretic theorems about the theory of algebras of individuals. From this it will be possible to compare such a theory with other first-order theories, especially with the theory of Boolean algebras.

DEFINITION 1 A *type* is an ordered pair $\tau = < T, ar >$, such that

(i) $T \neq \emptyset$ (set of indices)

(ii) $ar: T \rightarrow \omega$

DEFINITION 2 A *structure* of type $\tau = < T, ar >$ is an indexed ordered set $\mathcal{A} = < A, R_t >_{t \in T}$, such that

(i) $A \neq \emptyset$ (domain of $\mathcal{A}$)

(ii) $R_t \in A$ if $ar(t) = 0$

(iii) $R_t \subseteq A^{ar(t)}$ if $ar(t) \gneqq 0$

The cardinality of T indicates the number of relations $R_{t \in T}$ on A, the function ar the arity of these relations $R_{t \in T}$.

DEFINITION 3 An *algebra of individuals* is a structure $\mathcal{S} = < I, O, \cup, \cap, \subseteq, 1 >$ of type $< 2, 3, 3, 2, 0 >$ such that

(i) I is a non-empty set of elements, which are called "individuals";

(ii) O is called the relation of overlapping; $\cup$, $\cap$ and $\subseteq$ are called the relations of sum, product and complement; 1 is the maximum of I.

If the relations on I are treated as functions as is usual in a Boolean algebra, then I is closed under $\cup$; $\cap$ must be restricted to those sets $I_i \in I$ such that $I_i = \{ < a, b > \mid \cap (a, b) \neq 0 \}$, and $\subseteq$ must be restricted to $I - \{ 1 \}$. These restrictions are necessary because $0 \notin I$, which means that there is no minimum 0 of I.

Let $a, b, c \in I$; then with O the following additional relations can be defined on I:
(1) A weak partial ordering $\leqslant$ in the usual way as in a Boolean algebra, but also in the following way:

$$a \leqslant b := \forall c\, (c\, O\, a \rightarrow c\, O\, b)$$

$\leqslant$ is called the weak part-whole relation; it induces the strict part-whole relation $<$ on I.
(2) A relation $\wr$ called relation of discreteness:

$$a \wr b := \text{'} a \circ b$$

THEOREM 4 Let $I^* \subseteq I$, $a, b, c \in I$, $sup(I^*)$ the least upper bound of I^*, $inf(I^*)$ the greatest lower bound of I^*, and let

$f(I^*) = a$ iff $\forall c(c \sqcap a \leftrightarrow \forall b\,(b \in I^* \rightarrow c \wr b))$ and

$n(I^*) = a$ iff $\forall c(c \leqslant a \leftrightarrow \forall b(b \in I^* \rightarrow c \leqslant b))$, where f and n are called "fusion" and "nucleus" in the literature; then

(i) $f(I^*) = sup(I^*)$ and

(ii) $n(I^*) = inf(I^*)$.

Proof: From the hypothesis it follows that $f(I^*)$ is just $\cup I^*$ and $n(I^*)$ is just $\cap I^*$. Because I is closed under $\cup$ and all sets $I_i \subseteq I$ such that $I_i = \{ < a, b > \mid \cap(a, b) \neq 0 \}$ are closed under $\cap$ the identities (i) and (ii) follow.

DEFINITION 5 Let $\mathcal{A} = < A, R_t >_{t \in T}$ be a structure. The *appropriate language* for $\mathcal{A}$ is the indexed set $\mathcal{L}_{\mathcal{A}} = \{\bar{R}_t\}_{t \in T}$, such that for each $t \in T$, $\bar{R}_t$ is a relation symbol for the corresponding relation R_t.

DEFINITION 6 Let Sent($\mathcal{L}_{\mathcal{A}}$) be the set of all sentences of $\mathcal{L}_{\mathcal{A}}$.
$\mathcal{T} \subseteq$ Sent ($\mathcal{L}_{\mathcal{A}}$) is a (consistent) theory in $\mathcal{L}_{\mathcal{A}}$ for $\mathcal{A}$ iff for all $\varphi \in$ Sent ($\mathcal{L}_{\mathcal{A}}$):

(i) $\mathcal{T} \vdash \varphi$ iff $\varphi \in \mathcal{T}$ ($\mathcal{T}$ is deductively closed.)

(ii) $\mathcal{T} \neq$ Sent ($\mathcal{L}_{\mathcal{A}}$) ($\mathcal{T}$ is consistent.)

DEFINITION 7 Let $\mathcal{L}_{\mathcal{S}} = \{ \circ, \cup, \cap, \subseteq, 1 \}$ be the appropriate language for $\mathcal{S}$. The *theory of algebras of individuals* is a non-empty, deductively closed and consistent set $\mathcal{T}_{\mathcal{S}} \subseteq$ Sent ($\mathcal{L}_{\mathcal{S}}$), which contains as elements (axioms) the universal closures of the following formulas:

A×1 $\exists c(c \leqslant a \wedge c \leqslant b) \leftrightarrow a \circ b$

A×2 $a \cup b = b \cup a$ A×3 $a \cap b = b \cap a$

A×4 $a \cup (b \cup c) = (a \cup b) \cup c$ A×5 $a \cap (b \cap c) = (a \cap b) \cap c$

A×6 $a \cup (b \cap c) = (a \cup b) \cap (a \cup c)$

A×7 $a \cap (b \cup c) = (a \cap b) \cup (a \cap c)$

A×8 $a \cap (a \cup b) = a$ A×9 $a \cup (a \cap b) = a$

A×10 $1 \cup a = 1$ A×11 $a \cup a^{\subseteq} = 1$

Because $\cup$, $\cap$ and $\subseteq$ are treated as relations by definition 3 A×2—A×11 are written in a

very rough and abbreviated form. Considering the content of $A \times 1$ it is easy to see that the domain of O is just the domain of $\cap$, provided that O and $\cap$ are treated as functions.

DEFINITION 8 The theory of *atomic* algebras of individuals is the set $\mathfrak{T}_{\mathfrak{S}at} = \mathfrak{T}_{\mathfrak{S}} \cup \{ \forall a \exists b \, (b \leqslant a \wedge \forall c \, (c \leqslant b \rightarrow c = b)) \}$.

Because of $O \notin I$ the definition of an atom in an algebra of individuals is different from the corresponding definition in a Boolean algebra. An element $a \in I$ is an atom in I iff $\forall b \in I$ $(b \leqslant a \rightarrow a = b)$. Because of this definition of an atom in I it is easy to see that in an algebra of individuals the atoms are just the minimal elements of I, which is of course not the case for a Boolean algebra.

As for a Boolean algebra we can prove the following theorem for an algebra of individuals:

THEOREM 9 Every finite $\mathfrak{S}$ is atomic.

Proof: Suppose $\mathfrak{S}$ is nonatomic; then there is an element $a_o \in I$ for which there is no atom in I. That means that there is an infinite set $\{ a_1, \ldots, a_n \} \subseteq I$, such that $a_o > a_1 > \ldots > a_n$, a contradiction.

DEFINITION 10 Let $\mathfrak{T}$ be the theory for the structure $\mathfrak{A}$. A *model* for $\mathfrak{T}$ is a structure $\mathfrak{A}$, such that for all $\varphi \in \text{Sent}(\mathfrak{T})$, $\mathfrak{A} \models \varphi$.

THEOREM 11 $\mathfrak{T}_{\mathfrak{S}at}$ is *complete.*

Proof: There are some different methods in model theory for proving the completeness of a first-order theory. I choose the method which works with the notion of elementarily equivalent models.

DEFINITION 11.1 Two models $\mathfrak{A}$ and $\mathfrak{B}$ are *elementarily equivalent* iff for every sentence φ, $\mathfrak{A} \models \varphi$ iff $\mathfrak{B} \models \varphi$.

LEMMA 11.2 $\Sigma \subseteq \text{Sent}(\mathfrak{L})$ is complete iff all models of Σ are elementarily equivalent.

Proof: If Σ is complete then for every $\varphi \in \text{Sent}(\mathfrak{L})$ either $\Sigma \vdash \varphi$ or $\Sigma \vdash \neg \varphi$. So by one form of the completeness theorem either $\Sigma \models \varphi$ or $\Sigma \models \neg \varphi$ and hence for all models $\mathfrak{M}$ of Σ, $\mathfrak{M} \models \varphi$ or for all models $\mathfrak{M}$, $\mathfrak{M} \models \neg \varphi$. So by definition 11.1 any two models of Σ are elementarily equivalent.

Conversely suppose all models of Σ are elementarily equivalent and suppose Σ is not complete. Then there is a φ' and a model $\mathfrak{M}'$ such that not $\mathfrak{M}' \models \varphi'$. Hence it is not the case that all models are elementarily equivalent.

DEFINITION 11.3 A *numerative sentence* φ^n $(n \in \omega)$ is a sentence of the form $\exists a_1 \ldots a_n$ $(Ata_1 \wedge \ldots \wedge Ata_n \wedge a_i \neq a_j)$ where 'Ata_k' abbreviates 'a_k is an atom' and $1 \leqslant i < j \leqslant n$.

As it is clear from the definition a numerative sentence says that there are at least n atoms.

LEMMA 11.4 Every sentence $\varphi \in \mathfrak{T}_{\mathfrak{S}at}$ is $\mathfrak{T}_{\mathfrak{S}at}$-equivalent to a truth-functional compound of numerative sentences.

Proof: By Hodges and Lewis (1969).

As we know from model theory the theory $\{ \exists a_1 \ldots a_n \, (\overbrace{1 \leqslant i < j \leqslant n}^{} \, (a_i \neq a_j)) \}$ is $\varkappa$-categorical for each $\varkappa \geqslant n$ which means that any two models of this theory which have the same cardinality $\varkappa \geqslant n$ are isomorphic and hence (by a model-theoretic theorem) all models are elementarily equivalent. As has been proved by Hodges and Lewis (1969) the models of a theory consisting of truth-functional compounds of numerative sentences are also elementarily equivalent. Hence by Lemma 11.4 and Lemma 11.2 the completeness of $\mathfrak{T}_{\mathfrak{S}at}$ follows.

Theorem 11 tells us that all models of $\mathcal{T}_{\mathcal{S}\,at}$ have exactly the same first-order properties and that there is no sentence $\varphi \in \mathcal{T}_{\mathcal{S}\,at}$ which can distinguish between the models.

It is well known there are first-order theories which are complete, but not model-complete, and that there are also theories which are model-complete, but not complete. Hodges and Lewis (1969) and Hendry (1980) proved that for every n, the theory of atomic algebras of individuals $\mathcal{T}_{\mathcal{S}\,at}n$, according to which there are exactly n atoms, is complete.

DEFINITION 12 Let $\mathcal{A}$, $\mathcal{B}$ be two structures.

$\mathcal{A}$ is a *substructure* of $\mathcal{B}$, $\mathcal{A} \subseteq \mathcal{B}$, iff

(i) $A \subseteq B$

(ii) $\mathcal{A} \models \varphi[v]$ iff $\mathcal{B} \models \varphi[v]$

for every assignment v in $\mathcal{A}$ and every atomic sentence φ.

DEFINITION 13 Let $\mathcal{A}$, $\mathcal{B}$ be again two structures.

$\mathcal{A}$ is an *elementary substructure* of $\mathcal{B}$, $\mathcal{A} \leqslant \mathcal{B}$, iff

(i) $\mathcal{A} \subseteq \mathcal{B}$

(ii) $\mathcal{A} \models \varphi[v]$ iff $\mathcal{B} \models \varphi[v]$

for every assignment v in $\mathcal{A}$ and every sentence φ .

THEOREM 14 Let $\mathcal{T}_{\mathcal{S}\,at}n = \mathcal{T}_{\mathcal{S}\,at} \cup \Phi$, where Φ is the set

$$\{\exists a_1 \ldots a_n (Ata_1 \wedge \ldots \wedge Ata_n \wedge a_i \neq a_j)\} \cup$$

$$\{\neg \exists a_1 \ldots a_{n+1} (Ata_1 \wedge \ldots \wedge Ata_{n+1} \wedge a_i \neq a_j)\}$$

such that $1 \leqslant i < j \leqslant n$.

Then $\mathcal{T}_{\mathcal{S}\,at}n$ is *not model-complete.*

Proof: $\mathcal{A}$ theory $\mathcal{T}$ is model-complete iff $\mathcal{T}$ is consistent and for any two models $\mathcal{A}$ and $\mathcal{B}$ of $\mathcal{T}$, $\mathcal{A} \subseteq \mathcal{B}$ iff $\mathcal{A} \leqslant \mathcal{B}$. Let $\mathcal{S}'_{at}n$ be a substructure of $\mathcal{S}_{at}n$ such that $I'_{at}n$ is a proper subset of $I_{at}n$. We see immediately that not $\varphi \models \Phi$.

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REFERENCES

Chang, C. C., and Keisler, H. J., *Model Theory* (Amsterdam-New York-Oxford ²1977).
Hendry, H. E., "Two Remarks on the Atomistic Calculus of Individuals", *Noûs*, Vol. 14 (1980).
Hodges, W., and Lewis, D., "Finitude and Infinitude in the Atomic Calculus of Individuals", *Noûs*, Vol. 3 (1969).

* * *

THE LOGIC OF SITUATIONS

Mieczysław Omyła

Professor Roman Suszko introduced a broad class of languages into the literature of logic. In honour of Wittgenstein Suszko named these languages W-languages. Syntax, semantics and consequence operations in these languages are based on the famous ontological principle: whatever exists is either a situation, or an object, or a function. The distinguishing property of W-languages is that they contain sentential and nominal variables, identity connectives and identity predicates. The intended interpretation of W-languages is such that sentential variables range over the universum of situations, nominal variables range over the universum of objects. All other symbols in these languages except sentential and nominal variables are interpreted as symbols of some functions both defined over the universum of situations and the universum of objects. Identity connectives correspond to identity relations between situations, and identity predicates correspond to identity relations between objects. It is obvious that the ordinary predicate calculus with identity is a part W-language excluding sentential variables, but the most often used sentential languages are the part of W-languages without nominal variables and identity predicates. In this paper, I will discuss only W-languages containing sentential variables, connectives and possibly quantifiers binding sentential variables.

By a sentential calculus we will understand a pair (L, Cn) where L is a sentential language and Cn is a structural consequence operation on L. We will identify L with the algebra of formulas freely generated by the sentential variables. Thus $L = (\mathrm{L}, \mathrm{F}_1, \mathrm{F}_2, \ldots, \mathrm{F}_n)$ where L is the set of all formulas of language L and $\mathrm{F}_1, \mathrm{F}_2, \ldots, \mathrm{F}_n$ are its connectives. We are interested in the following problems:

(i) Find the conditions that should be satisfied by the sentential calculus so that it can be interpreted as a logic of situations.

(ii) What mathematical structure should be put on any set, so that it can be a formal representation of the universum of situations.

To answer both questions we assume the following principles of the interpretations of any language system:

(1) Sentences and names form disjoint syntactic and semantic categories. The principle was not assumed by Frege. For Frege sentences are names for special kinds of objects which he called logical objects.

(2) The two-valuedness of logic, i.e., any logical sentence is either true or false. There are functions v defined on sentences whose values are either true or false.

(3) Following Frege and Wittgenstein we assume that sentences and names have references. If φ is any logical sentence or name then there is exactly one referent of φ, which is denoted by $\mathrm{h}(\varphi)$. The referent of φ is what is given by φ.

(4) The extensionality of logic in Frege's sense, i.e., if two expressions have the same referents, then they are interchangeable in any context without changing a referent of this context.

(5) If two sentences α, β are interchangeable in any sentential context without changing the logical value of this context, then these sentences have the same referents.

Frege believed, given postulates (2)—(5), that we have to identify the referents of sentences with their truth values, i.e., $v(\alpha) = h(\alpha)$, where v is a truth-valuation or logical valuation and h is an ontological valuation. Suszko in his formalization of Wittgenstein's *Tractatus Logico-Philosophicus* proves that it is possible to adopt semantic postulates (1)—(5) without adopting the Fregean axiom. Following Wittgenstein Suszko calls the semantic correlates sentences : situations. The starting point of Suszko's program is the assumption that the semantic correlates of sentences are different from logical values, i.e., $v(\alpha) \neq h(\alpha)$.

To say that two formulas describe the same situation Suszko uses an identity connective. Semantic principle (5) guided Suszko to the following definition of an identity connective:

Definition 1.

Functor § is called an identity connective in (L, Cn) iff for any set X and any formulas α, β in L the following condition holds:

$$\alpha \S \beta \in \mathrm{Cn}(X) \Longleftrightarrow \mathrm{Cn}(X, \varphi[p/\alpha]) = \mathrm{Cn}(X, \varphi[p/\beta])$$

where φ is any formula of L, p is any sentential variable, and the symbol $\varphi[p/\alpha]$ denotes the formula that results from replacing every occurrence p of φ with α.

Note that the equivalence connective in the classical sentential calculus is the identity connective. Interpretations of the sentential language L satisfying conditions (3) and (4) are arbitrary homomorphisms of language into any algebra similar to it. Let us denote a set of all homomorphisms of the sentential language L in an algebra similar to it by $\mathrm{Hom}(L, A)$.

Obviously, not every algebra A similar to the sentential language L is a formal representation of the universum of situations, and naturally not every homomorphism $h \in \mathrm{Hom}(L, A)$ is a semantic interpretation of L. If $A = (A, F_1, F_2, \ldots, F_n)$ is an algebra of situations, then there is a set $B \subset A$, where B is a set of all facts, or shortly F-set.

Every semantic interpretation h of the sentential language L defines the logical valution v_h such that:

$$h(\alpha) \in B \quad \text{iff} \quad v_h(\alpha) = 1$$

$$\text{or} \quad v_h(\alpha) = 1 \quad \text{iff} \quad \alpha \in h^{-1}(B)$$

Notice that, if (L, Cn) is the logic of situations, then:

(i) every theory T based on the consequence operation Cn is a particular theory of situations.

(ii) every theory of situations is the intersection of all complete theories containing it.

(iii) for every formal representation (A, B) of all situations and for every $h \in \mathrm{Hom}(L, A)$, h^{-1} (B) is a complete theory over Cn. Therefore, if a language is completely interpreted then the set of true sentences cannot be extended without any extension of this language.

If we want to treat (L, Cn) as a logic of situations, then there must be at least some truth-functional connectives in language L. One of the main assumptions of the ontology of *Tractatus Logico-Philosophicus* is that there are truth-functional connectives in a language of logic. The logic of situations should not contain any quantitative and structural assumptions

about all situations, except that true sentences describe different situations than false sentences do, so all situation have at least two elements.

In defining the sentential calculus (L, Cn) we determine the meaning of the logical constants. For example, if the language includes truth-functional connectives as the only logical connectives, then according to the assumed semantic principles any structure which is the interpretation of any theory in this language is two-elements of Boolean algebra. Thus we obtain the formula:

$$\text{(F.A.)} \qquad (p \leftrightarrow q) \vee (q \leftrightarrow r) \vee (p \leftrightarrow r)$$

which is a tautology. This formula was called by Suszko an ontological version of the Fregean axiom. The Fregean axiom is a quantitative condition put on the structure of the universum of sentential variables, because the equivalence connective $\leftrightarrow$ in classical sentential calculus is the identity connective. According to the Fregean axiom the classical sentential consequence operation may be described:

$$\alpha \in \mathrm{Cn}(X) \Longleftrightarrow \bigwedge_{h : L \to B_2} (h(X) \in \{1\} \Rightarrow h(\alpha) = 1)$$

where B_2 is two-elements Boolean algebra.

To avoid any restrictions on situations Suszko introduced an identity connective as a non-truth-functional connective into the language of classical sentential calculus. Let L be a sentential language containing only the logical symbols (i.e. the truth-functional connectives): $\neg$, $\wedge$, $\vee$, $\rightarrow$, $\leftrightarrow$ and a non-truth-functional identity connective: $\equiv$. In this language L some other connectives may appear, but the consequence operation Cn imposed on this language will be defined in such a way that these connectives will appear to be non-logical. Now let A be an algebra similar to L and let the following symbols:

$$-,\ \cap,\ \cup,\ \dot{\rightarrow},\ \dot{\leftrightarrow},\ \dot{\equiv}$$

denote operations in A corresponding to logical symbols. Following this notation we define a model of language L.

Definition 2.

The L-matrix $\mathrm{M} = (A, \mathrm{B})$ will be called a model universum of situations iff the following conditions hold for every $\mathrm{a}, \mathrm{b} \in \mathrm{A}$:

$$-\mathrm{a} \in \mathrm{B} \quad \text{iff} \quad \mathrm{a} \notin \mathrm{B}$$

$$\mathrm{a} \cap \mathrm{b} \in \mathrm{B} \quad \text{iff} \quad \text{both a, b are in B}$$

$$\mathrm{a} \cup \mathrm{b} \in \mathrm{B} \quad \text{iff} \quad \text{either a or b is in B}$$

$$\mathrm{a} \dot{\rightarrow} \mathrm{b} \in \mathrm{B} \quad \text{iff} \quad -\mathrm{a} \in \mathrm{B} \text{ or } \mathrm{b} \in \mathrm{B}$$

$$\mathrm{a} \dot{\leftrightarrow} \mathrm{b} \in \mathrm{B} \quad \text{iff} \quad \text{both } \mathrm{a} \dot{\rightarrow} \mathrm{b} \in \mathrm{B},\ \mathrm{b} \dot{\rightarrow} \mathrm{a} \in \mathrm{B}$$

$$\mathrm{a} \dot{\equiv} \mathrm{b} \in \mathrm{B} \quad \text{iff} \quad \mathrm{a} = \mathrm{b}$$

The properties listed in this definition guarantee that the usual connectives receive their classical interpretation, and '=' is interpreted as real identity. The set $\mathrm{B} \subset \mathrm{A}$ satisfying these conditions will be called a possible set of facts or F-set. We suppose that A is an algebra of situations.

Following Suszko we denote:

$\mathrm{Sat_h(M)} = \mathrm{h^{-1}(B)}$, for any $\mathrm{h} \in \mathrm{Hom}\,(L, A)$

$\mathrm{TR\,(M)} = \bigcap_{\mathrm{h}} \mathrm{Sat_h(M)}$

Val (A) = intersection of all sets TR (A, B), where B runs over the family of all F-sets in A.

We can intepret $\mathrm{Sat_h(M)}$ as a particular theory of situations determined by M and the valuation h, and we want to interpret TR (M) as a general theory of situations determined by algebra A and the set of all facts B. Moreover, the set Val (A) is determined by the algebra of situations A and is independent of the assumed F-set, and therefore I will call it an ontology of situations conditioned by the algebra of situations A.

Finally, in his 1971 paper Suszko presented the following theorem of strong completeness in non-Fregean logic:

> For all $\alpha \in \mathrm{L}$ and $\mathrm{X} \subset \mathrm{L}$; $\alpha \in \mathrm{Cn\,(X)}$ iff for every model of situations M, and for all valuations $\mathrm{h} \in \mathrm{Hom}\,(L, A)$ if $\mathrm{X} \subset \mathrm{Sat_h\,(M)}$ then $\alpha \in \mathrm{Sat_h\,(M)}$, where Cn is non-Fregean operation consequence in the open sentential language L, and A is any algebra of situations similar to L.

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REFERENCES

Suszko, R., "Ontology in the *Tractatus* of L. Wittgenstein", *Notre Dame Journal of Formal Logic*, Vol. 9 (1968).
Suszko, R., "Identity Connective and Modality", *Studia Logica*, Vol. 27 (1971).
Suszko, R., "Quasi-Completeness in Non-Fregean Logic", *Studia Logica*, Vol. 29 (1971).

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4. Erkenntnis und Ontologie

4. Knowledge and Ontology

KNOWLEDGE, TRUTH, AND ONTOLOGY

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Knowledge is the intersection between ontology and subjectivity. It has a subjective aspect, a system of accepted propositions, and an objective aspect, a connection with reality. The ontological problem in epistemology can be stated as follows: how are we to explain the connection between acceptance and truth, between subjective states of the knower and the ontology of what is known? I shall articulate an answer to this question in terms of coherence and probability. It is a modification and revision of the ideas I articulated in *Knowledge.*[1]

The theory I defend is similar to a traditional analysis of knowledge in form, but the interpretation of substantitive notions is, I believe, novel. According to this conception, a person knows that p if and only if it is true that p, the person accepts that p in the interests of obtaining truth and avoiding error, the person is justified in accepting p for these purposes, and the justification is undefeated by any false proposition. The last condition is necessary to deal with the problem articulated by Gettier, and, having discussed that protean problem on more than one occasion, I shall remain silent upon the topic here.[2] The notion of truth I shall take as primitive, but I note that though the project of providing a paradox free conception of truth is difficult and solutions controversial, it is trivially easy to eliminate the appeal to truth when one moves from general formulation to the particular instance. What is it for something to be true? That is a perplexing general question. What is it for it to be true that there are people before me? That question has a simple if unenlightening answer, to wit, that there are people before me.

The notion of acceptance replaces the more traditional notion of belief in my analysis as in Chisholm's.[3] The advantages of this substitution are that the conception of acceptance is more closely connected with decision and choice, in short, with optionality. Another advantage deriving from the first is that accepting is something one does for a purpose; it is, consequently, an intrinsically relative or conditional conception. As a result, by shifting to acceptance, we can deal with cases in which, though a person believes something out of habit, they know that what they believe is false. Thus, for example, a graduate student who has really not the least intention of completing a doctoral dissertation but is accustomed to thinking of himself as a student who will do so may as he reads, makes a few notes and so forth, *believe* that he will complete a dissertation. But he may know perfectly well from the evidence that he is really doing little to that end and that he will not finish. One might say of such a person that he believes that he will write the dissertation and that he also believes that he will not. I dislike that way of putting the matter. Belief is a state that comes about in certain ways that are not fully within our control. One finds oneself with a natural endowment of beliefs just as one finds oneself with a natural endowment of desires. Both belief and desire have a certain fixedness and do not immediately vanish when we reflect upon their demerits. Some of the best literature of the world exploits just this fact. Just as we are not compelled to act on irrational desires and thus are not prevented from attaining our rational ends, so we need not accept what we irrationally believe and thus are not prevented from attaining our intellectual ends. The graduate student may find that he believes that he will complete his dissertation and cannot easily shake off the conviction. But, if he reflects upon the evidence of his indolence and absorption in other pursuits, he may *accept* the opposite proposition in the interests of obtaining truth and avoiding error in the matter. He may thus accept and know that what he believes is false. He knows that he will not complete the dissertation.

The preceding remarks bring out the sense in which acceptance is relative to a purpose. One might object that the student accepts that he will complete his dissertation because it

is good for his selfesteem, personal felicity, and so forth. I do not disagree. He may *for the purpose of felicity* accept that he will complete the dissertation. However, when he considers other, more intellectual and epistemic objectives, those of obtaining truth and avoiding error, he may accept the contrary because of the evidence he has at his disposal. Thus, one may accept a proposition for one purpose and reject it for another. He accepts the proposition to please the hedonist within him and rejects it in homage to the intellectual. I shall not here comment on the overall rationality of such a strategy. What concerns me here is to focus attention on the notion of accepting a proposition for the purposes of obtaining truth and avoiding error. It is such acceptance that I take to be a condition of knowledge and the basis for solving the ontological problem. It is not sufficient to reach truth that one intends to do so, but it is what one accepts in the interests of so doing that is relevant to the solution of the ontological problem. What one believes from other causes or accepts for other purposes is beside the epistemological point.

The crucial notion is, however, that of justification. It is justification that effects the ontological connection between acceptance and reality. Justification, according to my conception, has both a subjective and an objective aspect. We cannot ignore either, I suggest, if we are concerned with knowledge. The subjective aspect of justification is what the person accepts to obtain truth and avoid error, his acceptance system. It is coherence within such a system that determines one sort of justification, what I call *personal* justification. A person who is justified in accepting something in this sense, for example, that the earth is flat, may be conceded to be justified in terms of what he accepts. We may, however, feel that there is also a sense in which he is not justified. If his errors were eliminated from what he accepts, he would, we allege, not be justified in terms of what would remain in accepting that the earth is flat. The person is personally justified but not *objectively* justified. Personal justification is coherence within an acceptance system, and objective justification is coherence within the subsystem of the acceptance system that would remain were all error to be deleted from the acceptance system.

This account, even at a sketchy level of articulation, can be seen to conflict with other approaches to knowledge and justification that are currently salient. Thus, before proceeding to a further articulation of the account sketched above, I should like to comment briefly on why I defend, and continue to defend, a coherence theory of knowledge and justification. By so doing, I believe I can provide a clearer motivation for the development of a coherence theory. The alternatives I whish to briefly discuss are the foundation theory and the causal theory of knowledge.

The causal theory is more often *assumed* to be correct, especially by those developing causal theories of meaning and reference, than articulated in detail. The earlier work of Goldman attempted articulation, and his attempt, because of the care and lucidity of his exposition, brought out the difficulties with clarity.[4] I shall not review what I have said elsewhere on the subject, and I note that now Goldman defends a different theory. What is assumed by the causal theory is that in certain instances a belief that p is caused by the fact that p and that such beliefs thus constitute knowledge. These beliefs are then transmitted to others, and they thus acquire knowledge. There is no doubt that knowledge is sometimes acquired and transmitted in this way. Attempts to elevate this truth into a theory of knowledge yield externalist theories of knowledge in that the appropriate causal history yields knowledge regardless of what internal reflections might take place.

The defect with such theories, however, is precisely that they ignore the internal system of reflections. In fact, such reflections are germane to whether or not a person knows regardless of the causation and transmission of what is believed. For example, you see someone out a window that is blocked from my view, are thus caused to believe that Haller has just walked by the window, and you say to me, "Haller is outside the window". It does not by any means follow that I know that Haller is outside the window even if I do accept what you say. Suppose you *think* that there are two people in the vicinity who look exactly alike, that you cannot tell apart, one of which is Haller. Then, even if you are incorrect in think-

ing this, and even if you accept the proposition that Haller is outside the window, it does not follow that you know that Haller is outside the window. Moreover, even if you do know that Haller is outside the window, if I believe that there are two people in the vicinity who look just alike that you could not tell apart, one of which is Haller, then I do not know from what you say that Haller is outside the window regardless of whether Haller is there. Or, if I believe that you are unreliable as an informant because you delight in lying to me about mundane matters as a form of humor, then, even if I accept what you say and, in fact, you are reliable, I still do not know that Haller is outside the window. These sorts of examples are, I believe, sufficient to establish the inadequacy of the causal or historical theories of knowledge. I should add that not only must a person not believe that his source of information is unreliable, whether the source is the testimony of another or the evidence of his own senses, he must, on the contrary, accept that the source is reliable and be correct about this in order to have knowledge.[5]

Next let us consider the foundation theory briefly. This theory, as I conceive of it, postulates that certain kinds of beliefs are justified intrinsically, that is, without justificatory reasoning, though the justification may be defeasible or *prima facie*, and denies that such postulates can be justified. What is central to such a conception is that the justification of such beliefs is taken as an axiomatic assumption. One can, of course, note that such a postulate will enable us to escape from skepticism and reach conclusions in accord with common sense. Actual versions of the foundation theory are sometimes formulated in such a way as to be subject to the same sort of counterexample as the causal theory, that is, examples in which a person has a belief of the sort in question but also has beliefs to the effect that, in the present circumstances, the belief is not a reliable guide to truth. However, there is nothing in the nature of a foundation theory that would preclude treating the existence of such beliefs about reliability as conditions that defeat or override the defeasible or *prima facie* justification conferred. My argument against such theories is that they contain an explanatory and justificatory limitation or deficit and, as a result, precludes solution of the ontological problem. Since the justification of the intrinsically justified beliefs is simply postulated, laid down as a principle of the norms of belief, the connection between truth and justification remains utterly mysterious. The normative principle that tells us that perceptual or memory or introspective beliefs are justified is logically compatible with the assumption that such beliefs are false more frequently than true or, for that matter, with the assumption that such beliefs are almost never true. The very reason it is plausible to postulate that such beliefs are justified is that one is convinced that such beliefs are a reliable guide to truth, that is, have a high frequency of truth. Moreover, we are not without reasons for thinking that such beliefs are frequently true, to wit, reasons concerning what we accept concerning perception, memory and introspection. We may, of course, be wrong in what we accept about these matters. But in that case, I propose, we are also wrong in postulating that such beliefs are justified, even *prima facie*. The justification of what we accept depends on our accepting considerations that give us reason for thinking that we are reliable in such matters and our being correct in these considerations.

These reflections are not intended to show that no modification of the foundation theory or the causal theory could deal with these difficulties. Formulations of such theories modified to incorporate considerations of what a person accepted in the interests of truth and avoiding error might well yield the same results concerning what people know obtained from a coherence theory. It is one of the lessons of the general truth that data always underdetermines theory that incompatible theories of knowledge can yield the same results, that is, effect the same sorting of examples into instances of knowledge and ignorance. It is, therefore, important to note that a theory can be perfectly effective in the way it sorts examples and yet be incompatible with another theory of the same virtues. The point of the preceding counterconsiderations is to give emphasis to the importance of coherence with what a person accepts in the attainment of justification and knowledge. Such coherence is the basis of explaining the reliability of acceptance and, therefore, solving the ontological problem.

This brings me, finally, to the theory of justification I wish to defend. The acceptance system of a person is a set of propositions of the form, S accepts that p, S accepts that q, S accepts that r, and so forth, where the variety of acceptance is that which aims at truth and the avoidance of error. It is essential to note that it is not the propositions accepted by S that constitute the acceptance system of S but rather propositions affirming that S accepts various propositions. This is essential because of the simple fact that not everything that S accepts is true, nor, for that matter, justified. Thus, when we ask whether a person is justified in accepting some proposition which, in fact, the person does accept, we should not assume that what he accepts is true, though we may, of course, assume that he accepts that it is true. Hence the acceptance system of a person articulates what a person accepts without presupposing that what the person accepts is true. Justification of a certain sort, what I have called *personal* justification, is coherence with an acceptance system. Schematically, a person is *personally* justified in accepting that p if and only if p coheres with the acceptance system of S. Personal justification is, so to speak, the subjective half of the story of justification.

The preceding considerations naturally raise the question of how we may explicate the relation of coherence. My intuitive conception of coherence is as follows. To decide whether p coheres with one's acceptance system, consider those propositions with which p conflicts, that is, those propositions that would render it less reasonable for S to accept that p, then ask whether it is more reasonable to accept p in terms of the acceptance system than the propositions with which it conflicts. If so, then one should, for the sake of coherence, prefer to accept p, that is, p coheres with the acceptance system. If there should be some proposition that conflicts with p that is not less reasonable to accept than p, one may yet reasonably accept p if there is some way of neutralizing the conflict. Such evaluations of conflict, of reasonableness, are made in terms of the acceptance system of the person in question. If p conflicts with q and it is more reasonable to accept p than q, then p *beats* q. If p conflicts with q and there is an n such that p and n does not conflict with q and it is as reasonable to accept p and n as n alone, then n neutralizes the conflict.

A simple example of a proposition that it is more reasonable for me to accept than one with which it conflicts is the proposition that I see a group of people before me. This conflicts with the skeptical proposition that I am now in delirium and see no one. No doubt if I accept that I am in delirium, I am, and there is, as Reid noted, no cure for that in all of logic.[7] But I do not accept that I am in delirium. I accept that I am not and that I can discern the difference. Thus, given what I accept, it is more reasonable for me to accept that I see a group of people before me, and, therefore, that proposition beats the skeptical one in the conflict. However, there is also the proposition that people sometimes suffer from delirium and think they see groups of people before them when they are quite alone. Since I am quite sure that this proposition is true, it creates a problem. I am not prepared to say that it is any less reasonable for me to accept this proposition than the proposition that I see people before me. Here the conflict or incoherence cannot be removed by favoring one proposition over the other. The conflict can, however, be neutralized. The proposition that I am not now in delirium neutralizes the conflict. For, conjoining that I am not now in delirium with the proposition that people sometimes suffer from delirium and think that they see people when they are quite alone yields a conjunction that in no way conflicts with the proposition that I now see a group of people before me. Hence, the conflict is here neutralized. Thus, we can eliminate conflict and obtain coherence by finding one of the propositions more reasonable than the other or by neutralizing the conflict.

I have taken the notion of it being more reasonable to accept one thing than another as primitive, following Chisholm.[8] However, it is clear to me that this form of reasonableness is a complex notion. We noted that justification has the dual objective of obtaining truth and avoiding error, and, consequently, when we speak of it being more reasonable to accept one thing than another, I mean that it is more reasonable with respect to this pair of objectives. It is well noted that these objectives pull in opposite directions. One may

accept a multitude of truths, if one is indifferent to error, by accepting everything, and, on the contrary, one may avoid error entirely, if one is indifferent to obtaining truths, by accepting nothing. To seek both objectives is more complicated. It is clear, however, that probability is a measure of the risk of error. The more probable something is, the less the risk of error, and the less probable something is, the greater the risk of error. Therefore, probability is a constituent of reasonableness germane to justification.

What can we say about probability? First, it is clear that there is a close connection between probability and reliability, that is, high probability is associated with high reliability. Secondly, we accept propositions about probability, especially propositions about whether one thing is more probable than another. Finally, these subjective estimates of probability are, I believe, estimates of some objective feature of the world, for example, a propensity. What is important in the context of personal justification is how probable a person thinks a proposition is relative to his acceptance system. The notion of probability that is appropriate is an estimate of the probability of propositions conditional on what one accepts. I do not suggest, however, that a person need survey the entire contents of his acceptance system to estimate these probabilities, though I do think that one might survey salient propositions in the acceptance system germane to a proposition in question. There is here, finally, a technical problem if one looks upon these estimates as being propositions affirming that a person accepts some proposition about a propensity. For, in that case, such estimates would both be propositions within the acceptance system and would also be estimates relativized to the acceptance system. There is work, by Kyburg and Skyrms, to suggest that consistent sense can be made of this.[9] I prefer, for present purposes, to regard there as being a subsystem of the acceptance system concerning propositions that are not about probabilities supplemented with probability estimates relativized to that subsystem to yield the acceptance system. I do, however, maintain that it makes perfectly good sense to talk about the probability of probabilities, the reliability of one's judgements about one's own reliability, and that such judgements are germane to justification.

Probability enters into justification as one component and the other component seems to be informational content. Thus, for example, a conjunction is, ordinarily, less probable than either conjunct. Nevertheless, it is, sometimes, quite as reasonable to accept such a conjunction as to accept a conjunct. To return to the preceding example, it is quite as reasonable for me to accept the proposition that I am not in delirium and that people sometimes suffer delirium as to accept the latter alone. Indeed, neutralizing assumes this. A conjunction has a greater informational content, it fills in the story more fully, and, therefore, gives us a more coherent account. Indeed, the escape from one kind of skepticism may be effected with complete success by noting that the avoidance of error is not the only appropriate objective of reason and justification. So is the obtaining of truth. Hence, if a skeptic should point out that there is greater chance of my falling into error in accepting the proposition that I see a group of people before me than in accepting the skeptically more cautious proposition that it seems to me that I see a group of people before me, perhaps pointing out that the latter proposition might be true even if I am dreaming or in delirium or in some other deceptive state, I have a ready reply. Even conceding his premise that there is less chance of error in accepting his proposal, my reply is that my intellectual objectives stretch beyond the simple goal of avoiding error; I am also interested in gaining truth. Thus, granted the greater risk of error, it is worth the risk of error to stretch beyond the limits of seeming to accept propositions about reality for the purpose of obtaining truth.

Having acknowledged the importance of considerations other than probability, I now wish to focus on the relevance of that notion to justification, for it is the notion of probability that connects with reliability and thus provides the answer to the ontological question with which we began. Let us, to that end, suppose that we are considering the reasonableness of a proposition in terms of the probability of it. It must be more reasonable than its denial. It must, however, also be more probable than exactly comparable propositions, ones that are simple permutations of it. Thus, for example, the proposition that the number 10

ticket will not be drawn in a certain lottery must be more probable that any proposition of the form that the number N ticket will not be drawn in the lottery because these hypotheses are permutations of one another in which one constant, the name of a ticket, is substituted for another. This restriction solves the lottery paradox.

The more reliable a person is concerning a proposition, the more probable it is that the proposition is true if the person accepts it. Moreover, other things being equal, the more probable a proposition is the more reasonable it is. The connection between probability, coherence, and justification can, consequently, be clarified once one notes the relation between reliability and probability. As we noted in criticism of other theories, it is possible that someone may accept a proposition in the interests of obtaining truth and avoiding error without being personally justified in accepting it because he considers himself unreliable. Thus, for example, I might accept a proposition, that I see some red thing, an apple say, without thinking that I am very reliable about this in the present circumstances. If I have reason to think that in the present circumstances I cannot tell a real apple from ersatz apples that are scattered around in the vicinity, or if I groundlessly accept that there are perfect apple counterfeits around in goodly numbers, then, though I may, in fact, be a good apple detector in the circumstances, I accept that I am not, and, therefore, in terms of what I accept, relative to my acceptance system, I am not personally *justified* in accepting that I see an apple. The proposition I accept about the counterfeit apples and my unreliability creates conflict. The proposition that I see an apple conflicts with the proposition that I cannot, in the present circumstances, tell a real apple from a counterfeit one. One proposition might be no more reasonable in terms of my acceptance system than the other, and there is no proposition that neutralizes the conflict either. If, on the other hand, I were to accept the opposite view, to wit, that I can reliably tell an apple when I see one, then it would, other things being favorable, seem that I am personally justified in accepting that I see the apple in question. If I accept that I am reliable in evaluating my reliability in this matter as well, my justification would be all the clearer.[10]

On the account I propose, evaluations of reliability, estimates of probability of truth, play a central role. To elucidate the matter somewhat further, I shall comment briefly on one problem that arises when dealing with skepticism. I once used an argument, in defense of skepticism, affirming that in order to be justified in accepting a common sense claim, that I see a group of people before me, for example, I must be justified in rejecting skeptical claims with which this conflicts, for example, the claim that I am in delirium.[11] It was countered that I may be perfectly justified in accepting that I see a group of people without being justified in rejecting the skeptical hypothesis.[12] I would not know or be justified in accepting that I was justified in accepting that I see a group of people before me if I were not justified in rejecting that I am in delirium. The critical proposal was that refuting the skeptic, though relevant to whether I know that I am justified or am justified in thinking that I am justified, is not relevant to whether I am justified in the first instance. Another way of putting the matter is that refuting the skeptic might be relevant to *showing* that I am reliable but not relevant to my being reliable.

I disagree with this line of criticism. It is true, of course, that my justification for rejecting a skeptical hypothesis is relevant to the question of whether I know or can show that I am justified in accepting that I see a group of people before me. It is, moreover, relevant to justifying the claim that I am justified in accepting that I see the group of people before me. However, it does not follow from this that justified rejection of the skeptical hypothesis does not justify my accepting that I see a group of people before me. In fact, the justification that I have for accepting that I am justified in accepting that p may be justification for accepting that p. I call this supervenient justification. Suppose I affirm that I am reliable in judging that p. If I give an argument to show that I am reliable in accepting that p, that argument, if cogent, shows that I was reliable when I affirmed that I was reliable in accepting that p. It does not show that I am any more reliable in accepting that p but does show that I am justified in accepting it. Put in terms of probability, if I prove that the probability that I am correct

in affirming that p is high, my proof does not raise the probability still higher. It establishes a high second order probability that the first order probability is high. However, if my justification for accepting that p depends on the high first order probability, if that probability is needed for p to prevail in conflict, then the proof contributes to the justification. For example, p may be more reasonable than some other proposition, not only because the probability of p is higher than the probability of q, but because the probability is itself so probable. I conclude this sketchy account of personal justification with the observation that a proposition that a person accepts may cohere with his acceptance system because the person estimates that he is a reliable judge that p and also because he estimates that he is a reliable judge about whether he is a reliable judge of p.[13] The sort of justification that results when a person is justified in accepting that p because he is justified in accepting that he is justified in accepting that p, is *supervenient* justification for accepting p.

We may note that this discussion of personal justification has rested on an acceptance system and estimates of probabilities. This justification is entirely subjective, and, though we may agree that a person is justified in terms of what he accepts, we may still wish to deny that he is really justified. I shall put this denial by saying that the person is not *objectively* justified. The reason is that we judge the person to have accepted false propositions or to have made incorrect estimates of probabilities. If that is our opinion, then we shall say that the person is not objectively justified in accepting the proposition. Suppose that we delete every proposition from the acceptance system of the person affirming that the person accepts a proposition that is, in fact, false. Thus, if the person accepts that p for the purposes of obtaining truth and avoiding error, but p is false, then the proposition that the person accepts that p is deleted from the acceptance system. The system thus cleansed of error will be a proper subsystem of the acceptance system. I call that the *verific* system of the person since it contains only propositions to the effect that the person accepts a proposition when the proposition is, in fact, true. The probability estimates of the acceptance system are replaced in the verific system with actual propensities relativized to the nonprobabilistic subsystem of the verific system. A person is objectively justified in accepting that p if and only if p coheres with the verific system of the person. To avoid confusion, it is important to notice that the mere fact that a person accepts something in the verific system is no guarantee that the person is objectively justified in accepting it any more then the fact that the person accepts the proposition in the acceptance system is a guarantee that the person is personally justified in accepting it. If a person accepts a proposition and the proposition is true, then the proposition that the person accepts it will be preserved in the verific system. But it is still possible that such a proposition fails to cohere with the verific system. It is coherence within the verific system that determines justification, not mere inclusion.

We are now in a position to solve the ontological problem once we note that the sort of justification required for knowledge is a combination of personal and objective justification. That is, a person is justified in accepting that p if and only if the person is both personally and objectively justified in accepting that p. Suppose that a person accepts some proposition and estimates that he is reliable about the truth of p. Imagine, moreover, that he also judges himself to be a reliable judge of his own reliability. He turns out to be personally justified in accepting that p. Now imagine, moreover, that not only is p true but that the person is also *correct* in accepting that he is reliable about such matters generally and that he is a reliable judge of his reliability. In that case, the connection between justification and truth naturally results. The person is both personally and objectively justified. It is not merely that p is true, but, since the person is correct in his estimates of his own reliability, subjective and objective probability coincide. Thus, if he is justified, personally and objectively, there is an appropriate fit between subjective conviction and ontological reality.

Suppose that a skeptic alleges that we are entirely unreliable about the issues I have discussed and, therefore, that we know nothing. If we are reliable, as we judge ourselves to be, then there is the appropriate connection between coherence and ontology. If not, then he is right, and we know nothing. There is, I contend, no *apriori* demonstration that we are

reliable. I do not, however, concede that, for all we know, the skeptic may be correct. I know that the skeptic is in error. The skeptical hypotheses are, in fact, less reasonable than those of common sense, even if, as we learn from history, we are fallible in our cognitive undertakings. We have, I suggest, a coherent conception of ourselves and our reliability as inquirers after truth, and that conception yields the ontological connection.

I wish to comment briefly on a natural objection to the treatment of the verific system. It might be suggested that how reliable a person really is, objectively considered, should be calculated not just in terms of what truths the person accepts but also in terms of other factors. At one extreme, that favored by Goldman for example, reliability and probability should be evaluated in terms of etiology, the historical mechanism by which the person came to accept the proposition in question.[14] A less extreme view would be that evaluation should be in terms of the present sensory and inferential states of the person. The idea is that there is more than merely what a person accepts that is relevant to evaluating how reliable the person is about a given matter, for example, the causal mechanism that produced his acceptance, or, more minimally, the sensory and inferential states of the person relevant to his acceptance.

My reply to this objection is that a person might not have access to these mechanisms or states. When the person lacks access to them, we will obtain too broad a conception of justification for the purposes of analyzing knowledge. Suppose, for example, that a person has come to accept a proposition in a perfectly reliable way but has forgotten this and takes himself to have come to accept it in some less reliable way. Such a person, though in a perfectly good position to know, fails to know because of erroneous opinions he holds about how he came to accept what he does. For example, a person who was, in fact, told some historical proposition by a perfectly reliable historian, who the person thinks is not a historian but a local derelict, does not know that the historical proposition is true. Even if he does reluctantly and suspiciously take the informants word for the matter, accepts what he takes to be an unreliable report, this does not entail that the person knows.

When we reflect on the more modest requirement that we should evaluate probability and reasonableness in the verific system relative to the present sensory and inferential states of the subject, we confront a similar problem. The subject may not accept that he is in the sensory and inferential states that he actually is in. If, relative to his being in those states, it is highly probable that he is correct in accepting that p, but he thinks it is not so probable that p because his erroneous views about his inferential and sensory states lead him to think he is not very reliable, then the person lacks the sort of justification required for knowledge.

I am assuming here that a person can be in a sensory or inferential state and not accept that he is. There is a tradition that regards such states as being self-presenting or transparent to the intellect.[15] Yet this tradition appears to me to be in error if it is interpreted as affirming that if a person is in such a state, then he accepts that he is, or if it is interpreted as affirming that if he is in such a state and accepts that he is, then he knows that he is in that state. The problem is that how things appear or how we infer one thing from another can slip by unnoticed. If, not noticing these things, we should, nevertheless, accept that they exist because of some prejudice or foolish conviction, then, though we have a correct opinion, we lack knowledge. Such cases are no different in principle from cases in which a person looks at some external object, fails to notice that it is there, but believes because of some prejudice or foolish conviction that the object is before him.

A lecturer might fail to notice the ringing sound of a bell when engrossed in his lecture. Such a person might be completely oblivious to his auditory state at the time of the ringing of the bell but accept that he heard such a sound from the conviction that a bell always rings during his lecture. If the bell rarely rings, usually a buzzer sounds, and, in fact, the person failed to notice the sound he heard, then I deny that he knows that he heard the sound even though he did and is convinced that he did because he is convinced a bell always rings during his lecture. A similar point could be made concerning visual images rather than

auditory sounds. Reid noted that when one holds a single finger before one's face and views some distant object there is an appearance of two fingers, though such an appearance often goes unnoticed.[16] Suppose I believe that two fingers are held before my eyes, though there is only one, and infer, therefore, that I experience a two fingered image because I believe there is a one to one correspondence of finger images to fingers. Then I shall accept that I experience a two fingered image, which, in fact, I do. But I do not notice this, because I believe, quite incorrectly, that I see two fingers and infer that I, therefore, experience a two fingered image. I think that such examples can be manufactured for less complex sensory states as well.

There is, of course, a sense in which sensory states may be regarded as playing a special role. But that role, as Reid again proposed, is causal and not epistemic.[17] It is sometimes argued that such convictions about states of consciousness are somehow safer and more cautious, even if not infallible, and again one may sagaciously demure. Sometimes propositions about what objects I see before me are just as probable as propositions about states of my own consciousness, how I am appeared to for example. It is sometimes thought that this is not so because the propositions about appearances are weaker logically, that is entailed by perceptual claims. Chisholm has effectively replied to this in objecting to phenomenalism.[18] That I see something red does not entail that I am appeared to in one way rather than another, just as that I am appeared to in a certain way does not entail that I see something red. I would only add that just as I may know that I am appeared to in a way characteristic of red objects while being in doubt about whether I see something red, so I may know that I see something red while being in doubt about whether it appears in one way rather than another. Of course, sensory states do play a special perceptual role, but that role is a causal one.

The argument for including inferential states in our basis for evaluating reasonableness and probability might appear more salient. How we infer one thing from another is certainly germane to how reliable we are in the conclusions we reach, it might be urged, and, therefore, should be considered in any evaluation of reliability. Moreover, as Stewart Cohen argued, even though hypothetical states will be included among the propositions we accept, the acceptance of premises is not equivalent to the acceptance of a rule of inference.[19] A system of premises, no matter how large, draws no conclusions without a rule of inference. My reply to this line of thought is again that unnoticed inferences, like unnoticed sensory states, may make us reliable, but if we think we are unreliable and accept that our conclusions are drawn from unreliable inferences, then we lack the sort of justification needed for knowledge. Moreover, it must be noticed that we do accept propositions affirming that we infer one proposition from another and that one proposition may be reliably inferred from another. So information about inferences will be included in the acceptance system and the verific system.

In conclusion, let me relate what I have affirmed to the theories that I have rejected. I defend a coherence theory of justification that has both a subjective and an objective component. Both are relativized to acceptance systems and subsystems of the subject because it is such systems that determine coherence. My views are intended to incorporate what I take to be the correct and valuable insights of causal, reliability, and foundation theories. What causal and reliability theories have in common is an insistance that acceptance that yields knowledge be a reliable guide to truth. However, such theories may ignore the subjective factor. One unfortunate consequence, noted above, is that instances in which a person considers himself to be unreliable turn out to be knowledge on such an account because such considerations are ignored. Other problems also arise. Thus, for example, Goldman faces the problem of whether a person can reliably discriminate an object of a certain kind from counterfeit objects of that kind. If the person cannot, then, according to Goldman, he is unreliable.[20] It is notable that this line of thought leads to skepticism. When the subjective aspects are considered, the problem is readily avoided. I know that I see an apple before me now. It is, however, evident that someone could manufacture a wax

apple that I could not visually discriminate from a real apple. So how can I be said to be reliable? I accept, on the basis of information about such fake objects, that it is extremely unlikely that someone has manufactured and placed such an object on my desk. I accept that, though I can be fooled by wax imitations, it is very unlikely that there are any in the vicinity and even less likely that someone has come in my office, removed the apple I remember placing there, and put an ersatz apple there instead. If, moreover, I am correct in what I accept about these matters, together with what I accept about my reliability in discerning apples in ordinary circumstances, then what I accept will be carried over to the verific system. I will be both personally and objectively justified in accepting that I see an apple. Thus, once we take into account what we accept and employ the appropriate notion of reliability, one having both a subjective and an objective aspect, grounded on coherence within our acceptance and verific systems, the skeptic is easily alluded.

With respect to the foundation theory, I also share intellectual proximity. Since I take what a person accepts as the basis of justification, my views draw close to those of Reid and Chisholm who are both foundation theorists. Some propositions are ones we are justified in accepting whenever we accept them, certain of those concerning perception, memory, and introspection for example. This is true, I aver, because those propositions are such that, in the ordinary cases, we consider them to have a high probability of being true whenever we accept them. Of course, in special cases, when we accept propositions that shed doubt upon our reliability, then justification for the proposition is forfeited. Reid said of such beliefs that they require no argument but are justified in themselves.[21] With this I agree. He also said that it was just a brute fact that we are justified in accepting such propositions.[22] With this I disagree. On the contrary, it is general truths we accept about ourselves and our relation to the world that both explain why we are reliable in such matters and which, therefore, provide supervenient justification for our accepting those propositions. Thus, I would grant that there are some propositions that are justified without argument, but I would affirm that it is, nevertheless, the relation of such propositions to what we accept, the relation of coherence, that accounts for our being justified in accepting those propositions without argument. We can, contrary to Reid, provide argument for accepting such propositions, the argument being that they cohere with our acceptance system, even though, consistently with what he affirmed, such propositions require no justification. Following Sellars, therefore, we might say that such propositions are noninferentially justified because of the way they cohere with our acceptance system.[23] Such propositions are, therefore, contrasted with ones that are justified by inference. Propositions that are justified by inference will be such that we correctly accept that they are reliably inferred from other propositions, those propositions being ones that we are also justified in accepting. Our correctly accepting that such inferences are reliable insures that such propositions are either more reasonable for us to accept than those with which they conflict or that the conflict can be neutralized.

The sort of coherence theory I defend incorporates salient features of the causal, reliablist and foundation theory. Reliability is a fundamental feature of justification and knowledge. It is derived from coherence. The noninferential justification of some perceptual, memory and introspective propositions is a fundamental feature of justification and knowledge. It is also derived from coherence. Finally, inferential justification is explained by coherence. Thus, certain fundamental claims of the conflicting theories are ones that we are justified in accepting. The others are either beaten or neutralized.

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NOTES

1 Lehrer, K., *Knowledge* (Oxford 1974). Also see R. Bogdan (ed.), *Keith Lehrer* (Dordrecht 1980), pp. 75—98.
2 Gettier, E. L., "Is Justified True Belief Knowledge?", *Analysis*, Vol. 23 (1962), pp. 121—123.
3 Chisholm, R. M., *Theory of Knowledge* (Englewood Cliffs ²1976).
4 Goldman, A. I., "A Causal Theory of Knowing", *Journal of Philosophy*, Vol. 64 (1967), pp. 357—372.
5 Cf. A. I. Goldman, "What is Justified Belief", in: G. S. Pappas (ed.), *Justification and Knowledge* (Dordrecht 1979), pp. 1—24.
6 Cf. Chisholm (1976).
7 Reid, T., *Essays on the Intellectual Powers of Man*, in: W. Hamilton (ed.), *The Works of Thomas Reid.* (Edinburgh/London ⁸1895), p. 485.
8 Chisholm (1976).
9 Kyburg, H. E., *The Logical Foundations of Statistical Inference* (Dordrecht 1974), and B. Skyrms, *Causal Necessity* (New Haven 1980), Appendix II.
10 Cf. Goldman (1979).
11 Lehrer, K., "Why not Skepticism?", *The Philosophical Forum*, Vol. 2 (1971), pp. 283—298.
12 Pitcher, George, in correspondence. See also G. E. Pence, "Scepticism Vanquished", *Philosophical Forum,* Vol. 4 (1972—73), pp, 303—304. For a reply, see D. C. Hubin, "Googols Again", *Philosophical Forum*, Vol. 7 (1976), pp. 367—374.
13 For a similar idea, see Goldman (1979).
14 Goldman (1979).
15 Chisholm (1976).
16 Reid, T., "An Inquiry in the Human Mind", in: Hamilton (1895), p. 164.
17 Reid, T., "Essays", in: Hamilton (1895), pp. 310—313.
18 Chisholm, R. M., *Perceiving: A Philosophical Study* (Ithaca 1957), Appendix.
19 In conversation.
20 Goldman, A. I., "Discrimination and Perceptual Knowledge", *Journal of Philosophy*, Vol. 73 (1976), pp. 771—791.
21 Reid. T., *Essays*, in: Hamilton (1895), Essay VI, Ch. V.
22 Reid (1895).
23 W. Sellars, "More on Givenness and Explanatory Coherence", in: Pappas (1979), pp. 169—182. I am also indebted to M. Swain, "Justification and the Basis of Belief", in Pappas (1979), pp. 25—50.

* * *

ON PRIVATE OSTENSIVE DEFINITION

G. E. M. Anscombe

I

Prologue

If a word stands for a private object, it must have a private ostensive definition. And the converse also holds: if a word needs a private ostensive definition, it stands for a private object.

The whole business concerns experiencing, wherever the content of experience can be thought of as an object. In some contexts we might rather speak of a private state of affairs; but I will confine myself to contexts where it is natural to speak of an object. That *experiencing* is what is in question comes out if we consider what is meant here by a 'private' object. Think of the explanation: "It's something which someone else—logically—can't have".—Is one's body a private object then?—No, *that's* not the sort of having.—What then?—It's the sort of having there is in having an experience. When I have an experience I have something which someone else can't have, and that's the private object. "Have" something here means "experience" something.

And when I walk, don't I do something no one else can? For no one else can do *that* walking.

But that's obviously a purely verbal point, it's just grammar. The walking you mean isn't identified, hasn't got an identity as *this* walking, except as the walking you do then.

Well, when you have an experience, pain perhaps, or a mental image, or a particular experience of sound, is what you speak of as that pain etc. to be identified otherwise than as one, of such a kind, that *you* are having then? Has one any better right to say "No one else can have *this*?" than I had to say "No one else can do *this* walking"?

"Yes! and that is precisely why there is the private object in the one case and not the other. For the object isn't just a grammatical object. Not a cognate accusative like the walk that you walk. I grant the *experiencing* is to be identified like the walking only as the experiencing that I am doing at a certain time. But it gives me, shews me, an object. Such an object is the first kind of existent that I get hold of; such objects are my sole direct cognitive connexion with the world. If it is a pain, for example, it acquaints me indirectly with my body; it itself is an object of direct acquaintance. 'There's something there!'"

"Such objects are not independent of the experiencing subject, but given that they are being experienced, they exist. Just what their relation is to independently existing objects is for correct philosophical analysis to tell us; but of one thing I can be sure, namely that all my knowledge of empirical reality depends on my having these objects. When I define a word by such an object, I guarantee that word's non-emptiness *and* its significance in a single blow."

What about the difficulty that no one else can know what you mean if your meaning depends on the experience of objects which they can't experience?—"Oh, that's something that will get taken care of somehow or other." There is certainly a public aspect to my use of the words I use in communication with others. I make an assumption—and isn't it a fair one?—that they have the same private objects as I do; but in any case, there is agreement on the application in public circumstances. The suggestion that we all have quite different private objects as our meanings for words which we have in common—*e.g.* that you 'get' what I'd call middle C, or an impression of a giraffe, when I speak of red or

when your eyes are directed upon a pillar box—that is too bizarre to entertain. There may even be arguments to shew that this cannot be so. Somehow this difficulty can be got rid of, whether by arguments from analogy or probability or the connexion of the private object with a certain logical structure. It is indeed a service to philosophers that the difficulty exists; framing theories to deal with it provides them with occupation. But we can happily disregard any suggestion that this difficulty is fatal to the private object; we *know* there are private objects, and no such problem will persuade us to give them up.

II

If we do indeed know that there are private objects in the sense indicated, that is a reasonable attitude. But certain considerations shew that the supposed knowledge is an illusion we have produced in ourselves. The illusion is however a misunderstanding of certain facts which are not illusions.

Suppose I concentrate on something and say "This is sof", intending thereby to fix the meaning of the word. Or, if it should already be a word of my language, seeking to guarantee to myself that I know its meaning.—But knowing that implies knowing how it is generally understood. That can't be guaranteed by this performance. There would have to be the additional judgment "This would be called 'sof' by anyone who knows the regular meaning of the word." True: so if I am trying to assure myself that I know the meaning I also make that judgment. But even without it I may think I have a guarantee that I *have* a meaning for the word. This is my absolute certainty. I can call it the Cartesian guarantee because for this purpose it would not matter even if the object was an illusion.

It can be tempting to think that this procedure, or the possibility of it, lies at the bottom of our understanding of words. Or, if not of all words, at least of some. For we might hesitate about 'logical' words like 'or' and 'all'; or we might even be sure that the account only applied to 'categorematic' words, and not to ones whose sole function is to shew how others are connected into a sentence. Or again, we may think that our procedure can only apply to 'pure' experience words, the names of secondary qualities and other simple sensation contents like 'itch', 'tingle' or 'sting'.

Some such motive lies at the back of the opinion that many non-technical terms are nevertheless 'theory-laden'. 'Theory' contrasts with 'givenness in experience'.

If my word "sof" meant *e.g.* "table", or "pre-Raphaelite", or "shadow" or "paralysis", or "smell of burning", or "insect-bite", I would not be likely to picture myself as having a guarantee of meaning by concentrating on something which I then called by such a name. This is for more than one reason. First, although all those things may be perceived, there is an element of hypothesis about all of them. There is more to one's perceptions being 'of a table', for example, than is exhibited in momentary perception. Further, though a table may be only an appearance, and so may the brown colour of an object in a certain light, still 'table' is not a sensible-property concept; whereas even the false appearance of brown does present the colour brown to the sight.—Again, all of those terms are either already complex verbal expressions, or susceptible of definition as if abbreviations of such expressions. —Now, if "sof" had one of *those* meanings, all these reasons would make it unnatural to think that one had a guarantee of meaning in one's here-and-now experience, and to suppose that it would *not* be fatal to this if others disagreed with one's application of the word.—Once a small child called some drainpipes "cookhouse doors". Presumably what others called "cookhouse doors" didn't matter to him; this was *his* word for something then. But if it was actually his word FOR *a drainpipe* the mere seeing of drainpipes then and there could not enable him to make it so: could not *present* him with the content of a concept of that type. Previous experience, acquaintance with the names of *such* objects, familiarity with the explications of other impressions even if only hypothetical, would be essential, would as it were supply the template for constructing a new name of the kind.

Now with a word for a sensible quality or for a sensation such as pain the situation is quite different. The terms are unhypothetical; the whole of the quality here answering to the name is presented to sense; the simple terms that stand for such things cannot be thought of as abbreviations of complex definitions. The terms don't hang together with the idea of confirmation by further experience.

Some philosophers (*e.g.* Ayer in *Language, Truth, and Logic*) have thought the 'ostensive' application ('*This* is white') even of such terms was partly hypothetical because it involved a judgment that *what* one was calling something was the same as one had called that before. But with that one cavil, these are the objects that seem apt for giving words meaning when the words are used to express the experience of a sensible quality. It does feel overwhelmingly convincing to fix my eye on a blue expanse, and alluding to that colour, to say "that's blue". Admittedly, I may get into one or two small difficulties if I say I have shewn myself what "blue" means. To take Ayer's point: do I know I am using the word as I have used it before?—Well, I am *sure*. But what's the use of that if there's no conceivable check on whether I'm right? But it doesn't matter: here and now I am meaning *this* by "blue", and so I have attached a meaning to the word, whether or not it is a new meaning. That also takes care of the remote possibility that taking it as a public word someone else might not agree. It is *Spitzfindigkeit* to insist on that possibility; but if anyone does so, I fall back on the claim that *I*, *now*, have a meaning for it. "What is meant by it is presented to me."

Another difficulty might be raised about the range that my word "sof" is supposed to have. The colour words, for example, that we all easily remember, have rather wide ranges. "Pain" stands for something very various. So how different could what I concentrated on have been and still served to *give the same meaning* to "sof"?—Well, once again this is something it should be possible to take care of. We might restrict our term so that *e.g.* it covered no range of a property, but only a quite particular place on its scale or spectrum. Or we might say that there is a focal point—say the midpoint of a range—such that everything to which the term could apply is referred to that point, and this essence was what I got hold of.

Nevertheless, in offering these escape routes, we already introduce something rather more difficult to brush aside. What sort of word is "sof" at all? My concentration on a *this* cannot tell me the grammar of the word I am associating with it, or the grammar of the sentence "This is sof". The sentence is supposed to be a definition, of course; but is the defined word to be understood *e.g.* as a proper name, or as a predicable?

How could experiencing something fix the grammar of a word? And this word must surely have a grammar!

How could experiencing something fix whether anything in another encounter, or whether anything else, and if so *what* else, is to be called something that this is being called?

Here Ayer might say "You see, it was no use circumventing my point by making a new definition in face of the *present* object. For you'll want to use the word again—otherwise why define it? And any later use will involve the assumption that you are using it for the same. This assumption may always be false, and therefore there are no 'ostensive' certainties." But what we have to consider first is not the possibility of scepticism. For we can be sceptical only where we know what we are doubting, i.e. where we do understand the sense of it.

Let us first take this point: any later use will involve the assumption that you are using it for the same. If I meet someone, learn his name, "Jack" say, and use it of someone in a later meeting, meaning it as the name of that man that I learnt it for before, *then* indeed I am making an assumption: I am taking this man to be the same as that one. But when I merely mean "Jack" as that man's name, it can't be said that I must be making a like assumption, or reidentifying something as Jack. It is easy to see this, as I might have to remember Jack *in order to* make any such reidentification.

Thus we must distinguish between 'using it for the same', in the sense of using it in the same meaning, and 'using it for the same' where this means *also* applying it to something

that *is* the same: "Jack" for a man *here* presented for example, or newly described. Here there *is* an assumption or belief.

Only where we have a distinction between these two senses can that assumption be involved in a later use of a word once learned. We don't *assume* we are using the word "than" or "perhaps" 'for the same' or as before, any more than we normally *assume* we are talking or speaking English. With those words, indeed, there's no temptation to think we identify anything to ourselves in using them. Where such a temptation arises, because a word is wrongly construed as a name, or we want to call it a "referring expression", we get spurious problems of reidentification. Such problems surround the word "I", for example, as I have argued elsewhere.

But we must also take care in another way how we speak of 'using a word *for*' something. If I say "This paper is magenta" I am not using the word "magenta" as a name either of the paper or of anything else. I am applying it to the paper; and if I say I call the paper magenta because it's the same as what I called "magenta" before, "calling" has the sense "asserting of" and "being the same" relates to predicates. For if a is ϕ and b is ϕ we may say in this sense that they are the same—there is something that they both are.

When however I say "This colour is magenta" I am using "magenta" as a name. The character of a name gets imposed *ad hoc* on a word by the syntax of some sentences it occurs in and of some questions which it answers. The fact that the word occurs as a name, however, is no proof that we are dealing with an object. It is true that name and object are correlative: but that only means that if we construct a name (syntactically speaking), we also construct either an object, syntactically speaking, or a relation to some actual object. For a sign may be connected with something without being its name: it may merely be attached to the object, or we may learn to associate them. Think of the signs "+" and "—" which stand by the pins of an electric plug, and are also associated for us with different wires in a flex according to the colours of their coverings. Similarly two signs "in" and "out" may be memorised in connexion with trays identified by position on an office desk. The answer "in" may be given to the question "Which tray is this?" and the question and answer import a use of the sign "in" as if it were a *name* of a *tray*. But the question "Which sign goes with this tray?" does not do that, though it has just the same point. Considered as names in answer to *that* question, the signs "in" and "out" are names of themselves.

The establishment and memorising of the connexions is for the sake of an application of the signs—wiring electric plugs, dealing with incoming and outgoing mail. With their *application* they acquire *real* significance. We might say: Only now have they meaning—and their meaning is not like that of names. Thus a name-like character conferred by the syntax of some sentences in which a sign occurs, is insufficient to make it out as the name of some object; either the supposed object itself, as an object, or the relation as of name to object, is pure syntactical construction.

In short, Frege is wrong in his view (if it really was his view) that an object is the correlate of a name in such wise that you prove that numbers are objects by shewing that numerals are (indispensable) names. We can of course *call* the supposed correlates of words that have a name-like character "objects", and it may be a convenient way of talking, making it easier, perhaps making it possible, to say much that we want to say. And so we say as a matter of course that "two" is the name of a number, "red" the name of a colour, "pain" the name of a sensation, "West" the name of a direction; and we would speak of the 'objects' in question. Many people hold and have held that if a true proposition has a name as subject and cannot be restated so as not to include such a subject, then we must hold that the subject has an object corresponding to it. Thus they derive a metaphysical conviction from the formal character of a true proposition. Or rather, from its formal character together with its truth. But also, from its epistemological status; for that has a great deal to do with possibilities of analysis. And that is one reason why the simple sensible qualities are treated, in their particular occurrences, as *objects encountered. Their* names *must* be fixable by ostension! And a certain course of reasoning leads one to think that the most basic ostension is private.

However, our considerations shew that this *can't* be so. Public ostensive definition is all right if you know or can pick up what kind of word is being defined—a proper name of a dog, the name of a colour, of an architectural style, of a taste, of a step in a dance. Knowing that means knowing the answer to our questions "What's the grammar of the word? What sort of reapplication is it to have?" *Mere* utterance of a sign, a sound, say, while experiencing something, can't be given the role of fixing the sound as a sign with a certain character. Something *else* must give it that role. I utter a sound, what makes it a *name*? You feel as if *meaning that thing* by that sound would do it. And that may be so, *if* you already know how to use a sign in a particular grammatical way. But the thing you are attending to can't teach you the way.

And this is what makes the idea of private onstensive *definition* into a *fraud*, which we are universally tempted to perpetrate.

Giving a definition: Someone *gives* a definition *to* someone. If the recipient learns from it, the giver knew; the recipient *was* ignorant. So: If *I* can shew *myself* something, then *I* already knew. If I can teach myself then I do not need teaching. I cannot be divided into the knowing self that teaches and the ignorant self that is taught.

"But can't I *fix* the meaning?" How?—"By saying to myself: '*This* is A'". But, once more, when have I A again, or when again am I to call something "A"?—"When it is like *this*" Like this, in what way? "In the respect I mean, when I call *this* 'A'." But how did I fix *that*? "I feel sure I know it, I know what I meant." That's no answer. You are so regarding it, that it makes sense for you to be wrong, and at the same time there's nothing that being wrong—or right—consists in.

If I can take *my meaning* as fixed by *this*, then I'll be justified in thinking that *this* has fixed *a* meaning for "A". But I only *fancy* I can because I attach *what* I mean by "A" to the way I understand „*this*". So the meaning of "A" is given, fixed by the meaning of 'A'. The same objection holds if I try to explain what I'll rightly call "A" again by "the same as this". *What* same? If the application of "A" is not yet determined, neither is the relevant application of "The same as this". I have yet to fix what I call "the same" in "the same as this". Or, what to call recognising A again.

Once more: I must have a way, a technique, of using "A". Something *else* is, or isn't, to be called "A". Nothing else, if A is a particular soap bubble which explodes at once, and "A" is its proper name. Something else, if "A" is the name of a sound. How long, how loud, whether one can observe it in the dark, whether it can be imitated—these are just a few of the things that go with the meaning of "A". How can *this* that I am attending to, tell me all that or determine any of it? "First I see it is *this* and then I call it such-and-such". *This*? What? There has to be an answer to that, and that is why the answers to the questions are already determined, as many of them are, in my approach to the object; and that is why it is a fraud to think that the object, uncharacterized by such determination, can fix them. I already know, I am not fixing, what I mean by "A". Or if I *am* fixing it, it's just the *last* point that I am fixing. "A" say, is to be a name of a piece in a game—*that* I know, and now I say it's *this* one. When I think I am reassuring myself by giving myself a private ostensive definition, I am dwelling on, attending to, an A; I already know what an A is, or what sort of thing is to be called "A". I am not reverting to the justification of the meaning of the word.

That I can 'simply attend' to something and dwell on it is noteworthy, remarkable. If it is a simple sensible quality I can absorb it, drink it in, get hold of the whole of what the name here names. That one can 'sensibly attend' to an object is one of the things that characterise the important concept of an object of experience. A human expression, yes, that is such an object; a coefficient of expansion, no. A Blake painting, yes, a speed limit, no. A colour in a surrounding, yes, the principles of perspective, no. 'Objects of experience' do not indeed have to be 'elementary data'. Indeed, it's not at all clear that there *is* such a thing as an elementary datum according to the old empiricist conception—the given that fixes the meaning of a word without grammar—so that one wants to *mean* it by squeaking

at it, as Wittgenstein once put it. What is true is that there *is* this inclination, that it is strongly connected with the idea of "I"—what *I* have, what it takes being *I* to have—and, more reasonably, that the expressions of experience which mention simple sensible qualities are in an important sense unhypothetical.

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THINKING, PICTURING, AND STORY-TELLING

Wolfgang Grassl

We think about certain things,—
but how do these things enter into
our thoughts? [1]

Thinking is quite comparable to
the drawing of pictures.[2]

A sentence in a story gives us
the same satisfaction as a picture.[3]

Two characteristics serve, according to Brentano, to mark off mental from physical entities: first, the *intentional inexistence* of the object in a mental act, and secondly, the *directedness* of the act towards its object. The two criteria are regarded as being two faces of the same coin. But when we consider Brentano's definition of mental phenomena as "such phenomena as include an object intentionally within themselves",[4] there are two distinct lines of argument which suggest themselves. We can, on the one hand, be suspicious about the tractability of the notion of intentional inexistence, while maintaining the claim that all thoughts are directed towards objects. "*x* is thinking about *y*" would then be construed as being of the form *x*R*y*, *i.e.* as in all cases expressing a relation holding between a person and an object. Since we are able to think about objects regardless of their existence or non-existence, this would require us to produce an ontological account of non-existent objects and of those which, in Meinong's phrase, are "beyond being and non-being". This relational view of intentionality seems to make a Meinongian theory of objects inevitable and presents us with all of its traditionally attendant problems.

On the other hand, however, there is the second line of argument opened up by Brentano's apparent running together of the notions of object-directedness and intentional inexistence. This starts from the latter notion and is at the expense of the former. Any such non-relational account is, however, hampered by the notorious unclarity attaching to the scholastic notions of "intentional inexistence" and "immanent objectivity". According to the prevailing interpretation, it will necessarily lead to the acceptance of an immanentist view of the object as having a purely mental existence.[5] Conceiving of the relation between a thought and what this thought is *about* in immanentist terms comes, in fact, very close to what Bradley meant by an "internal relation": intentional objects have no existence independent of the mental act that "refers to" or "is directed onto" them.[6] The most poignant criticism to be raised against such a construal would be that it does not allow for the possibility that different individuals may think about the same object, or, more generally, that it does not admit quantification into intentional contexts.

It was his realisation of these and similar problems that led Brentano, in his later writings, to ascribe existence only to real objects, thus relegating *entia rationis* to the domain of linguistic fictions. But it does not seem necessary to follow Brentano's move towards "reism" in order to steer clear of these problems. It is, surely, possible to make sense of the notion of "intentional inexistence" whilst at the same time avoiding an immanentism that would imply solipsism. A new interpretation can be given to Brentano's view that what is fundamentally characteristic of being in a mental state is not the peculiar character of the relation

of object-directedness, nor the peculiar character of the object, but the peculiar standpoint of the subject. This implies a non-immanentist analysis of "*x* is thinking about *y*" that accounts for the aboutness of thoughts whilst sidestepping the problems connected with the existence or non-existence of intentional objects.[7]

This new analysis will, in some sense, be a non-relational one. Its starting-point is an epistemological, not an ontological, claim: What someone immediately knows is not what the *object* of his thought is, but what intentional state he is *in*. Objects of thoughts are therefore not something to which thoughts, independently identifiable, are related. In saying that he is thinking about Aristotle a person is identifying his mental act as an Aristotle-thought (rather than, for instance, as a Plato-thought). This is the real force of the intentionalist claim that the identity of a thought is given by its object. The motive underlying this approach may be seen in Leibniz's assertion that ideas are "affections" or "modifications" of the mind.[8] Like appearances and emotions, thoughts can be regarded as "affections" or "modifications" of the person who entertains them. The sentences in which we seem to predicate properties of thoughts can be paraphrased into other sentences in which we predicate properties only to the self or person who is said to be thinking:

> Consider a man who is thinking about a unicorn. Though we say, quite naturally, that the unicorn is the object of the man's thought, it would be less misleading to say that the unicorn is the object of the man to the extent that he is thinking.[9]

This new analysis is compatible with the ontological assumption of a reality independent of our thinking. It concerns only the knowledge a person has of what the objects of his thoughts are *at the moment* of his thinking about them. It is in this sense that the present analysis may be regarded as non-relational: *when* thinking about an object, the person has knowledge only of the mental state he is in; he has no separate knowledge of what his thought is *about*. This, however, does not imply that what he thinks about is itself a mental state: "The objects he is thinking about are certainly not in his head—any more than in his thoughts!"[10]

It is obvious that such a construal of "intentional inexistence" requires a new conception of how the mind can be "directed onto" something other than itself and yet permit first-person knowledge of the object only as the content of a mental act.

It seems that one clue to the nature of such acts is provided by Wittgenstein's suggestion of an analogy with pictorial representation.[11] In the case of picturing, too, we have to give up the relational conception. Because we can distinguish between a picture and the object it depicts—if there is any—we are easily led to think of the picture as referring away from itself to its original. But such an understanding would assimilate pictures to ordinary signs, which *do* indicate something different from themselves. Pictures, on the other hand, do not simply refer to something, but contain what is depicted in the picture *itself*: "So what the picture tells me is itself".[12] We can, after all, speak of an object depicted even if there is no actually existing original *apart* from the picture. Clearly there can be unicorn-pictures even in a unicornless world. And a unicorn-picture cannot be a centaur-picture, since, notwithstanding the extensional equivalence of the terms "unicorn" and "centaur" (both of which apply to nothing in the real world), the terms "unicorn-picture" and "centaur-picture" apply to quite different objects.[13] The object of a picture is thus essential to the picture in the same way in which the object of a mental state is essential to that state. To understand how a picture can be an Aristotle-picture or a unicorn-picture may therefore help to understand how a thought can be an Aristotle-thought or a unicorn-thought.

How, then, does the creator of a picture *know* what the picture is about? The question is best answered obliquely: this is not something he *knows* at all, but something he *stipulates* or *deems to be true*. A picture has the representational qualities it has because its creator has decided that it has them. He knows what its representational properties are only in the

somewhat strained sense in which someone can be said to know the upshot of his own stipulation. It is clear that Botticelli's painting *The Birth of Venus* represents Venus just as Greek statues represent Zeus-casting-the-thunderbolt or Poseidon-with-the-trident. And the mediaeval craftsmen who created the Unicorn Tapestry were thereby certainly representing unicorns, even though there never existed any unicorns, and therefore, even though there never existed any which were represented. The concept of representing something or being a picture of something is thus parasitic on the idea of someone picturing it. A painting "is about its object in the way a sentence is about its subject".[14] It is in this sense that what works of art represent can be said to depend on the intentions of their creator.[15]

Identity criteria for the objects of pictorial representations can be laid down if we are prepared to adopt a causal view of picturing along the lines of the causal theory of reference. A similar view (without the causal component, however) was also proposed by Wittgenstein:

> How do I know that this picture is my image of the *sun* ?—I *call* it an image of the sun. I *use* it as a picture of the *sun*.[16]

By the act of name-giving an artist stipulates that a picture (which need, of course, bear no particular likeness to an original) is a picture *of* or *about* Aristotle, a unicorn, or the Battle of Hastings, and thus *makes* it a picture thereof. Two artists can be aware of having produced *different* pictures of the *same* object because they have knowledge of the stipulations (expressed by the names given to their pictures) by which they introduced the respective objects. The identity of objects of thoughts may then be conceived of along analogous lines.

A maybe even better clue to the understanding of the *aboutness* of thoughts is provided by considering the case of story-telling. Knowing that one is thinking about *y* seems to be very much like knowing that a story one is telling is about *y*. If someone begins to tell a story by saying "Once upon a time there was a witch ...", it would be absurd to ask him "How do you know it was a witch ?" It is not that he knows it was a witch; he has deemed or stipulated that he is talking about a witch and has thereby introduced her into the domain of the objects of his story. Thinking about an object is like telling a story in just this way. The only justification a person has for claiming that it is Aristotle he is thinking about is his immediate awareness at that moment of being an Aristotle-thinker. But this no more precludes the possibility that different individuals can, at the same time, entertain Aristotle-thoughts than it does in the analogous cases of picturing and narrating. This interpretation also permits us to say that Aristotle is being thought about or pictured in different ways. But knowledge of *what* we are thinking about when we are thinking about *y* is not a piece of knowledge we have independently from that which we have of the mental state we are in when thinking about *y*. Knowledge of the objects of intentional states seems like a separate piece of knowledge only because the term denoting the object can be detached from the description of the state. But this is a semantic, rather than an epistemological, move.

When using this analysis for an account of the aboutness of thoughts we have to pay attention to what it is that we want to explain. The analogy between thinking, picturing, and narrating has been introduced to give a new interpretation to the notion of "intentional inexistence", not as a theory of what thinking is. The stipulational model is intended to answer only the question, "What makes a thought about *y* a thought about *y* ?" It cannot provide an answer to the further question, "What is *x* thinking about when he is thinking about *y* ?" that would go beyond saying that it is *y* that *x* is thinking about. And it obviously cannot tell us what *y*'s there are or what their ontological status is. By restricting its applicability to *acts* of thinking we can both resuscitate the notion of "intentional inexistence" and steer clear of the solipsism which has usually been regarded as its necessary sequel.

NOTES

1 Wittgenstein, L., *The Blue and Brown Books* (Oxford 1958), p. 38.
2 Wittgenstein, L., *Philosophical Grammar* (Oxford 1974), p. 163.
3 *PG*, p. 171.
4 Brentano, F., *Psychology from an Empirical Point of View* (New York 1973), p. 89.
5 Cf., e.g., H. Spiegelberg, *The Phenomenological Movement: A Historical Introduction*, Vol. 1 (The Hague 1975), pp. 40 ff.
6 Cf. F. H. Bradley, *The Principles of Logic* (Oxford 1883).
7 The following considerations are limited to only one kind of mental acts: conscious, episodic thoughts directed at an object.
8 See G. Leibniz, *Meditationes de Cognitione, Veritate et Ideis*, in: J. E. Erdmann (ed.), *Opera philosophica quae exstant*, Vol. 1 (Berlin 1840).
9 Chisholm, R. M., (ed.), *Person and Object: A Metaphysical Study* (La Salle/London 1976), p. 203.
10 *PG*, p. 143.
11 Cf. BBB, p. 39 f.; PG, pp. 163 ff.; and *Lectures and Conversations on Aesthetics, Psychology and Religious Belief* (Oxford 1966), p. 66 f.
12 *PG*, p. 165.
13 Cf. N. Goodman, "On Likeness of Meaning", *Analysis*, Vol. 10 (1949), pp. 4 ff.
14 Scruton, R., "Intensional and Intentional Objects", *Proceedings of the Aristotelian Society*, Vol. 70 (1970/71), p. 205.
15 See also *BBB*, p. 32: "An obvious, and correct, answer to the question 'What makes a portrait the portrait of so-and-so?' is that it is the *intention*".
16 Wittgenstein, L., *Remarks on the Foundations of Mathematics* (Oxford 1956), I, § 129.

* * *

WHAT MAKES MY IMAGE OF HIM INTO AN IMAGE OF *HIM*?

Stewart Candlish

Although Wittgenstein himself does not give a clear answer to his own question (*PI*, II, iii), what he does say has been invoked by those who think, like Sartre, that the answer is the intention of the imager.[1] And this response has an immediate, intuitive appeal which suggests that it has at least managed to encapsulate *some* important feature of the relation between image and imaged. Yet it faces an objection which even if in the end not conclusive is, nevertheless, obvious enough to give us pause for thought: namely, that a mental image which "resembles" the Eiffel Tower surrounded by heavy traffic at twilight can hardly be an image of an empty desert under a midday sun, no matter how resolute the imager in his intention. What the intention-answer appears to neglect is the importance of *similarity*.[2]

This objection suggests that similarity to an object is a necessary condition for the 'of'-relation, which we may call image-identity. Could it be sufficient too? No; for we do not allow accidental similarities to count. My mental image of a man I call to mind may resemble another man towards whom I have no such intention, but is not thereby an image of both even if the resemblance to the unintended man is rather greater. Moreover, if similarity were sufficient we should not be able to determine unique image-identities. Yet clearly we do do this; and one who wished to defend the similarity-answer in the face of this point would have to hold not only to the already dubious Principle of Identity of Indiscernibles,[3] but to a peculiarly strong and implausible version of it: that complete community of visualisable properties guarantees uniqueness.

So far it seems that intention and similarity are severally necessary for image-identity. Are they jointly sufficient? First consider a physical case. Suppose I form the intention, for whatever reason, to obtain an image of the householder at some telephone number which I pick at random from the directory. I go to a junk shop, buy the first picture of a man that I come across, take it home and formally title it appropriately to my intention. By some freak of chance, and quite unknown to me, the picture (though originally derived from someone else) does bear a strong resemblance to my unseen object of intention. Is this combination of intention and similarity sufficient to make the picture the image of my desired object?

There is reason for saying that it is not; and the reason is not hard to see. It is that the image is derived from the wrong source and is, quite simply, an image of someone else who happens to look like the intended object of the image.

It may be objected here that this physical analogy is insufficient to support a comparable claim about a mental image, for the physical image involved is, in a sense other than that of legal ownership, clearly not *mine*: I am not its creator, and thus my intentions in the matter are irrelevant, for it is only the intentions of the creator which count. Whereas of course I am always in some sense the creator of my mental images. But the objection is irrelevant, for we can imagine a case in which I *am* the creator of the physical image, as the original painter or photographer—maybe I have since forgotten this—and yet still my intention does not suffice to detach the picture from its source and give it a new identity. 'But', the objection may be pursued, 'one's current intention is beside the point. It is the original intention, at the time of creation, which gives the image its identity; and it is this original intention, not the object from which the image is derived, which outweighs the current intention in the determination of identity.' Even the original intention, however, seems insufficient to outweigh what we may call the causal origin of an image. Suppose I intend to photograph or paint James who has an identical twin John of whose existence I am

unaware; unbeknownst to me John sits for the picture. Then the resulting image, despite its similarity to, and my intention to depict, James, is one of John.

The suggestion is, then, that what is true of the physical case is here also true of the mental; that if I produce a mental image causally derived from the perception of one thing with the intention of having an image of another similar thing, then the image is one of the original object from which it is derived and not one of the intended object.[4]

Causality has not often been considered in recent discussions of imagery, so a brief consideration of the reasons for resisting its introduction here is in order. First, it may be alleged that to speak of intention as operating on quite alien images and then to draw conclusions from its failure to do so, is about as sensible as concluding that intention is insufficient for action because it does not move stones; restrictions are needed on the range of objects to make them conceivably subject to intention. The reply to this is that one does not need the restrictions to make the negative points made here; and that in any case causality and similarity, together with knowledge, are the most plausible candidates for the restricting features. Secondly, the resistance may stem from the failure to notice that there are universal as well as particular answers to the question 'What is this an image of?', and, similarly, images of how an object looks as well as ones of an object itself. For example, this question can be answered with either a proper name or an indefinite description. Thus the inclination to think that the causal background of an image is irrelevant to its identity can be tempered by pointing out that an image derived from John can show us what his identical twin James looks like; that it is easy to confuse this with showing us James; and that the image nevertheless does not show us *James himself*. Thirdly, another helpful distinction (adapted from Bernard Williams[5]) is easily overlooked, the distinction between an image and an imaginative project, and correspondingly, between the identities of their objects. Suppose, for example, I have the imaginative project of depicting Athene. As the goddess is unavailable for a direct personal encounter I persuade a woman of my acquaintance to model for me. I now paint a faithful picture of this woman appropriately garbed and posed, and label the result 'Athene'. In this way I can employ an image of one person to fulfil the imaginative project of depicting another. Similarly, if we reserve the term 'visualising' for imaginative projects pursued by deploying mental imagery, I can intentionally employ an image of one twin (in the sense that the image is known to originate from a direct encounter with that person and is revived by me as such), in order to visualise the other twin, so far unseen.

We have, then, it seems, discovered a complex sufficient condition for image-identity. If I intend to produce an image of X, that image resembles X and is causally derivative from a perceptual encounter with X, then undoubtedly my image, physical or mental, is *of* X. The causal component of this condition appears necessary. Is either of the others superfluous?

Intention can arguably be discarded. The man idly doodling on a pad who produces a likeness of the girl he loves and has lost may not intend to do this; but our knowledge of his situation, seeing the similarity and inferring the causality, could justify us in deciding the identity of the sketch even in the face of his denials. Or again, suppose an image comes unbidden to my mind; I cannot recall whose image it is. Intention can hardly be said to be active here; yet undoubtedly the image is of *someone*, and I may remember later of whom.

If intention can so easily be dismissed as neither sufficient nor necessary for image-identity, why is it that people have thought it important? A defender of the prominent rôle of causality may conjecture that such people have been inclined to the confusion between image-identity and identity of imaginative project, for it seems plausible to suppose intention the sole determinant of the latter. Indeed, intention is peculiarly suited to this rôle, for the imaginative project is a projected *act*, and intention is the criterion of identity for attempted action. Thus if my intention is to visualise the unseen member of a pair of identical twins, then that just *is* the project, and its nature is not affected by my proposal to use an image derivative from another source. (This is not to say that the project is guaranteed success. There is more to be said here; but no space to start saying it.)

Can similarity also be abolished as a necessary condition? This would mean that causality alone would suffice; but not everything that is a causal product of perception is a mental image at all, and here the lack of similarity is the most obvious reason for claiming that such a product is *a fortiori* not an image of its origin. Even if, in the light of this, we restrict the scope of the causal account to those things already determined on other grounds to be images, we are no better off; for we cannot rule out, in advance and *a priori*, the possibility that we may one day be able to establish, of an image, both its causal origin in a perceptual encounter and its utter dissimilarity to the content of that encounter. So at this stage it looks as if similarity and causality are severally necessary and jointly sufficient conditions for image-identity.

What would be the advantages of such an account of image-identity? First, and most significantly, it would allow, what an intention-account could not, a unified account of the identities of both voluntary and involuntary mental imagery and of physical imagery too. (It might be argued here that intentionality, not intention, is the key to image-identity, thus claiming the same advantage; but 'intentionality' so far is just a fancy name for the 'of'-relation, not an account of it.) Secondly, it is easily, and in a manner not particularly *ad hoc*, defended from counter-examples, especially those involving intention, by employing the two distinctions mentioned above. Thirdly, it eases the pressure, stemming in part from Sartrean versions of the intention-account, to suppose that mental images do not exist. This supposition apparently requires that claims that our mental images are fleeting or sketchy are all false, and makes it hard to distinguish visualising something from merely thinking of its appearance; it is not obvious that its rejection commits one to the still less appealing view which Hannay adopts,[6] that mental imagery consists in the seeing of mental pictures.[7]

However, there remain grave problems with this account of image-identity. For a start, there are well-known difficulties, discussed by Gombrich,[8] in talking of any similarity at all between image and imaged. These can be avoided by stipulating that an image is similar to a given object when a description of the imaged object, what is seen intentionally, is similar to a description of that given object. There remain perhaps insuperable difficulties associated with the fact that similarity has degrees; but as these difficulties could be argued not to affect central cases, and the dispute could be lengthy, I shall leave the similarity-condition in order to concentrate on the less familiar problems of the causal condition. In what I said earlier I implied that this condition could be met only by a direct perceptual encounter with an object. But for several reasons this seems too restrictive. First, it involves either denying that we can have images of things which exist only in fiction, or allowing that the condition can be met by admitting as direct encounters with things, reading about them in novels. Secondly, if one takes the apparently preferable latter course, it then seems irrational not to allow the perception of (accurate?) descriptions of real people as fulfilling the causal condition. Thirdly, there is a straightforward linguistic intuition that it is correct to say of someone who visualises a person on the strength of having read about him or seen a picture of him, that he has an image of him; while if one tries to reject this intuition one can then be asked to rule on all the intermediate cases, like seeing people on television, in mirrors, *etc.*

But if we relax the causal condition to include cases other than direct encounters then we must surely allow that one can have an image of one twin on the basis of having seen another; and this seems not only to readmit intention into the matter but, in one of the prime examples in terms of which the distinction between image-identity and project-identity was introduced, to obliterate that distinction. And, as we noted in the last paragraph but one, the distinction is important to the preservation of the causal account from counter-examples. Moreover, the strictest causal condition may include, as well as exclude, too much, through deviant causal chains, even when supplemented by the similarity condition.

It may be possible to meet these difficulties by using the distinction between images of an object and of how an object looks; but this begins to seem *ad hoc* in the face of the strong intuition that one can have an image of a person without having seen him for oneself. The

strict interpretation of the causal condition is merely Russell's doctrine of real names transferred to the sphere of the philosophy of mind, and just as restrictive in its consequences. It may be appropriate to photographs: if James sits for my picture, or I construct the image piecemeal, then if I write 'John' under the result I am lying. But painters and visualisers are not so restricted.

So far I have deliberately conducted the discussion within the parameters set by previous writers; the conditions I have considered have all been defended by one or other philosopher in recent years. And what is the result of this procedure? A confusion typical of philosophy: an inconclusive series of general accounts, counter-examples, modifications and logical problems.

What are the sources of the trouble? The first and most obvious is that *image* seems not to be a concept governed by strict necessary and sufficient conditions. This, while not to be assumed in advance, should not surprise us when discovered. The second is that we have concentrated on the apparently problematic half of the image/object dichotomy, proceeding as though the imaged object is somehow given in its entirety by a name or definite description and forgetting that it may have many others more or less appropriate to the manner in which it is imaged. (It is no accident that the problems with the intention often invoked ignorance and error.) The third is that the mental image has been treated as an inner object; and the eventual failure of the occasionally clear distinction between image and imaginative project indicates that this is mistaken. But the temptation to do this is almost overwhelming, and even those treatments of mental imagery which try consciously to avoid this error while not relying on intention alone, nevertheless succumb to it in some form even if an inverted one: for example, Ishiguro's attempt to give an account in terms of *seeing as*,[9] which begins with physical representations being seen as their represented object and ends, in the case of mental representations, quite mysteriously with nothing being seen as the imaged object. Perhaps we should just stop thinking of mental imagery in terms of representation altogether, just as we have learned to do with seeing.

Wittgenstein himself pointed out (*PI*, II, iii) that the same question of identity applies to utterances as well as to images. Were it not for the fact that parallel theories to some of the above have been dominant in recent philosophy of language, I should recommend that we remove the discussion of this topic from the framework of representation to that of reference.

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NOTES

1 See I. Dilman, "Imagination", *Analysis*, Vol. 28 (1967—8); J. P. Sartre, *The Psychology of Imagination* (London 1972), Ch. 2; and L. Wittgenstein, *BB*, pp. 32—9.
2 See E. J. Furlong, "Mental Images and Mr. O. Hanfling", *Analysis*, Vol. 30 (1969—70); O. Hanfling, "Mental Images", *Analysis*, Vol. 29 (1968—9); and H. H. Price, *Thinking and Experience* (London 1953), p. 299.
3 S. Candlish, "The Inexplicability of Identity", *The Australasian Journal of Philosophy*, Vol. 49 (1971).

4 D. R. Cousin, "On the Ownership of Images", *Analysis*, Vol. 30 (1969—70).
5 B. Williams, "Imagination and the Self", in: B. Williams, *Problems of the Self* (London 1973).
6 A. Hannay, *Mental Images— A Defence* (London 1971); and A. Hannay, "To See a Mental Image", *Mind*, Vol. 82 (1973).
7 Candlish, S., "Mental Images and Pictorial Properties", *Mind*, Vol. 84 (1975).
8 Gombrich, E. H., *Art and Illusion* (London 1968).
9 Ishiguro, H., "Imagination", *Proceedings of the Aristotelian Society*, Supp. Vol. 41 (1967).

* * *

DO WITTGENSTEIN AND QUINE DISAGREE ABOUT CERTAINTY?

Harold Morick

This paper compares Wittgenstein's treatment of (what he calls) fundamental statements in his book *On Certainty*[1] with Quine's treatment of *a priori* statements in his article "Two Dogmas of Empiricism".[2] Wittgenstein's fundamental statements are statements that in normal circumstances we accept without question, and which in those circumstances it would be senseless to question. Instances of such statements are mainly of the sort that G. E. Moore claimed that he knew for certain—"$12 \times 12 = 144$", "The earth has existed for a long time", "These are two hands". Wittgenstein's account of their epistemological status is what we shall now turn to.

He says that taken together such statements form the inherited background for our judgments of the truth and falsity of ordinary statements. That is, the system of fundamental statements provides us with a world picture that functions as our frame of reference for distinguishing what is true from what is false. The fundamental statements themselves are neither true nor false. Instead, they determine the nature of the reality against which ordinary statements correspond, or fail to correspond; fundamental statements are, or embody, rules of description of reality. Since they set the standard of what is to count as reality, fundamental statements neither agree nor disagree with reality. Instead of being true or false, they "stand fast" in the sense that they are irrefutable. No matter what surprises are in store for us, nothing can happen that would force us to give them up. That we don't ever *have* to give them up is just what is meant, Wittgenstein says, by calling them fundamental.

What is the extent of these statements? This is not an easy question to answer, for there is no clear boundary as to where they leave off and where, for instance, ordinary empirical statements begin. Even within the set of fundamental statements, the lines between different types of them is blurred. What constitutes this set are elementary statements of logic and mathematics, together with quasi-empirical statements like "These are two hands", and "The earth has existed for a long time". Yet, among the fundamental statements, there are no sharp borders between logical and quasi-empirical statements, and between statements of common sense and statements of science.

This system of statements that make up our world picture is subject to change: what was once part of the river bed of our thoughts—namely, fundamental statements—may transmute into waters of the river—namely ordinary empirical statements—and vice versa (*OC*, s. 96).

How do Wittgenstein's views in *On Certainty* about the epistemological status of fundamental statements compare with Quine's views about epistemology as found in "Two Dogmas of Empiricism"? On Quine's view, the statements that we accept confront experience collectively, not one by one. From this he believes it follows that any distinction between empirical statements and non-empirical statements is illusory; and any distinction between methodological statements and factual statements is equally illusory. Thus, given Quine's view, Wittgenstein's so-called fundamental statements are no less empirical, no less factual, than what Wittgenstein judged to be ordinary empirical statements.

You may recall that the acid test for a Wittgensteinian fundamental statement is that it be a statement that never *has* to be given up, no matter what happens. This test for fundamentality seems to have the trivial result of making *all* statements fundamental, because, according to Quine, we may hold on to any statement we please, no matter what happens, provided that we make a suitable redistribution of truth values among the rest of the statements that we have hitherto accepted. Hence, accepting Quine's epistemology, one can,

it seems, claim that Wittgenstein is a victim of the illusion that there is a sensible distinction between fundamental statements—statements that may be held on to come what may—and statements that are not fundamental—statements that we cannot hold on to come what may.

Furthermore, given Quine's view, no statement is fundamental in the sense that it can only be given up at the price of epistemological catastrophe. For instance, Euclid's parallels postulate, a statement people used to accept without question, used to be thought fundamental, or *a priori*, in that it seemed that rejection of it would "make our concepts crumble". Moreover it was thought that the idea of such catastrophe was merely academic, because there could be nothing that could make us give up this postulate, no matter what happened. However, as Quine indicates, with the advent of the theory of relativity, which incorporated a geometry that rejected Euclid's parallels postulate, it became evident that that postulate was dispensible without the price of epistemological anarchy. Hence, the Quinean can claim, the fact that Wittgenstein would have judged e.g. "$12 \times 12 = 144$" to be fundamental is no more than a sign of the limits of his imagination—or perhaps better, a sign of the limits of the imagination of us all at this stage of knowledge. Given Quine's view, there is nothing in principle that precludes our giving up "$12 \times 12 = 144$" or, to vary examples, "These are my two hands", even when these statements are made in ordinary circumstances, and even when we have scrupulously exhausted the normal run of checking procedures to assure ourselves of the acceptability of these statements. On Quine's view, it seems that Wittgenstein has failed to learn one of the most important epistemological lessons to be learned from the scientific revolution that overthrew Newtonian physics for relativity physics.

Let us appraise Wittgenstein's case for fundamental statements in light of the different parts of Quine's attack on *apriority*. Wittgenstein's fundamental statements fit the, or a, traditional account of *a priori* statements. For, for Wittgenstein, (1) fundamental statements are not inferred from experience, nor are they justified by it; instead, these statements constitute the inherited epistemological background which, as infants and children, we imbibe as we do the food we eat. And (2) these statements "stand fast" for us in that, whatever happens, we do not have to give them up.

We presented two Quinean arguments against fundamental statements. The first one ran as follows. If the hallmark of a Wittgensteinian fundamental statement is that we can hold on to it regardless of what happens, then fundamentality is a trivial trait, since it is possessed by *all* statements. We can hold on to any statement, provided that we redistribute truth values over the rest of our hitherto accepted statements in such a way as to assure consistency. Well, the Wittgensteinian answer to this is that Quine's argument, although correct, is merely legalistic. (I must here interject that Quine would be the first to admit the truth of this charge.) It is legalistic because in real life there are countless statements that can be preserved only at the price of madness or duplicity. For instance, I could hold on to the statement "I have no head" only by pleading hallucination or something even more farfetched.

The second Quinean argument against fundamental statements needs to be taken more seriously. It is the argument from scientific revolutions. The gist is: if it could be rational to reject a statement as self-evident as the parallels postulate, then there is no basis for claiming that *any* statement is in principle insusceptible to rejection by evidence. If so, the distinction between *a priori*, or fundamental, statements on the one hand and *a posteriori*, or empirical, statements on the other collapses. The answer to this argument against fundamental statements is that it is doubtful that it really does challenge fundamentality. To see this we have to fill in some further parts of Quine's account of *apriority*.

The *positive* aspect of his account is that he believes that, in its heyday, Euclid's parallels postulate did hold a privileged epistemological status—namely, that *relative* to the body of scientific knowledge before Lobachevski, Riemann, and Einstein, the parallels postulate indeed could not have been given up without an epistemological catastrophe. That is, no person, scientist or layman, could rationally say, "I don't know what ought to replace

Euclid's postulate, but it's nevertheless wrong, so we should abandon it''. The principles of geometry are so central to our conceptual system that rejection of any of those principles would entail the collapse of the system. To have rejected Euclid without replacing him with a positive alternative would be to let our concepts crumble. So, according to Quine, the parallels postulate did have a special status in its time, namely the status of *contextual apriority*. The mistake many scientists and philosophers make is to confound the *bona fide* condition of being contextually *a priori*—the condition of being *a priori* relative to a specific body of background knowledge—with the illusory condition of being absolutely *a priori*—the condition of being *a priori* relative to any, and every, body of background knowledge.

So at the deepest level, Wittgenstein and Quine are in agreement about certainty and *apriority*. We have seen that Quine leaves room for statements that are exempt from doubt *relative to our current body of theory*. Such statements, Quine says, are central to our conceptual system, so that their rejection in favor of alternative statements is tantamount to the adoption of a new conceptual system.[3] Wittgenstein holds the same view in different words: Certain statements cannot be doubted or rejected *if we are to preserve our form of life*; if we do reject these statements in favor of alternative claims, we enter into a new form of life with its attendant new language games. ''There are e.g. historical investigations and investigations into the shape and also the age of the earth, but not into whether the earth has existed during the last hundred years'' (*OC*, s. 138). That we take for granted that the earth has existed for a long time characterizes our interpretation of experience (*OC*, s. 145). We shall continue to take for granted fundamental claims about the earth such as ''The earth has existed for a long time'' and ''The earth is round''—''unless *our whole way of seeing nature* changes'' (*OC*, s. 291). What Wittgenstein says about another one of his fundamental statements fits in beautifully with these observations on conceptual revolution.

> Nor am I *making a mistake* about twelve times twelve being a hundred and forty-four. I may say later that I was confused just now, but not that I was making a mistake. (*OC*, s. 304)
>
> Here *once more* there is needed a step like the one taken in relativity theory. (*OC*, s. 305)

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NOTES

1 Wittgenstein, Ludwig, *On Certainty* (Oxford 1969).
2 Quine, Willard Van Orman, *From a Logical Point of View* (New York 1961), ch. 2.
3 Quine, W. V., *Methods of Logic* (New York 1972), p. 3.

* * *

WITTGENSTEIN'S LEGACY TO EPISTEMOLOGY

Newton Garver

Wittgenstein did not have a theory of knowledge. This is partly because he was more interested in problems of meaning than in problems of knowledge, and partly because he eschewed philosophical theories. Nonetheless, Wittgenstein does speak about knowledge and knowledge-claims, particularly in his later works, and his remarks certainly have some relevance not only to the claims of various theories of knowledge but also to the very enterprise of the epistemologists. It is exceedingly difficult to say with confidence what is the final implication of his scattered remarks on causality being a superstitution, on the parallels between science and art or between science and magic, on the necessity for justifications to come to an end, on criteria, and on the contrast between knowledge and certainty. Some commentators, such as Wolgast (in *Paradoxes of Knowledge*), have seen these remarks to imply a devastating critique not only of theories of knowledge but also of the possibility of any coherent conception of knowledge in general.[1] I want to draw attention, on the contrary, to rather conservative aspects of Wittgenstein's remarks about knowing: *viz.* that public certification is more important to back knowledge claims than subjective certainty, that science remains the paradigm of knowledge, that claiming to knowing is a social practice with distinctive features, and that there are strong suggestions of a distinctly Kantian posture with respect to justificatory regresses. In this paper I make no attempt to survey the relevant remarks of Wittgenstein; I focus instead on one of the most famous and controversial: "It cannot be said of me at all (except perhaps as a joke) that I *know* I am in pain." (*PI*, § 246) I want first to make some comments, more sketchy than definitive, about the reading of that remark (which I shall refer to as *A*); then I shall say something about the language-game in question, claiming to know; finally I want to underscore the Kantian aspect of *A*.

Exegesis. *A* is difficult to read not because of its vocabulary and syntax but because (i) it is not easy to be sure what *kind* of statement it is, and (ii) it is not obvious what it implies about uses of the first-person statement (*F*) "I know I am in pain" nor of the third-person statement (*T*) "He knows he is in pain". Perhaps the simplest way to read *A* would be to take it as a generalization in empirical linguistics, to the effect that *F* and *T* do not occur, or that they occur only deviantly. When I first read the *Investigations*, for example, I wrote indignantly in the margin of my copy opposite *A:* "But it *is* said!" If I supposed that *A* could be empirically refuted, I must have supposed it to be an empirical claim, and probably (I no longer remember) a claim about possible occurrences of *F* and *T*. Morick has said that "there is evidence, *viz.* the intuitions of native speakers" for the invalidity of *A*.[3] Morick does not actually present the evidence; I take him to mean that native speakers would not regard all utterances of *F* and *T* as deviant, and that such evidence would refute *A*, assuming *A* to be an empirical linguistic generalization.

Simplicity is the only merit of such a reading of *A*. If one reads carefully, it is striking that *A* is an elaborate circumlocution which does not mention *F* or *T* or any other form of words. So it cannot be refuted by documenting the occurrence of *F* or *T* or any other form of words. In any case, Wittgenstein himself documents the occurrence of similar forms of words in *PI*, § 246, where he suggests some ways in which they may be used or construed: for example, "and here 'know' means that the expression of uncertainty is senseless" (*PI*, § 247). So the simple interpretation won't do. *A* cannot be construed as prohibiting *F* and/or *T*; it states instead that no occurrence of *F* or *T* can possibly be an instance of "saying of me that I *know* I am in pain".

More promising contributions to understanding *A* have been made in the earlier sessions of this symposium. Ayer remarked that *F* is very like what Wittgenstein calls a *tautology* in the *Tractatus.*[3] It is, indeed, also a tautology in the nontechnical sense of the word, a redundancy or a repetition of what has already been communicated: that is why it is generally pointless to express it. Ayer pointed out that I learn nothing more from hearing a person say "I *know* I am in pain" than I would from hearing him say "I am in pain"; for although an animal or a very young child could be in pain without knowing it, that could not be the case with a person who has learned to speak. So the utterance is tautologous. This is helpful.

But what are we to say about tautologies? Fischer pointed out that in Wittgenstein's later text a number of comparable and equally tautologous expressions are called "grammatical propositions" (GPs), and contends that we should therefore consider *F* and *A* as GPs. They are comparable to "Only you can know if you had that intention" (*PI*, § 247), to "One plays patience by oneself" (*PI*, § 248), and to "Every rod has a length" (*PI*, § 251). In these passages Wittgenstein mentions two characteristics of GPs: first, that to the extent that we can form a picture corresponding to the GP at all, we are quite unable to form a picture of the opposite (*PI*, § 251); and second, that the circumstances in which GPs are appropriate are ones when we mean to be talking about language rather than about the world: "One might tell someone this when one was explaining the meaning of the word . . ." (*PI*, § 247). Fischer adds, again usefully, that these propositions can be seen as *sinnlos* but not *unsinnig*, thereby invoking a continuity with the perspective of the *Tractatus.*

This is also helpful. The qualification to be made is that there is a certain betrayal of Wittgenstein in not making reference to language-games from the very beginning. (Fischer makes reference to language-games in connection with "forms of life" rather than with elementary questions of meaning.) In the *Tractatus* there was only one language-game, "making pictures for ourselves of facts" (*TLP* 2.1.); and a sign was said to "have sense" if it had a role in that game, to be "senseless" (*sinnlos*) if it had a role in language (in logic) but not in that game, and to be "nonsense" (*unsinnig*) otherwise. The qualifications needed with respect to Fischer's points are (i) that while *A* is a GP and *F* may be, *F* could also have a role in other language-games, such as protest against meddling interference or emphatic avowal[5] and (ii) that it becomes unclear whether to be *sinnlos* means to lack a role in the one language-game of the *Tractatus* (which may be construed as either making knowledge-claims or as making truth-claims, which are not the same) or means to lack a role in a language-game other than that of grammar or logic (which are, again, not the same). So while it is useful to be reminded of the concepts and perspectives of the *Tractatus* while explicating *A*, the details of their application are problematic.

If *A* is a GP, as Fischer (rightly) contends, it must describe a language-game. To explicate *A* will therefore require saying a bit more about the particular language-game which it describes. I cannot complete the exegesis here, but suggest that its adequate completion will have to incorporate the following 14 points:

1. *A* does not attack any particular words or expressions.
2. *A* concerns a language-game or speech act rather than verbal expressions themselves.
3. The language-game is one in which one certifies something as *known.*
4. What is certified as *known* is something said or predicated of something or someone.
5. Whatever is said or predicated requires a criterion.
6. Saying that I am in pain required no criterion, and hence is different from saying of X (myself) that X is (I am) in pain.
7. From there being a criterion for saying X, it follows that one can learn of or doubt X; and from there being no criterion for saying X that one cannot learn of or doubt X.
8. *A* is descriptive (of the language-game in question) rather than prescriptive; "can't" does not express a prohibition.
9. *A* is a GP.
10. It does *not* entail, "It can be said of me that I don't know when I am in pain".

11. The proposition A' "It can't be said of me that I *don't know* if I am in pain" is also a GP (see *PI*, § 408).

12. A does not entail that there are not other language-games (emphatic avowals, grammatical propositions) in which F and T occur.

13. Science is a paradigm for the kind of knowledge attained through the language-game which A and A' (partially) describe.

14. Because of the essential reference to criteria, the certification of something through this language-game is as appropriate for constraining the belief of others as for attaining subjective assurance.

Making Knowledge-Claims. A says that F and T cannot be used to make knowledge-claims. The main purpose of A is to delineate the language-game for which F and T are not appropriate. Since this use of language involves knowledge or knowing (as distinct from mere truth), it shows decisively that Wittgenstein regarded claiming-to-know as an established use of language, that he was not simply a sceptic or relativist, and that he did not hold a nugatory view of knowledge. (This may be a reason why Wolgast does not deal with A.) The use in question is the use which the sentence "I know I am in pain" has, or would have, on those occasions, if any, when I might say exactly the same thing about another person by uttering the sentence, "He knows I am in pain". The use in question is, therefore, one in which the change from first-person to third-person utterance signifies nothing but referential standpoint—as with the normal use of "I am wearing brown shoes"—and does not signify a shift in language-game or in illocutionary force, from, say, avowal or performative to knowledge-claim or truth-claim—as with the normal use of "I promise"/"He promises" or "I like"/"He likes". The important thing about knowledge-claims is that they can be doubted and vindicated: that is, they are subject in principle to challenge and confirmation by reference to common criteria. Because the criteria must be common (otherwise they would not be criteria), the truth-conditions for *knowledge*-claims cannot vary between 1st-person and 3rd-person utterances.

An example might help. Suppose someone has taken an action which excludes me from a long-standing privilege and I am considering various responses. I wonder whether (P) the action had another motive, its impact on me being inadvertent, or whether (Q) the action was aimed to injure me. Let us further suppose that I am convinced of (P), that the effect on my ancient privilege was inadvertent, and that I believe it firmly and unquestioningly. That belief, and my subjective certainty, will shape my response. If I were doubtful or unsure, rather than firmly convinced, the doubt would affect my response substantially. But what difference would it make to me and my response if, instead of feeling sure, I actually *knew* that (P)? Suppose I were to have a reliable report of a meeting at which the action was decided: this would confirm my belief, but there is no reason why confirmation of an already fixed belief should lead me to alter, reconsider, or intensify my intended response.

Knowing would make a difference in the *justification* of the action I take. Not, of course, "justification before myself". Before myself I am justified by my belief, and by my action's being reasonable in the light of my belief. Let us now further suppose that others will generally accept my action's being reasonable in the light of my belief, or relative to my belief. They will then regard my action as reasonable and justified if they share my belief. But why should they share my belief? Beliefs are varied, changing, disputed, and idiosyncratic; justification would be whimsical and illusory if it were always relative to beliefs. Knowledge, however, if it is really knowledge, is fixed and universal. If I *know* that (P) is the case, others have no rational option other than to share my belief. *Knowing*, because it is justified belief, constrains others to share my belief and thus furnishes justification for action reasonably based on the belief.

It is not misleading, though it still needs more elaboration, to say that whereas *belief* is a psychological concept, as is *certainty*, *knowledge* is a social concept. Believing is intelligible in the case of a solitary person; knowing refers implicity to other persons and to a group process. Because it gives rise to rational constraint of belief, knowledge provides the basis

for a noncoercive uniformity of belief—a kind of social cohesiveness—without resorting to dogma or ideology. Knowing thus entails a significant social ideal as well as a social process.

For the process to work and the ideal to be possible knowledge can never rest on simple personal authority. Another way to put this point would be to say that knowledge in this sense is *justified* true belief, and therefore the constitutive rules of justification are also constitutive rules of knowledge-claims. The point is to achieve a noncoercive convergence of belief, and one must therefore in principle be able to satisfy oneself of knowledge-claims that another person makes. Therefore "How do you know?" is always an appropriate response to a knowledge-claim; and this response deserves to be given a detailed answer, rather than brushed aside with the rejoinder that one "just knows", or that it is "obvious", or that it is something that "every right-thinking person knows", or that the evidence is secret (Senator J. McCarthy's bulging briefcase) or confidential (the bureaucrat's files) or private (the empiricist's sense data). Such rejoinders betray and abuse the process by attempting to reimpose dogma or personal authority at the expense of rational constraint. Of course we sometimes live with such imperfections; but toleration does not transform a shortcoming into a virtue. At the other extreme from these authoritarian abuses of the practice of distinguishing knowledge from mere belief, but also outside the practice, is the pretended certification of the indubitable. If I claim to *know p*, where *p* is a tautology, the opposite of which "cannot be imagined" or resolves into contradiction, then my knowledge claim is a mere pretense: it can never be part of a practice constraining rational convergence of belief if the opposite of what I claim to know is impossible to conceive.

A conception of knowledge which conforms to the rules for "know" (*PI*, § 246), and whose purpose or integrity would be compromised by altering those rules, is central to a significant social process which embraces the development of science. I have not attempted to show that there can be no other sense of "know". Nor have I claimed to show what Wittgenstein's actual reasons were for saying some apparently paradoxical things about knowledge and certainty. But noncoercive convergence of belief is important enough to justify preserving the concept which makes it possible, no matter what Wittgenstein thought.

The Kantian Parallel. I want to suggest a parallel between Wittgenstein's insistence that I cannot be said to *know* (nor not know) that which I cannot question and Kant's treatment of transcendental illusions in the *Critique of Pure Reason*.

What Kant calls the antinomy of pure reason arises when reason insists on conceiving the absolute totality (or completeness) of a series through which the understanding makes phenomena intelligible. Thus the understanding conceives of time as an infinitely extensible series of moments; or perhaps as two series, a regressive series infinitely extensible into the past and a progressive series infinitely extensible into the future. Reason holds that, since the regressive series is complete up to the present moment (for any present moment), we can think of it as a totality and inquire about its beginning. A similar situation is evident with causation: since we understand any event as caused, and each cause as itself caused, reason proposes to think of the regressive series of causes as an absolute totality and to inquire about its beginning.

Each ordinary member of such a regressive series is conditioned by other members, and no antinomy results from considering them—only an expansion of our knowledge of phenomena. Reason, however, is not satisfied, and in thinking of the series as an absolute totality, it is aiming at the unconditioned. This unconditioned, Kant points out, can be thought of in either of two ways: "It may be viewed as consisting of the entire series in which all the members without exception are conditioned and only the totality of them is absolutely unconditioned . . . Or alternatively, the absolutely unconditioned is only a part of the series—a part to which the other members are subordinated, and which does not itself stand under any other condition".[6] The second of these alternatives gives us the form of the thesis in each of the four manifestations of the antinomy that Kant discusses, and the first alternative furnishes the form of the antithesis.

In the case of knowing, which is easily conceived as involving a regressive series of justifications which reason insists must be complete, the thesis of the antinomy is that there are basic bits of knowledge, *i.e.* knowledge that is unconditioned in the sense that it is not known through anything else but through itself alone. Ayer called them "primary recognitions" in his paper. Descartes held such a view, as do both phenomenologists and empiricists. The argument for this thesis takes a *reductio ad absurdum* form: Unless there is some knowledge that is selfevident, no justification can ever be completed and there can be no knowledge at all. The antithesis of this antinomy is the idealist view, found in Hegel, Bradley, and Royce, that the chain of epistemological justifications forms a single coherent absolute totality, none of whose parts has any absolute privilege or priority. Again the argument takes the form of a *reductio*: If there were any unconditioned bits of knowledge, they could never be justified and therefore could not be known; any such knowledge would have to be independent of every other such knowledge, and therefore could not be part of our system of knowledge. It follows that there can be only *one* unconditioned in the domain of knowledge, and this must not be a part of the system but the whole system itself—the Absolute Idea.

Kant traced the transcendental illusions of the thesis and the antithesis to the constitutive use of regulative ideas. Again there is a parallel in Wittgenstein: the attempt to make empirical employment of GPs, which is just what is at issue in Wittgenstein's critique of *F* in *PI*, § 246. We might note, too, that the craving for generality of which Wittgenstein complains (*BB*, p. 17; cf. *PI*, § 104) is very like what Kant speaks of as reason's insistence on completeness and totality.

The analogy is not perfect. Because *knowing* is a social rather than a cosmological concept, it is not a rule of understanding that it be applied to every item within its domain, *i.e.* to every belief. But the analogy is nonetheless strong, and since Wittgenstein knew and respected Kant's critical philosophy, we may suppose that the insight it gives us into the problem is not altogether alien to Wittgenstein's reasons for saying what he says about *knowing*. By presenting the analogy I thus hope to have rehearsed some familiar reasons for saying what Wittgenstein said, and thereby to have put *A* in a clearer and wider perspective.

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NOTES

1 Wolgast, E. H., *Paradoxes of Knowledge* (Ithaca 1977).
2 Morick, H., "Wittgenstein and Privileged Access", in: E. Leinfellner, W. Leinfellner, H. Berghel and A. Hübner (eds.), *Wittgenstein and His Impact on Contemporary Thought: Proceedings of the Second International Wittgenstein Symposium* (Vienna 1978), pp. 366—368.
3 Ayer, A. J., "The Elementary Propositions of the *Tractatus*" (in this volume).
4 Fischer, H. R., "Wahrheit, grammatischer Satz und Lebensform: Der epistemologische Aspekt in Wittgensteins Privatsprachenargumentation" (in this volume).
5 Wolgast (1977), pp. 67—74.
6 Kemp-Smith, N., (ed.), *Immanuel Kant's Critique of Pure Reason* (London 1959), A 417/B 445.

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POSITS AND EPISTEMOLOGY

George S. Pappas

Two interconnected questions are addressed in this paper: (1) What sort of thing is a posit, and (2) is it true, or at least reasonable to hold, that every existing thing is a posit? A number of philosophers have given answers to the second of these questions. For instance, James Cornman has given a negative answer to the second of these questions; sensations, he claims, are not posits.[1] On the other hand, Quine seems to hold that everything, or at least everything we are willing to countenance, is a posit. To help decide between these two answers, we need to first address the first question.

We may begin by focusing attention not on posits, but rather on the activity of positing. To posit something, we might say, is just to assume that that thing exists. Thus, to posit neutrinos is to assume that there are neutrinos. Of course, we do not mean assuming the existence of neutrinos in the sense of uncritically taking it for granted that there are such things. Rather, positing neutrinos is more like putting it forward that there are neutrinos, or perhaps supposing in a certain context that neutrinos exist. Moreover, one typically posits entities for some purpose. For purposes of doing a certain proof, one might posit the existence of sets of a certain type; or, more commonly, for purposes of effecting a specific explanation of some data, one might assume the existence of, that is, posit the existence of neutrinos. If we confine ourselves to explanatory purposes, then we can say that positing an entity, x, is assuming or putting it forward that there are x's for purposes or producing some sort of theoretical account or explanation of some data.

Acts of positing entities are engaged in by persons at specific times. But we should distinguish between fresh positing and ongoing positing. Thus, a person might posit x's at a certain time, and do so for the first time; x's were never posited by that person in the past, at least not for their current explanatory purposes. The same person or group may posit x's in an ongoing way in the sense that they continue to assume the existence of x's for their continuing explanatory purposes. Ongoing positing in some cases will verge on uncritical assumption of x's ; if the assumption of x's for explanatory purpose p has been widespread and fruitful, then making that assumption given explanatory purpose p will be a commonplace, an act of second nature for some appropriately placed persons.

We should also notice that individuals as well as types of entities may be posited. A detective seeking a solution to a crime may posit the existence of a specific weapon. But when the physicist posits quarks, he has no individual entity in mind. Instead, he posits a type.

Given these brief remarks about the activity of positing, we might want to lay it down that a posit is nothing more than an entity that is, or has been, posited. Somewhat more fully, we could say that an entity, x, is a posit just in case x is, or has been, assumed to exist (put forward as existing) for purposes of giving some theoretical explanatory account of some data or other. However, this is not all there is to the notion of a posit. Consider inferences of the following form:

I In order to adequately
explain data d, we need to posit the existence of x's; *hence*,
a) there are x's;
b) we have good reasons to believe that there are x's;
c) we have at least some reason to believe that there are x's.

II We do not need to posit the existence of *x*'s in order to adequately explain data *d*; *hence*,
a) there are no *x*'s;
b) we have good reasons to believe that there are no *x*'s;
c) we have at least some reason to believe that there are no *x*'s.

Examples of the inference form exhibited in *I* abound. Thus, Church once argued that since we do need to posit the existence of abstract entities for explanatory purposes in semantics, we have good reasons to think that there are abstract entities.[2] Similarly, Quine claims that we need to posit sets for purposes of doing mathematics and (assuming that 'doing mathematics' involves giving some account of why certain mathematical statements come out true) he concludes that there are sets.[3] On the other hand, Hume maintains that we do not need to posit the existence of abstract general ideas for purposes of explaining any feature of lanugage use or learning, and so he concluded that we have good reasons for thinking that there are no such ideas.[4] Or, again, Quine has often said, with Skinner, that we need not posit the existence of mental entities for purposes of giving explanations of human behavior. He concludes from this, it seems, that there are no mental entities.[5]

Inferences of the sort illustrated above are surely apposite when one is dealing with posits. Thus, consider a paradigm case of a posit, the ether. As soon as it was found that appropriate physical explanations were forthcoming without recourse to the ether, it was concluded that there was no reason to believe that the ether existed at all. Indeed, it was concluded that there was good reason to think that there was no ether, not merely that the case *for* the ether had been swept away. Yet, if *all* we meant by 'posit' were 'posited entity', as described earlier, inferences of the sort just described in connection with the ether would not generally be valid regarding posits. It is easy to see why this is so. Imagine that *x*'s are posit*ed* for some explanatory purpose; thus, they would qualify as posits. Suppose, though, that *x*'s simply are not needed for the envisioned explanatory purpose in question. It would not follow, as it did in the case of the ether, that we have good reason to think that there are no *x*'s, since there might be other, independent and non-explanatory reasons for holding that there *are* *x*'s. But, as we said, the ether is a paradigm case of a posit, and the inference patterns noted in *I* and *II* are clearly acceptable when one is dealing with such paradigm cases. So, our initial definition needs amendment.

There are various ways of making the needed changes; for instance, we might proceed so that the term 'posit' is reserved just for entities relevantly similar to the paradigm cases like the ether. However, I prefer so to frame matters that our earlier definition captures a fairly low-level, or what I will call a 'first-level', notion of a posit. Thus, we would have:

> *x* is a first-level posit = df. *x*'s are, or have been, posited.

The notion of posit*ing* used in this definition is what was earlier set out.

We can uncover a somewhat different notion of a posit if we again consider our paradigm case, the ether. Once the explanatory need for the ether was no longer present, people felt perfectly justified in maintaining that there simply was no such thing. Similarly, one feels that one is justified in believing that the ether *does* exist only if there *is* some explanatory need for the ether. This last remark suggests a new notion of a posit:

> *x* is a second-level posit = df. (1) *x* is a first-level posit; *and*, (2) one would be justified in believing (have good reasons for believing) that there are *x*'s only if there were a genuine explanatory need for *x*'s.

The term 'genuine' in clause (2) is important. There must be some data in need of explanation, and it must also be that bringing in *x*'s helps to provide that explanation. Notice that I leave out a further clause that reads, "If there were a genuine explanatory need for *x*'s, then one would be justified in believing that there are *x*'s." This omission is motivated by the fact

that although the presence of such an explanatory need would indeed provide *some* reason to hold that there are *x*'s, it would not of itself suffice to justify this claim. The data in need of explanation might be equally well or better explained by the assumption of something other than *x*'s.

An illustration of a second-level posit would be the sorts of micro-particles presumed detected in cloud chambers. Such entities are certainly first-level posits. Still, it is said that with training a person can come to be justified in some circumstances in believing on the basis of observation that such-and-such a particle is present. Even so, such a person would not have this justification if there were no genuine explanatory need for these micro-particles.

In connection with the ether we said that once the explanatory need for such an entity had passed, people were justified in believing that there was no such thing (and never had been). Such a claim goes beyond clause (2) of the preceding definition, despite the fact that it is clear that the ether is at least a second-level posit. We thus have the makings of a slightly different notion of a posit, viz.:

> *x* is a third-level posit = df. (1) *x* is a second-level posit; *and*, (2) if there were no genuine explanatory need for *x*'s, then we would be justified in believing that there are no *x*'s.

Like the notion of a second-level posit, it is certainly possible that one comes to have observational evidence for the existence of *x*'s. However, if something is a third-level posit, such as the ether, then once that explanatory need is lost, the observational evidence would be overridden and one would be justified in believing that there are no *x*'s at all. Something similar to this will apply in the case of second-level posits, but it is not quite the same. For in the latter case, all that ensues when the explanatory need for *x*'s is lost is that one's justification for holding that there are *x*'s is also lost. It does not follow that one is thereby justified in believing that there are no *x*'s.

To the question, "What sort of thing is a posit?", then, a complex answer is offered. A posit is either a first-level, or a second-level, or a third-level posit as here set out. Let us now consider the second of our initial two questions.

Should we say that everything that exists is a first-level posit? It would seem immediately clear that the answer is *no*. Medium-sized ordinary physical objects such as chairs and tables and rocks are not first-level posits because they are not and have not been posit*ed*. Against this Quine has insisted that such objects have been posited,[6] though that event is lost to us in the mist of prehistory. Considered as an historical thesis, I know of no evidence whatever for Quine's view. But it need not be an historical thesis that he favors. One might interpret him as claiming that the notion of ordinary medium-sized physical objects *functions* like that of a first-level posit insofar as such objects do serve to explain some important data, namely, the fact that we have the sense experiences that we typically have. In that way, although such objects would not strictly speaking meet our definition of a first-level posit, they are enough like such entities for us to extend the term to cover them.

Let us tentatively fall in with this way of thinking and agree that such physical objects are first-level posits. And let us take the further more radical step of agreeing that each and every thing we agree exists is a first-level posit on the grounds that for every such entitiy, we can always think of something which the assumption that there are such entities helps to explain. I do not claim that this last remark is correct, but only that it has enough initial plausibility for us to fall in with the idea that everything is a first-level posit. The important epistemological issues are engaged with second- and third-level posits.

Consider the thesis that everything that exists is a second-level posit. We need only attend to clause (2) of the definition of a second-level posit which, when coupled with the thesis under consideration, leads to the idea that everything that exists is such that a person is justified in believing that such an entity exists *only if* the assumption that it does serves some genuine

explanatory need. Such a thesis is far from obvious; indeed, it seems obviously false. For instance, consider the pains that people all too often feel and suffer. We can agree that such entities are first-level posits since, it would seem, we can always come up with something that the assumption that there are pains helps to explain (viz., in this case, so-called pain-behavior). But many people would be justified in holding that there are pains even if the explanatory work discharged by such an assumption were lost. They would be justified in this belief by the fact that they have the pains.

Nothing in this example hinges on the fact that pains are mental entities. Thus, consider instead ordinary human hands. Even if the assumption that there are hands does help to explain some data or other, it is not true that this explanatory service is essential to a person's being justified in believing that there are human hands. For sufficient justification for such a belief is the simple fact that he or she sees his or her own hands.

Of course, exactly the same arguments will apply to third-level posits, since being a third-level posit entails being a second-level posit. So, not everything that exists is a third-level posit, and neither is every existing thing a second-level posit.

I can think of just one way of defending the thesis that everything is either a second-level or a third-level posit, and of rebutting the preceding arguments. This would be to defend and justify a particular version of an explanatory coherence theory of (epistemic) justification. To get some idea of what this would involve, consider an example of such a theory once defended by Keith Lehrer:[7]

> *EC* A belief is justified if and only if that belief serves to explain other beliefs, or it is itself explained by other beliefs.

Here Lehrer states necessary and sufficient conditions for justified belief. However, *EC* as given here is not directly useful as support for the claim that every existing thing is a second-level (or a third-level) posit. This is because *EC* allows a belief to be justified when it does not itself serve to explain but rather is itself explained. That is inconsistent with clause (2) of the definition of a second-level posit. What we need, therefore, is a more restricted statement of an explanatory coherence theory, something like,

> *EC-1* A statement, *p*, is justified (for a person) *only if p* serves to explain, or helps to explain, some other statements.

Now if *EC-1* were true, it would follow directly that every existing thing is a second-level posit. For among the substituends for 'p' will be each and every existential statement. However, there are important objections facing *EC-1*. One is that it seems to lead to a vicious infinite regress. Thus, let *p* be some putatively justified statement, and let *q* be some statement which *p* explains or helps to explain. Either *q* is itself justified or it is not. If it is not justified, it is hard to see how any justification will accrue to *p* in virtue of *p*'s explaining *q*. On the other hand, if *q* is justified, it is so only if it explains or helps to explain some other statement *r*. The same considerations which affected *q* may then be brought forward regarding *r*, so that, it would seem, we are led to yet another statement, *s*. And so on. On one condition, this will eventuate in the view that a statement is justified for a person only if an infinite number of statements is first (logically first) justified for that person. Thus, no statements would be justified for that person. The condition is that if a statement is to be justified only if it explains or helps to explain some other statement, then the other statement must itself be justified. But this condition is quite reasonable.

The second objection is less complex but perhaps more forceful: *EC* is much more plausible than *EC-1*. We generally do allow that a statement is justified if that statement is explained by a justified theory, independently of whether that particular statement itself serves to explain other statements. Consider this example. Suppose a person, *S*, accepts the following claim: "There are spots before my eyes." (= P) In many cases of seeing such spots, one is in fact seeing small physical objects—tiny particles which get into the aqueous humour and sometimes "fly off" and are seen. Now the claim is that *P* is in part explained by facts about

the workings of the eye. Imagine, what is surely acceptable, that *S* knows a great deal about the workings of the eye. Hence, he is justified to some degree in accepting *P* by the fact that *P* is explained by a justified background theory which S accepts. Yet, there is no further fact that *P* explains or helps to explain.

Notice that the claim is that *P might* serve to explain other statements. And if it did, perhaps that fact would contribute to S's being justified in accepting *P*. But *P need not* explain any other statements in the present example and in such a case *S* would still be justified in accepting *P* for the reasons given. Moreover, even if we could always come up with *some* statement or other that *P* explains or helps to explain, a line we conceded above, this would not salvage *EC-1*. For the fact that *P* is explained by a justified background theory suffices by itself to justify *P*.

The overall upshot is that even if everything is a first-level posit, it is not true that everything is a second-level, and thus not a third-level posit. In thus concluding that some things are non-posits, are we *eo ipso* concluding that some things are *given*? A full answer to this question would take us too far afield. But perhaps one can see that the correct answer is *no* simply by reflecting on the fact that the spot example used in defense of *EC* against *EC-1* does not require that claims about immediately seen spots cannot be revised, or that such claims are immediately and non-inferentially known, or that they are absolutely certain. No epistemic privilege needs to be invoked at all in behalf of that example. All that is needed is the idea that some statements are justified for a person simply because they are explained by a reasonably accepted background theory. The spectre of the given is not raised by this idea.

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NOTES

1 See J. Cornman, *Materialism and Sensations* (New Haven 1971), p. 156. This claim is discussed in W. Lycan and G. Pappas, "Quine's Materialism", *Philosophia*, Vol. 6 (1976); and in G. Pappas, "Postulation and Materialism", *Philosophical Studies* (forthcoming).
2 Church, A., "The Need for Abstract Objects in Semantic Analysis", in: P. Benacerraf and H. Putnam (eds.), *Philosophy of Mathematics* (Englewood Cliffs 1964).
3 See W. V. O. Quine, *Word and Object* (Cambridge 1960), Ch. 6.
4 Hume, D., *A Treatise of Human Nature* (Oxford 1888), p. 25.
5 See W. V. O. Quine, *Ways of Paradox* (New York 1966), pp. 208—214; as well as Quine (1960), pp. 262—264.
6 See W. V. O. Quine, "Speaking of Objects", in: W. V. O. Quine, *Ontological Relativity* (New York 1968).
7 Lehrer, K., "Justification, Explanation, and Induction", in: M. Swain (ed.), *Induction, Acceptance and Rational Belief* (Dordrecht 1970). Lehrer no longer endorses this position. See K. Lehrer, *Knowledge* (New York 1974), Ch. 6.

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IDENTITÄT: ONTOLOGISCHE VORAUSSETZUNGEN HEURISTISCHEN DENKENS

Gerhard Frey

Der Begriff Identität kann dahingehend bestimmt werden, daß in einem Satz der Form ,,A ist identisch mit B'' die Zeichen A und B verschieden sind, das Bezeichnete, die Denotata dagegen nicht, A und B bezeichnen dasselbe. In diesem Sinne postuliert Identität eine Ununterscheidbarkeit der Denotata. Logiker haben den Identitätsbegriff dadurch zu definieren versucht, daß die Denotata in allen Eigenschaften übereinstimmen. Damit wird aber Identität auf den Gleichheitsbegriff zurückgeführt, da ja für alle möglichen Prädikate gelten soll, daß sie gleich sind. Probleme treten aber immer dann auf, wenn eine Identität empirisch nachgewiesen werden soll, da wir für empirische Gegenstände, Ereignisse, Vorgänge nie über alle möglichen Prädikate, die ihnen zukommen bzw. nicht zukommen, etwas aussagen können. Die Identifikation ist daher empirisch streng genommen unmöglich. Auch die schon von Leibniz vorgeschlagene Beschränkung auf Raum und Zeit als die entscheidenden Merkmale führt nicht zu einer Lösung. Kann man ein Objekt dadurch als identisch festhalten, indem man es durch Raum und Zeit kontinuierlich verfolgt? Bin ich wirklich derselbe, der ich als fünfjähriger Knabe gewesen bin, selbst wenn es möglich wäre meine raum-zeitliche Existenz lückenlos zu verfolgen? Biologen und Mediziner versichern uns, daß nichts mehr von den Stoffen meines damaligen Körpers mit den jetzigen übereinstimmt. Schon Ende des vorigen Jahrhunderts wurde für diesen Sachverhalt der Begriff der ,,Genidentität'' geprägt. R. Carnap hat diesen Begriff wieder aufgenommen[1] und ihn im Zusammenhang der Vorstellung der Minkowski-Welt zu präzisieren versucht, wobei an Stelle der ,,Weltlinien'' so etwas wie ein Band aus Weltlinienstücken entsteht. Dieser Hinweis soll nun dazu dienen, uns die Schwierigkeiten einer empirischen Identifikation deutlich zu machen. Die eigentliche Problematik scheint darin zu bestehen, daß Körper und Dinge als etwas konsistentes gar nicht präzise angebbar sind, sondern nur Prozesse ablaufen, wobei immer nur einzelne Eigenschaften über einige Zeit hin verfolgbar sind. Daß gewisse Eigenschaftskomplexe über verhältnismäßig lange Zeiträume verfolgbar sind, erzeugt die Vorstellung effektiv identifizierbarer Objekte. Daß in der Quantentheorie ein Teilchen als ein Wellenpaket verstanden werden kann, zeigt das ganz besonders klar. Das Wellenpaket läuft gewissermaßen auseinander, die Identifizierbarkeit des Teilchens oder Quants verliert sich als Ablaufprozeß. Es bleibt somit nur übrig eine Konstanz gewisser Prädikate oder Komplexe von solchen, die über eine beschränkte Zeit hinweg verfolgbar ist. Unser heutiges kosmologisches Weltbild spricht für prinzipielle zeitliche Identifizierbarkeitsgrenzen. Am deutlichsten wird das bei der Retrodiktion, die eine solche Grenze im sogenannten Alter des Universums hat.[2] Für praktische Zwecke werden bestimmte charakterisierende Prädikate verwendet: bei Menschen werden Blutgruppen, Augenfarbe, Größe, Fingerabdruck als solche Merkmale benützt.

Warum ist unsere Welt überhaupt erkennbar? Die Antwort darauf kann nicht bloß in uns als den erkennenden Subjekten liegen. Nicht nur in der Konstruktion unserer Sinnesorgane und unseres Nervenapparates kann dies begründet sein, sondern vor allem auch in der Welt, die eine Ordnungsstruktur haben muß, damit sie erkennbar ist. Die für die Erkennbarkeit der Welt wesentlichen Strukturen können als Symmetrien beschrieben werden.[3] In einer Mannigfaltigkeit bestehen Symmetrien, wenn es in ihr Elemente gibt, in bezug auf welche Vertauschungsrelationen bestehen. Die Physik hat gezeigt, daß Symmetrieprinzipien eine wichtige Rolle spielen. E. Noether hat gezeigt, daß alle sogenannten Erhaltungssätze äquivalent sind mit Symmetrieprinzipien.[4] Der experimentellen Methode liegt die Wiederholbarkeit von Vorgängen, Handlungen zugrunde. Wir müssen die ontologische Annahme machen,

daß es in der Welt sich wiederholende Vorgänge gibt, da sie sonst für uns unerkennbar wäre. Auch das ist bereits eine Voraussetzung über eine Symmetrieeigenschaft der Welt. Eine noch elementarere Symmetrieeigenschaft der Welt, die wir voraussetzen müssen, ist die, daß es in ihr Gleichheiten und Identitäten gibt. „Gleichheit" und „Identität" sind Symmetrieeigenschaften der Welt. Es gibt in der Welt Dinge und Vorgänge, in bezug auf die Vertauschbarkeit besteht. Wenn J. St. Mill noch sehr unbestimmt von „The Course of the Universe" sprach, so erscheint es als ein plausibler Vorschlag dies zu präzisieren durch die ontologische Voraussetzung alles Erkennens und aller Wissenschaften, daß es in der Welt Symmetrien gibt. Übrigens muß auch für die Meßbarkeit von Dingen und Vorgängen die Wiederholbarkeit und damit die Gleichheit von Maßstäben und Meßvorgängen vorausgesetzt werden.

Wie elementar die Physiker die Existenz von Symmetrien ansehen, zeigt sich etwa am Beispiel der Paritätserhaltung. Diese erweist sich als äquivalent der Rechts-links-Symmetrie des Raumes.[5] Nachdem sich diese zunächst für schwache Wechselwirkungen als nicht mehr gültig erwiesen hatte, haben die Physiker sogleich nach umfassenderen komplexeren Symmetrien gesucht. Das CPT-Theorem postuliert eine Invarianz der Gesamtheit von drei Operationen, der Ladungskonjugation (C), der Raumspiegelung (P) und der Zeitumkehr (T).

Da eine absolute Identität nur postuliert werden kann, empirisch aber immer nur partiell Gleichheiten von Prädikaten feststellbar oder besser vermutbar sind, bleibt ontologisch die Frage bestehen, ob die Welt, wie sie an sich besteht, solche absolute Identität besitzt. Wenn es streng genommen in der Welt gar keine Identitäten gäbe, so würde das heißen, daß die Dinge und Vorgänge der Welt mit sich selbst nicht vertauschbar wären. Das würde wohl bedeuten, daß wir in einer Welt lebten, in der keine Autokorrelationen bestehen.

Alle heuristischen Verfahren zielen darauf ab, generelle Erkenntnisse zu gewinnen, wobei die Art und der Grad der Verallgemeinerung unterschiedlich sein kann. Jede auch beschränkte generelle Aussage kann als eine Symmetrieaussage verstanden werden. Die Aussage, daß Antonio nur Söhne hat, ist eine Aussage über die Gesamtheit seiner Kinder oder, was dasselbe ist, eine solche über eine Symmetrieeigenschaft dieser Menge, die sich in der Vertauschbarkeit der Elemente bezüglich der Eigenschaft, Söhne von A. zu sein, ausdrückt. Das Beispiel bezog sich auf eine beschränkte Mannigfaltigkeit. Die entscheidenden Probleme entstehen aber erst, wenn sich die Verallgemeinerungen auf unbeschränkte Mannigfaltigkeiten beziehen und dann treten auch die bekannten, viel diskutierten Schwierigkeiten auf, die mit der sogenannten Induktion zusammenhängen.

In bekannter Weise vermuten wir, wenn etwas in mehreren oder vielen Fällen gilt, daß es dann immer gelte. Dabei ist gleichgültig, ob es sich um eine effektiv unbeschränkte Mannigfaltigkeit handelt oder um eine beschränkte doch bisher nicht durchgemusterte. Was uns in diesem Zusammenhang interessiert, ist, daß die obige Generalisierungsvermutung voraussetzt, daß es gleiche Fälle gibt. Wann sind aber zwei Fälle gleich? Fälle können Gegenstände, Zustände, Ereignisse oder Relationen zwischen diesen sein. Die am häufigsten betrachteten und als am wichtigsten angesehenen Fälle sind Aufeinanderfolgen von Zuständen oder Ereignissen. Schon für zwei Gegenstände kann ihre Identität oder Gleichheit nur im Hinblick auf bestimmte Prädikate bestimmt werden. Die theoretische Definition der Identität besagt, daß ein x einem y identisch ist, wenn alle Prädikate, die x zukommen, auch y zukommen. $(f)\,[(fx \leftrightarrow fy) \rightarrow x \equiv y]$. Insofern Prädikate durch Beobachtung oder Messung festgestellt werden sollen, kann in diesem theoretischen Sinne die Identität, bzw. vollständige Gleichheit von Gegenständen empirisch nie bestimmt werden. Entsprechendes gilt für Zustände, Ereignisse und Relationen zwischen diesen.

Wenn wir Fälle miteinander vergleichen, so interessieren uns immer nur bestimmte Prädikate und Relationen. Nur in bezug auf sie besteht Vertauschbarkeit und somit Symmetrie. Die Austauschbarkeit von Geld ist ein allbekanntes Beispiel. Geldscheine, Münzen, Schecks und eine Gutschrift auf einem Konto sind in bezug auf bestimmte Kauffunktionen vertauschbar. Der Kaufwert ist gleich, ja man kann sagen, er ist identisch derselbe, gleichgültig in welcher Form ich ihn bezahle. Wenn wir bei einer generalisierenden Induktion von der Gleichheit der Fälle sprechen, so gilt diese immer nur relativ zu bestimmten als wichtig

betrachteten Prädikaten und Relationen. In der ganzen seit Hume andauernden Diskussion über die Induktion wurde immer nur auf das Problem hingewiesen, wie man aus einer endlichen Anzahl von Fällen auf die Geltung eines generellen Satzes in einer unbeschränkten Mannigfaltigkeit schließen könne. Mindestens ebenso wichtig ist aber, daß wir eine Anzahl von „gleichen" Fällen brauchen, wobei Gleichheit immer nur relativ ist zu den als relevant verstandenen Prädikaten. Welche Prädikate und Relationen können aber als irrelevant beiseite gelassen werden? Die Identität von Fällen hängt somit davon ab, welche und wieviele Eigenschaften unverändert bleiben oder sind. Die Identität und Gleichheit von Fällen hängt somit von Zweck und Ziel meiner Untersuchung und Betrachtung ab.

Als zweites vielleicht in der Praxis noch wichtigeres heuristisches Verfahren erweist sich die Analogie. Dieser aus der antiken Mathematik stammende Begriff der etwa das meint, was wir unter Proportion verstehen, hat im Laufe der abendländischen Geistesgeschichte einerseits metaphysische anderseits eine Verstehens-Konzeption erfahren. Wenn auch gelegentlich von Analogieschlüssen gesprochen wurde, so ist doch die eminent heuristische Bedeutung dieses Schemas viel zu wenig beachtet worden. Formal hat Analogie in diesem heuristischen Sinne verstanden eine Verwandtschaft zur Induktion. Einige Fälle stimmen in einzelnen Teilen, Prädikaten überein und man vermutet, wenn in einem weiteren dieselbe Übereinstimmung auftritt, auch in anderen Eigenschaften oder Folgen eine Übereinstimmung eintritt. Wenn man feststellt, daß aus $a \in A$, $a \in B$ . . . jeweils f folgt, so wird per analogiam vermutet, daß in einem Fall C bei $a \in C$ auch f folgen wird. Sehr deutlich wird dieses Verfahren bei der Auffindung und Synthese chemischer Stoffe. Man weiß oft, daß z.B. Stoffe mit einer bestimmten Eigenschaft ein charakteristisches Radikal in ihrer Strukturfomel aufweisen. Wenn man nun einen anderen Stoff sucht, der die gleiche Eigenschaft haben soll, so wird man versuchen an eine andere Verbindung eben dieses Radikal anzulagern. Dieses Verfahren ist hier sehr vereinfacht und verkürzt skizziert. Komplexer wird das Verfahren, wenn etwa ein Stoff mit mehreren vorgegebenen Eigenschaften gesucht wird. Immer wenn etwas erzeugt, konstruiert werden soll, sind Analogieüberlegungen wichtig. Das gilt selbst in rein formalen Bereichen. Sowohl bei der Suche nach Lösungen mathematischer Probleme als auch bei der Konstruktion formaler Systeme mit bestimmten erwünschten Eigenschaften, — eine Frage, die insbesondere bei Bourbaki eine große Rolle spielt, — werden Analogieüberlegungen immer große Bedeutung haben.[6]

Wie wir feststellten, geht man auch bei Analogieverfahren davon aus, daß in mehreren Fällen Teile, Eigenschaften identisch oder gleich sind. Es müssen Vertauschbarkeiten bestehen. Induktion und Analogie als heuristische Verfahren setzen voraus, daß es jene bestimmte Art von Symmetrie in der Welt gibt, die wir als Identität bzw. Gleichheit bezeichnen.

Das Suchen, Auffinden und Entdecken neuer Sachverhalte, Zusammenhänge, Informationen kann nie willkürlich und ziellos sein. Es ist immer durch bestimmte Aufgabenstellungen und Probleme bestimmt. Aufgaben können sich aus unserem bisherigen Wissen und Können heraus stellen, indem wir die Unvollständigkeit und Lückenhaftigkeit desselben erkennen, sie können sich aber auch aus dem praktisch-alltäglichen Leben ergeben.

Alle Aufgaben- und Problemlösungen sind immer nur möglich, weil wir bereits ein Wissen haben, auf dem wir aufbauen können. Wir sind in einer bestimmten Problemsituation überzeugt, daß bestimmte Kenntnisse praktischer oder theoretischer Natur wichtig sind. Es ist das von uns akzeptierte und nicht bezweifelte Wissen, auf das wir uns stützen. Jeder normale Mensch ist überzeugt von einem So-Sein der Welt, in der er lebt. Wie weit für ihn dieses von ihm als selbstverständlich akzeptierte Wissen über diese Welt reicht, ist jeweils verschieden. Auch jeder Wissenschaftler erkennt im Rahmen einer bestimmten Aufgabenstellung bestimmte Theorien aber auch bestimmte singuläre Fakten an. Er sieht in ihnen zumindest für die vorliegende Aufgabenstellung ein faktisches Apriori. So ist für den Raketentechniker der NASA eben auch heute noch die klassische Mechanik ein akzeptiertes Wissen als unbezweifelte Voraussetzung seiner Arbeiten und Bahnberechnungen. Etwa relativistische Überlegungen sind dafür überflüssig.

Beschränken wir uns auf wissenschaftlich-technische Aufgaben. Wir finden für ihre Lösungen folgende Voraussetzungen, die hier nur global angeführt werden, für den einzelnen Fall natürlich spezialisiert werden müssen:

(1) Das jeweils akzeptierte theoretische Wissen über die Welt. Daß wir immer so etwas voraussetzen, entspricht unserer Überzeugung, daß die Welt geordnet ist, daß es in ihr Symmetrien, Wiederholungen, Identitäten gibt. Gäbe es solche Ordnungen und Symmetrien in der Welt nicht, so wäre diese unerkennbar. Auch heuristische Verfahren wären in ihr unmöglich.
(2) Wir stellen Arbeitshypothesen, Rahmenhypothesen und unvollständige Theorien auf, die wir als Fragmentartheorien bezeichnen wollen. Sie weisen Lücken auf oder sie werden meist nur zum Teil in Frage gestellt. Durch jene Lücken oder Infragestellungen entstehen die wissenschaftsinternen Probleme, zu deren Lösung wir die heuristischen Verfahren brauchen.
(3) Die außerwissenschaftlichen Fragen und Aufgaben. Diese müssen zu ihrer wissenschaftlichen Behandlung zu wissenschaftsinternen Problemen umgewandelt werden.
(4) Wir brauchen jeweils spezielle Lösungsmethoden. Zu diesen gehören ebenso Rechen- und Deduktionsmethoden, wie die Verwendung von verschiedensten technischen Geräten und Apparaten, die Art der Beobachtung und deren Verarbeitung, z.B. statistischer Art, sowie das Entwerfen und Ausführen von Experimenten.

Alle diese Voraussetzungen bestimmen für die vorliegende Aufgabe und ihre Lösungsbearbeitung, welche Prädikate relevant sind. Sie sind die Bedingungen für das, was wir als Identität und Gleichheit der Fälle, bzw. der Teile derselben in den heuristischen Verfahren der vorliegenden Aufgaben- und Problemstellungen anzusehen haben.[7] Für raumzeitliche Bewegungsvorgänge ergeben sich aus der jeweiligen Fragestellung ganz bestimmte Merkmale, die für die raumzeitliche Identität wichtig sind. Die Kriterien dafür, daß der demnächst zu erwartende Halley'sche Komet identisch ist mit dem vor 76 Jahren beobachteten Kometen, sind andere als diejenigen für die Vermutung, daß der bei dem Anschlag auf die Wiener Synagoge festgenommene Mann derselbe sei, der am Morgen des 1. Mai den Stadtrat Nittel in Wien erschossen hat. Was bedeutet es, wenn ich jemandem erzähle, ich habe gestern nachmittag einen wunderschönen Regenbogen gesehen, und er antwortet mir: ja, den habe ich auch gesehen?

Entsprechendes gilt für die Vergleichung von Fällen, aus denen wir induktiv generalisieren. Ohne das im einzelnen ausführen zu können, sei nur darauf verwiesen, daß die Gleichheit von Meßresultaten einer apparativen Experimentalanordnung auf anderen Voraussetzungen beruht als diejenige eines Verhaltensforschers, der von gleichem Verhalten in gleichen Situationen und bei gleichen Reizen spricht. Daß es Identitäten und Gleichheiten gibt, ist notwendige Voraussetzung für die Erkennbarkeit der Welt. Was als identisch und gleich feststellbar ist, bestimmen die Aufgaben und ihre Voraussetzungen. Induktion und Analogieverfahren dienen zur Lösung wissenschaftlicher und praktischer Aufgaben. Die Lösung einer Aufgabe bestätigt aber immer auch die vorausgesetzte Rahmenhypothese. Eine Induktion oder Analogie kann zwar nicht sich selbst bestätigen, aber als Aufgabenlösung bestätigt sie die zugrundeliegende Fragmentartheorie. Und das kann sie nur, weil dabei ontologische Voraussetzungen wie Symmetrie, Wiederholung und Identität gemacht werden.

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ANMERKUNGEN

[1] Carnap, R., Über die Abhängigkeit der Eigenschaften des Raumes von denen der Zeit, in: Kant-Studien Bd. 30 (1925), S. 331 ff. Vgl. dazu K. Lewin, Die zeitliche Geneseordnung, in: Zs. f. Physik Bd. 13 (1923), S. 62—81.

[2] Vgl. G. Frey, Gesetz u. Entwicklung in der Natur (Hamburg 1958), S. 134 f.

[3] Vgl. G. Frey, Erkenntnis der Wirklichkeit (Stuttgart/Berlin/Köln/Mainz 1965), S. 99 ff.

[4] Noether, E. Invarianten beliebiger Differentialausdrücke, in: Nachr. d. kgl. Ges. d. Wiss. z. Göttingen, math-phys. Kl. (1918).

[5] Yang, Ch. N., Das Gesetz der Paritätserhaltung und andere Symmetriegesetze der Physik, in: Phys. Bl. Bd. 14 (1958).

[6] Vgl. E. Mach, Die Ähnlichkeit und die Analogie als Leitmotiv der Forschung, in: Annalen der Naturphilosophie, Bd. 1(1902), S. 5—14.

[7] Frey, G., Anmerkungen zum Forschungsprozeß, in: Zs. f. Wissenschaftsforschung, Bd. 2 (1981), S. 565—573.

* * *

MUTUAL PROPOSITIONAL ATTITUDES

Gabriel Falkenberg

"Perhaps it is the very simplicity of the thing which puts you at fault." (Poe, "The Purloined Letter")

Let me introduce the concept of mutuality by way of a story.

(Example 1) Two people, call them "A" and "B", are living together. One day, A learns that he has cancer, and writes in his diary: "I have cancer". But he doesn't tell B (*step 1*). By chance, B discovers A's diary, reads the entry and takes down his discovery (*step 2*). A, noticing a change in B's behaviour, looks around and finds the note (*step 3*). That night, he mutters in his sleep "If only B hadn't found out!" (*step 4*). B, reporting this incident to a friend, is overheard by A (*step 5*), and so on.

Up to infinity? Let us review the story step by step from an epistemic point of view, using the usual notation: "p" for a proposition (state of affairs), here for A's having cancer, and "K" for the two-place relation of knowing that, followed by argument places for person and proposition. (In order to avoid the familiar problems with representing not only self-knowledge but also self-knowledge as contained in other-knowledge, we will interpret the singular terms "A" and "B" as standard names.)

Figure 1

	A	B
...	...	...
Step 5	$K_A p$, $K_A K_B p$, $K_A K_B K_A p$, $K_A K_B K_A K_B p$, $\underline{K_A K_B K_A K_B K_A p}$	$K_B p$, $K_B K_A p$, $K_B K_A K_B p$, $K_B K_A K_B K_A p$
Step 4	$K_A p$, $K_A K_B p$, $K_A K_B K_A p$	$K_B p$, $K_B K_A p$, $K_B K_A K_B p$, $\underline{K_B K_A K_B K_A p}$
Step 3	$K_A p$, $K_A K_B p$, $\underline{K_A K_B K_A p}$	$K_B p$, $K_B K_A p$
Step 2	$K_A p$	$K_B p$, $\underline{K_B K_A p}$
Step 1	$\underline{K_A p}$	./.

Each step represents a different situation of *asymmetric knowledge*: one of the parties has certain extra knowledge such that the other does not have the corresponding mirror-image knowledge (the respective vantage points are underlined in fig. 1). What the example suggests is, I think, that the steps are logically as well as psychologically distinct. It would seem that the *sequence* could develop indefinitely. Now compare this with the following situation:

(Example 2) A, having found out about his illness, *tells* B that he has cancer.

Given certain plausible background assumptions about normality and reliability, this single act would not only supply B with the information sufficient for knowing that p, knowing that A knows that p, knowing that A knows that B knows that p, etc.; it would also be a guarantee for A himself knowing that B knows that p, knowing that B knows that A knows that p, etc. (Nothing, of course, depends on the expression "knowledge" here, you may substitute "belief" if you prefer.) Following Radford, from whom I have also adapted

examples 1 and 2, let us call this the *explicit situation* where everything relevant is out in the open. In such a case we say that A and B *mutually* know, for short, *know that p (Schiffer, § II.2). It will be seen later, however, that *knowledge is not confined to explicit situations.

Amazingly, in an explicit situation the whole sequence of interlocking knowings appears to be given at a single stroke. It seems hard to escape the conclusion that people have an immense amount of knowledge in ordinary, simple-looking situations—a conclusion that raises suspicions about the epistemology needed to back it up, not only for hard-boiled Wittgensteinians who 'only scratch when it itches'.

There has been some discussion about the complexity of epistemic and other attitudes which we can sensibly attribute to finite creatures such as persons, i.e., about the complexity of propositions people can be said to know, believe, desire, etc., hence ultimately about the complexity of the world we take ourselves to be facing. Some, regarding the regress as harmless, have taken the heroic course of ascribing to persons knowledge of an infinite number of propositions—weakened perhaps by allowing only "dispositional" or "potential knowledge". Others, excluding everything that couldn't be actually stored in our heads, have insisted that only the first steps should be imputed. The trouble with the heroic course is that, after a few steps, the propositions involved become so intricate that no conditions are specifiable under which they could ever be entertained singly. Furthermore, one may ask whether it is reasonable to speak of someone's knowing something (s)he couldn't express under any circumstances. The trouble with the latter, seemingly down-to-earth account is, however, that no natural stopping point is forthcoming: any given upper limit turns out to be arbitrary in the sense that, with ingenuity, paper, and pencil, a complex situation à la Schiffer (§ II.1) can be constructed in which there is attitudinal symmetry *up* to that point but—due to some asymmetry *higher* up—still no mutuality; and we want—Bennett (§ 39) has stressed this—a treatment that systematically excludes such counterexamples. Moreover, actual cut-off points will vary individually, as we all know from games like poker, from neurotic discourse (Laing) or from the strategy of international nuclear politics (Schelling) —all things where, by exploiting higher orders, the sense of them may be cultivated.

If the sequence can't be stopped at *some* early point, it can't be stopped at *any* point so that nothing less than infinity will do. While strongly attracted to the heroic course, I confess to having no easy solutions to the arising puzzles. I would like to proceed instead by separating the logical and the psychological aspects of the problem. Usually, to be sure, no more than five or six orders are entertained or actually reasoned through, higher steps seem to merge confusingly; but our difficulty in disentangling them may only reflect contingent limits of our physical nature—say, our immediate memory.

Let us try, then, after some preliminary clarification, to be more explicit about mutuality, confined here to mutuality in a group of two people (the extension to the general case is quite straightforward). Mutuality is, first and foremost, a feature of the mental: whereas actions can be done collectively, only attitudes can be had mutually. And though my primary example is knowledge, mutuality is by no means limited to it; nor can it only arise in situations involving language. Here are, without comment, three further examples:

(Example 3) *Mutual expectation.* After losing one another in the crowd, we will *expect to meet again where we last saw each other. (This, of course, is an example of mutuality in a non-explicit situation.)

(Example 4) *Mutual desire.* That two partners sexually aroused by one another *desire to make love seems to be a characteristic of human sexuality.

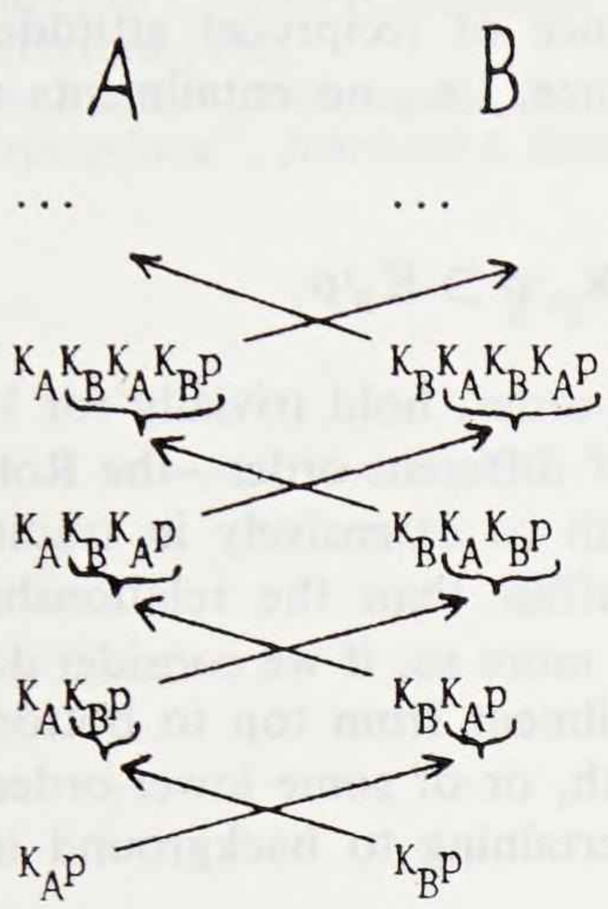
(Example 5) *Mutual perception.* If we face each other with a material object between us, it follows that we *perceive-visually that the object is between us.

The shortest characterization of *knowledge that I know of is the following nice sentence, invented by Harman:

(S) p, and A and B both know *this* (i.e., S).

The trick is done by the self-referential element "this", referring to the whole sentence, itself included: Trying to unwrap S, it turns out to be infinite. But apart from the doubtful legitimacy of S as a definition, the structure thereby imposed on *knowledge is not sufficiently transparent. *Knowledge consists in two person's each having a symmetric sequence of reciprocal propositional attitudes of increasing complexity:

Figure 2



A *reciprocal* attitude is a special iterative attitude where only two alternating singular terms occur. Notice that the set of reciprocal attitudes of A and B is *recursive*: one person's attitude is the content of the other's next higher attitude (I have indicated the connection by arrows in fig. 2). Utilizing this, we introduce the notion of a reciprocal *higher-order attitude* in the following way:

> An *i*th-order reciprocal attitude toward a proposition p is an ordinary attitude toward someone else's (*i*-1)th-order reciprocal attitude toward p (for $1<i$).
> A first-order reciprocal attitude toward p is an ordinary attitude toward p.
> (This is, roughly, an extension of a definition of Lewis's, § I.3.)

With "K^i" abbreviating "has *i*th-order reciprocal knowledge", the preceding definition can be more succinctly expressed thus:

$$K_A{}^i p =_{df} K_A K_B{}^{i-1} p \qquad K_B{}^i p =_{df} K_B K_A{}^{i-1} p \qquad (1 < i)$$

$$K_A{}^1 p =_{df} K_A p \qquad K_B{}^1 p =_{df} K_B p.$$

We are now in a position to say that *knowledge obtains when and only when each party possesses reciprocal knowledge of first and any higher order:

$$*K_{AB} p =_{df} K_A{}^r p \wedge K_B{}^r p \; (r = 1, 2, 3, \ldots).$$

It is instructive to compare the reciprocal (hence *interpersonal*) components of mutuality and the likewise iterative, reflexive (*intrapersonal*) attitudes of the sort "knowing that one knows". Hintikka has argued that—if, as we have assumed here, "A" ranges over *persons*—$K_A K_A p$ entails $K_A p$, and conversely: all those circumstances which justify one's saying "I know" also justify one's saying "I know that I know", and vice versa. However, this is clearly not so in the case of reciprocal knowledge, as was already apparent from example 1: That $K_A p$ is one state of affairs; but *both* that $K_A K_B p$ *and* that $K_B p$ (or, for that matter,

that K_BK_Ap) are new states of affairs in which novel and logically independent elements appear. Stated generally: no member of one person's sequence of reciprocal attitudes entails any later member, i.e., no entailment of the following form holds (ignoring, for the moment, first-order knowledge):

$$K_A{}^ip \supset K_A{}^jp \quad (i<j).$$

Likewise, no member of one person's sequence of reciprocal attitudes entails any later or parallel member of the *other* person's sequence, i.e., no entailments of the following form hold, either:

$$K_A{}^ip \supset K_B{}^jp \quad (i<j) \qquad\qquad K_A{}^ip \supset K_B{}^ip.$$

(Converse entailments, from higher- to lower-order, hold trivially for knowledge, of course.) The relationship between reflexive attitudes of different order—the Robinson-Crusoe-type-of-knowledge, for one, that has been dealt with so extensively in traditional philosophy and epistemic logic—is, thus, a much simpler affair than the relationship between reciprocal attitudes of different or the same order—even more so, if we consider doxastic and other non-veridical attitudes for which there is no entailment from top to bottom anymore. Hence, if there is a guarantee of some higher-order truth, or of some lower-order truth given a higher-order one, it must lie in extra conditions pertaining to background information, situation, normality, trust, and reasoning standards.

What is wanted first is an *evidential relation* ("indication", in Lewis) between states of affairs and persons, a relation strong enough to build up attitudes of higher order; we may call it a *constructive principle.* Remembering the demands of mutuality, it must be ensured that participants have symmetric access to what constitutes the *basis* of their mutuality. Second, for all non-veridical attitudes, a nontrivial *reductive principle* is needed permitting curtailment of higher-order attitudes.

That work done, we would have substantiated, for the theory of the *Geisteswissenschaften*, the following general statement which I can only submit as a closing conjecture now: mutuality is *that* group-dependent feature of the mental which makes its object social, or stronger still: it is only in virtue of being, or becoming, mutual that social facts are what they are.

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REFERENCES

Bennett, J., *Linguistic Behaviour* (Cambridge 1976).
Burge, T., "Reasoning about Reasoning", *Philosophia*, Vol. 8 (1979).
Dennett, D., "Conditions of Personhood", in: A. O. Rorty (ed.), *The Identities of Persons* (Berkeley 1976).
Dummett, M., *Frege: Philosophy of Language* (London 1973), p. 286—7.
Grünberger, J., *Die Perfektion des Mitgliedes* (Berlin 1981).
Harman, G., "Solution", *Philosophia*, Vol. 6 (1976).
Heal, J., "Common Knowledge", *Philosophical Quarterly*, Vol. 28 (1978).
Hintikka, J., *Knowledge and Belief* (Ithaca 1962).

Husserl, E., *Erste Philosophie II* [Lectures of 1923/24] (The Hague 1959).
Laing, R. D., *The Self and Others* (London ²1969).
Lenzen, W., "Recent Work in Epistemic Logic", *Acta Phil. Fennica*, Vol. 30 (1978).
Lewis, D. K., *Convention* (Cambridge, Mass. 1969).
Meggle, G., "Schiffer-Epistemologie", *Grazer Phil. Studien*, Vol. 10 (1980).
Nagel, T., "Sexual Perversion", *Journal of Philosophy*, Vol. 66 (1969).
Radford, C., "Knowing and Telling", *Philosophical Review*, Vol. 78 (1969).
Sartre, J.-P., *L'être et le néant* (Paris 1943).
Schelling, T. C., *The Strategy of Conflict* (Cambridge, Mass. 1960).
Schiffer, S. R., *Meaning* (Oxford 1972).
Sharvy, R., "An Epistemic Puzzle", *Philosophia*, Vol. 4 (1974).
Stoltenberg, H. L., "Seelspiegelung", *Jahrbuch f. Soziologie*, Vol. 2 (1926).

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5. Ontologie und Semantik

5. Ontology and Semantics

POSSIBILITY THEORY AS A BASIS FOR REPRESENTATION OF MEANING*

L. A. Zadeh

1. *Introduction*

A basic assumption which underlies almost all of the current approaches to the theory of meaning in natural languages—including the approaches based on truth-conditional, possible-world and Montague semantics—is that the extension of a predicate is a precisely defined subset of a universe of discourse. As a consequence, such approaches cannot come to grips with the issue of vagueness of natural languages and are effectively limited to small fragments whose constituents are well-structured grammatically and have a crisp meaning.

In a series of papers starting in 1971 (Zadeh 1971—81), we have developed an alternative approach in which the point of departure is that the extension of a predicate is a fuzzy set in which the transition from membership to nonmembership is gradual rather than abrupt. By allowing the extension to be a fuzzy set, the expressive power of meaning representation is increased by a wide margin and it becomes possible to treat a variety of semantic issues, e.g., the effect of fuzzy quantifiers, fuzzy modifiers, fuzzy presuppositions, etc., which do not lend themselves to analysis within the traditional framework of two-valued logic and classical set theory.

More recently, the development of possibility theory (Zadeh 1978a) has contributed substantially to a better understanding of the role of fuzziness in natural languages and has led to the conception of the meaning-representation language PRUF (Zadeh 1978b). This in turn has led to the development of *test-score semantics* (Zadeh 1981b)—a possibility-based semantics for both natural and synthetic languages which has a high expressive power and wide applicability.

A basic assumption which underlies test-score semantics is that a semantic entity such as a predicate, proposition, question or command induces a collection of elastic constraints on a set of objects or relations in a universe of discourse. Viewed in this perspective, the meaning of a semantic entity may be represented by: (a) identifying the constraints which are explicit or implicit in the entity in question; (b) describing the tests which must be performed to ascertain the degree to which each constraint is satisfied; and (c) specifying the manner in which the degrees in question or, equivalently, the partial test scores are to be aggregated to yield an overall test score. In general, the overall test score is a vector whose components are numbers in the unit interval, with the overall test score representing the compatibility of the semantic entity with the constrained objects or relations in the universe of discourse. By virtue of its generality, test-score semantics subsumes both truth-conditional and possible-world semantics as limiting cases in which the partial and overall test scores are restricted to {pass, fail} or, equivalently, {true, false} or {1,0}.

In more detailed terms, the process of meaning representation in test-score semantics involves three distinct phases which may be summarized as follows:

In Phase I, an *explanatory database frame* or EDF, for short, is constructed. EDF may be regarded as a collection of state descriptions (i.e., possible worlds) and, more concretely, is assumed to consist of a collection of relational frames, i.e., names of relations, names of attributes and attribute domains whose meaning is assumed to be known. In consequence of this assumption, the choice of EDF is not unique and is strongly influenced by the knowledge profile of the addressee of the representation process as well as by the desideratum of explanatory effectiveness. For example, in the case of the proposition p≙ Over the past few years Mike earned far more than most of his close friends, the EDF might consist of the following relations: INCOME [Name; Amount; Year], which lists the income of each indi-

vidual identified by his/her name as a function of the variable Year; FRIEND [Name; μ], where μ is the degree to which Name is a friend of Mike; FEW [Number; μ], where μ is the degree to which Number is compatible with the fuzzy quantifier *few*; MOST [Proportion; μ], in which μ is the degree to which Proportion is compatible with the fuzzy quantifier *most*; and FAR. MORE [Income; Income 2; μ], where μ is the degree to which Income 1 fits the fuzzy predicate *far more* in relation to Income 2. Each of these relations is interpreted as an elastic constraint on the variables which are associated with it.

In Phase 2, a test procedure is constructed which acts on relations in the explanatory database[1] and yields the test scores which represent the degrees to which the elastic constraints induced by the constituents of the semantic entity are satisfied. For example, in the case of p, the test procedure would yield the test scores for the constraints induced by the relations FRIEND, FEW, MOST and FAR. MORE.

In Phase 3, the partial test scores are aggregated into an overall test score, τ, which in general is a vector which serves as a measure of the compatibility of the semantic entity with an ED, that is, an instantiation of EDF. As was stated earlier, the components of τ are numbers in the unit interval or, more generally, possibility/probability distributions over the interval. In particular, in the case of propositions, when the overall test score is a scalar, τ may be interpreted as the degree of truth of the proposition with respect to the explanatory database, ED, or, equivalently, as the degree of possibility of the explanatory database given the proposition. It is in this sense that test-score semantics may be viewed as a generalization of both truth-conditional and possible-world semantics.

The possibility theory which serves as a basis for test-score semantics is distinct from—but not totally unrelated to—the possibility theories related to modal logic and possible-world semantics (Cresswell 1973, Rescher 1975). In effect, it may be viewed as a nonstatistical theory of uncertainty which is intimately related to the concept of a fuzzy set, that is, a class of objects in which the transition from membership to nonmembership is gradual rather than abrupt. As a simple illustration, consider the proposition "Marguerite is young". This proposition does not pinpoint the age of Marguerite. Rather, it associates with the variable Age(Marguerite) a fuzzy subset of the interval [0, 100] which is characterized by its membership function μ_{young}. In turn, this function associates whith each numerical value of age, u, the degree, $\mu_{\text{young}}(u)$, ranging from 0 to 1, to which u is compatible with one's perception of *young* in a given context. For example, the degree to which a woman whose age is 30 is young may be 0.6, while that for a woman of 40 may be 0.2, with the understanding that the degrees in question are both subjective and context-dependent. Thus, if in a conversation between, say, A and B, A states that Marguerite is young and B inquires what A means by *young*, then A can define the meaning of *young* for B by characterizing the extension of *young* as a fuzzy set, that is, by associating with each numerical value of age, u, the degree to which u fits A's perception of *young* in the context in which the conversation between A and B takes place.

How does the concept of possibility relate to that of fuzziness? First it should be noted that in some contexts the concept of possibility reflects a physical limitation on the values which may be assumed by a variable. For example, if N is the number of tennis balls that may be squeezed into a metal box, then with each value n of N we may associate a number $\pi(n)$ (between 0 and 1) which represents the degree to which it is possible—in terms of some agreed upon criterion—to squeeze n balls into the box. Thus, for n up to and including five, $\pi(n)$ might be unity. For $n = 6$, $\pi(6) = 0.8$; for $n = 7$, $\pi(7) = 0.6$ and so on until at $n = 10$, say, $\pi(10)$ becomes zero, implying that by the criterion in question it is impossible to squeeze ten or more balls into the box.

In most cases, however, the concept of possibility is epistemic in nature in the sense that it relates to knowledge or, more specifically, to the degree of match or compatibility rather than to a physical limitation. For example, when A tells B that Marguerite is young, the knowledge of this fact induces in B's mind what might be called a *possibility distribution* of the variable Age(Marguerite). Thus, if under the definition supplied by A the degree to

which 30 is young is 0.6, then in B's mind the possibility that Marguerite is 30 years old given the proposition "Marguerite is young" will also be 0.6. This equality between the grades of membership in a fuzzy set and epistemic possibilities is a basic assumption (see Appendix) which underlies PRUF—a language in which the concept of a possibility distribution plays a central role.

Viewed in this perspective, the proposition "Marguerite is young" induces an elastic constraint on the possible values of Marguerite's age. The meaning of this proposition, then, may be regarded as a test whose score is the degree to which the constraint in question is satisfied by the data in the explanatory database.

More generally, let p be a proposition, e.g., "Marguerite is young", or "Marguerite lives in a small city near San Francisco", or "Most Frenchmen are not very tall", etc. Each such proposition contains one or more implicit or explicit variables, say $X_1, \ldots, X_n$, which take values in their respective universes of discourse $U_1, \ldots, U_n$. Then, the information conveyed by p is the joint possibility distribution, denoted as $\Pi_{(X_1, \ldots, X_n)}$, of the variables $X_1, \ldots, X_n$. In effect, this induced possibility distribution is a fuzzy set whose membership function is the *possibility distribution function* $\pi_{(X_1, \ldots, X_n)}$ which is defined by

$$\pi_{(X_1, \ldots, X_n)}(u_1, \ldots, u_n) = \text{Poss}\{X_1 = u_1, \ldots, X_n = u_n\} \tag{1.1}$$

where the u_i are possible values of X_i, $i = 1, \ldots, n$, and the righthand member of (1.1) is the possibility that $X_1 = u_1$, $X_2 = u_2$, . . . , and $X_n = u_n$ simultaneously.

As an illustration, in the case of the proposition[2]

p ≜ Marguerite is young

the implicit variable is

X ≜ Age(Marguerite)

and its possibility distribution is given by the fuzzy set labeled YOUNG.[3] The possibility distribution function of Age(Marguerite) is the membership function of YOUNG, so that

$$\begin{aligned}\text{Poss}\{\text{Age(Marguerite)} = u\} &= \mu_{\text{young}}(u)\\ &= \text{grade of membership of u in YOUNG.}\end{aligned}$$

Similarly, in the case of the proposition

p ≜ Marguerite resides in a small city near San Francisco

the implicit variable is

$$X = \text{Location(Residence(Marguerite))} \tag{1.2}$$

and the possibility distribution is defined by the fuzzy set described by

$$F \triangleq \text{small cities near San Francisco.} \tag{1.3}$$

Thus, if u is a city, then

$$\begin{aligned}&\text{Poss}\{\text{Location(Residence(Marguerite))} = u\}\\ &= \text{grade of membership of u in the fuzzy set of small cities}\\ &\quad \text{which are near San Francisco,}\end{aligned}$$

which may be expressed more compactly in the form

$$\Pi_X = F, \tag{1.4}$$

where Π_X is the possibility distribution of X and F is defined by (1.3).

What these simple examples demonstrate is that a proposition in a natural language defines an elastic constraint on a variable which is generally implicit rather than explicit in the proposition. The possibility distribution of this variable, then, may be interpreted as the possibility of each ED given the proposition or, equivalently, as the truth of the proposition given ED.

In the following section, this point of view is discussed in greater detail. A fuller treatment may be found in Zadeh (1978b, 1981b). A brief discussion of possibility theory is presented in the Appendix.

2. *Possibility and Meaning*

As was stated earlier, a basic premise of test-score semantics is that the meaning of a proposition, p, may be represented as a test which computes the compatibility, τ, of p with each instantiation, ED, of an explanatory database frame EDF.

In general, the compatibility, τ, depends on the values of a finite number of variables, say $\{X_1, \ldots, X_n\}$, which enter into EDF. As an illustration, in the case of the proposition p $\triangleq$ Marguerite is young, the explanatory database frame may be assumed to comprise the relations LIST[Name; Age] and YOUNG[Age; μ]. In the first of these relations, the tabulated attributes (or variables) are Name and Age, while in the second relation, YOUNG [Age; μ], the tabulated attributes are Age and μ, where μ is the degree to which a value of Age is compatible with one's perception of YOUNG.

For concreteness, consider an explanatory database, ED, which consists of the following instantiation of the relations LIST and YOUNG:

LIST	Name	Age
	Michael	35
	Marguerite	30
	Lynn	29
	George	41
	Marie	35
	—	—
	Luisa	40

YOUNG	Age	μ
	20	1
	21	1
	22	1
	23	1
	24	1
	25	1
	26	1
	27	0.9
	28	0.8
	29	0.7
	30	0.6
	31	0.4
	32	0.2
	33	0.1
	34	0

(2.1)

In this ED, the age of Marguerite is 30, and hence the possibility of ED given p is 0.6, since the degree to which 30 is young is 0.6. Now, if we imagine a collection of explanatory databases in which Marguerite's age takes the values 20, 21, . . . , 34, respectively, then

$$\text{Poss}\{\text{ED}|\text{p}\} = \mu_{\text{YOUNG}}(\text{u}), \tag{2.2}$$

which signifies that the possibility of ED is the grade of membership of u in YOUNG. From this we can conclude that

$$\text{Poss}\{\text{Age(Marguerite)} = \text{u}\} = \mu_{\text{YOUNG}}(\text{u}), \tag{2.3}$$

which, as in (1.4), may be expressed more compactly as the *possibility assignment equation* (see Appendix)

$$\Pi_{\text{Age (Marguerite)}} = \text{YOUNG}. \tag{2.4}$$

Using the notation described in the Appendix, the test which yields the possibility of ED given p may be expressed as

$$\text{Poss}\{\text{ED}|\text{p}\} = {}_{\mu}\text{YOUNG}[\text{Age} = {}_{\text{Age}}\text{LIST}[\text{Name} = \text{Marguerite}]]. \tag{2.5}$$

In words, this test may be described as follows:

1. Read Marguerite's age in LIST.
2. Substitute Marguerite's age for Age in YOUNG and read μ.
3. Equate μ to the possibility of ED given p.

A less simple illustration of the computation of the possibility of D is provided by the proposition

$$\text{p} \triangleq \text{Marguerite resides in a small city near San Francisco.} \tag{2.6}$$

In this case, we shall assume that the explanatory database frame consists of the relations

$$\text{RESIDENCE}[\text{P. Name; C. Name; Population}] \tag{2.7}$$

$$\text{SMALL}[\text{Population}; \mu]$$

$$\text{NEAR}[\text{C. Name1; C. Name2}; \mu]$$

In RESIDENCE, P. Name stands for Person Name, C. Name for City Name, and Population for population of C. Name. In SMALL, μ is the degree to which a city whose population figure is Population is small. In NEAR, μ is the degree to which C. Name1 and C. Name2 are near one another.

The population of the city in which Marguerite resides is given by

$$_{\text{Population}}\text{RESIDENCE}[\text{P. Name} = \text{Marguerite}] \tag{2.8}$$

and hence the test score for the elastic constraint induced by the relation SMALL may be expressed as

$$\tau_1 = {}_{\mu}\text{SMALL}\,[{}_{\text{Population}}\text{RESIDENCE}\,[\text{P. Name} = \text{Marguerite}]. \tag{2.9}$$

Similarly, the test score for the elastic constraint induced by NEAR is given by

$$\tau_2 = {}_{\mu}\text{NEAR}\,[\text{C. Name1} = \text{San Francisco};$$

$$\text{C. Name2} = {}_{\text{C. Name}}\text{RESIDENCE}\,[\text{P. Name} = \text{Marguerite}]]. \tag{2.10}$$

On forming the conjunction of (2.9) and (2.10), the possibility of ED—and hence the compatibility of p with ED—is found to be expressed by ($\wedge \triangleq \min$)

Marguerite resides in a small city near San Francisco →

$$\text{Poss}(\text{ED}) = \tau_1 \wedge \tau_2 \tag{2.11}$$

where τ_1 and τ_2 are given by (2.9) and (2.10).

More generally, the *translation* of a proposition (symbolized by the arrow →) may assume one of three equivalent forms:

1. p → a possibility assignment equation

2. p → a procedure which computes Poss{ED|p}

3. p → a procedure which computes Truth{p|ED}

To facilitate the translation of a given proposition it is expedient to have a collection of translation rules which may be employed to reduce the problem of translation of p to that of its constituents or modifications. The principal translation rules in PRUF are the following:

Type I. Rules pertaining to modification. E.g.,
Marguerite is very young
George is more or less settled in his present job

Type II. Rules pertaining to composition. E. g.,
X is small and Y is very large
If X is small then Y is not very large

Type III. Rules pertaining to quantification. E.g.,
Most Frenchmen are not very tall
Ramon has many close friends

Type IV. Rules pertaining to qualification. E. g.,
X is small is very true
X is small is not very likely
X is small is almost impossible

A detailed discussion of these rules may be found in Zadeh (1978b). For purposes of illustration, we shall state a basic rule of Type I—the Modifier Rule.

Modifier rule (Type I). Let X be a variable which takes values in a universe of discourse U and let F be a fuzzy subset of U. Consider the proposition

$$\text{p} \triangleq \text{X is F} \tag{2.12}$$

e.g.,

p ≜ X is small.

Now, if in a particular context the proposition X is F translates into

$$X \text{ is } F \rightarrow \Pi_X = F \tag{2.13}$$

then in the same context

$$X \text{ is } mF \rightarrow \Pi_X = F^+ \tag{2.14}$$

where m is a modifier such as *not*, *very*, *more or less*, etc., and F^+ is a modification of F induced by m. More specifically: If m = not, then $F^+ = F' =$ complement of F, e.g.,

$$\mu_{F^+}(u) = 1 - \mu_F(u)\,,\ u \in U\,. \tag{2.15}$$

If m = very, then $F^+ = F^2$, i.e..

$$\mu_{F^+}(u) = \mu_F{}^2(u)\,,\ u \in U\,. \tag{2.16}$$

If m = more or less, then $F^+ = \sqrt{F}$, i.e.,

$$\mu_{F^+}(u) = \sqrt{\mu_F(u)}\,,\ u \in U\,. \tag{2.17}$$

As a simple illustration of (2.16), if SMALL is defined as[5]

$$\text{SMALL} = 1/0 + 0.8/2 + 0.6/3 + 0.4/4 + 0.2/5\,, \tag{2.18}$$

then

$$X \text{ is very small} \rightarrow \Pi_X = F^2 \tag{2.20}$$

where

$$F^2 = 1/0 + 1/1 + 0.64/2 + 0.36/3 + 0.16/4 + 0.04/5$$

and

$$X \text{ is more or less small} \rightarrow \Pi_X = \sqrt{F}$$

where

$$\sqrt{F} \cong 1/0 + 0.9/2 + 0.77/3 + 0.63/4 + 0.44/5.$$

By employing the translation rules singly or in combination, it is possible to translate into PRUF many types of propositions which are not susceptible of translation into predicate calculus or any of the other available meaning representation languages. The greater expressive power of PRUF is due, in the main, to the use of the concept of a possibility distribution in conjunction with the use of modifiers, fuzzy quantifiers and fuzzy qualifiers. However,

as shown in Zadeh (1981b), an even greater expressive power may be attained through the use of testscore semantics, in which the flexibility of aggregation rules and the concept of a vector test-score make it feasible to represent the meaning of a wide variety of semantic entities.

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3. *Appendix*

If X is a variable taking values in U, then by the *possibility distribution* of X, denoted by Π_X, is meant the fuzzy set of possible values of X, with the *possibility distribution* function $\Pi_X: U \rightarrow [0,1]$ defining the possibility that X can assume a value u. Thus,

$$\pi_X(u) \triangleq \text{Poss}\{X = u\}, \tag{3.1}$$

with $\pi_X(u)$ taking values in the interval [0,1].

The connection between possibility distributions and fuzzy sets is provided by the *Possibility Postulate.* In the absence of any information about X other than that conveyed by the proposition

$$p \triangleq X \text{ is } F, \tag{3.2}$$

the possibility distribution of X is given by the *possibility assignment equation*

$$\Pi_X = F. \tag{3.3}$$

This equation implies that

$$\Pi_X(u) = \mu_F(u) \tag{3.4}$$

where $\mu_F(u)$ is the grade of membership of u in F, i.e., the degree to which u fits one's subjective perception of F.

As a simple illustration, consider the proposition

$$p \triangleq X \text{ is small} \tag{3.5}$$

where SMALL is a fuzzy set defined by

$$\text{SMALL} = 1/0 + 0.8/2 + 0.6/3 + 0.4/4 + 0.2/5. \tag{3.6}$$

In this case, the possibility assignment equation corresponding to (3.4) may be expressed as

$$\Pi_X = 1/0 + 0.8/2 + 0.6/3 + 0.4/4 + 0.2/5 \tag{3.7}$$

with Π_X representing the possibility distribution of X.

More generally, if p is a proposition of the form

$$p \triangleq N \text{ is } F \tag{3.8}$$

where N is an object, a variable or a proposition, then p is said to *translate into the possibility assignment equation*

$$\Pi_X = F,$$

where X is a variable that is explicit or implicit in N. To express this connection between p and the corresponding possibility assignment equation, we write

$$N \text{ is } F \rightarrow \Pi_X = F. \tag{3.9}$$

When X is implicit rather than explicit in N, the possibility assignment equation serves, first, to identify X and, second, to characterize its possibility distribution. For example, in the proposition

$$p \triangleq \text{George has dark hair} \tag{3.10}$$

X may be expressed as

$$X \triangleq \text{Color (Hair (George))} \tag{3.11}$$

and the possibility assignment equation reads

$$\Pi_{\text{Color (Hair (George))}} = \text{DARK}. \tag{3.12}$$

In the preceding discussion, it is assumed that X is a unary variable such as color, height, age, etc. More generally, let $X \triangleq (X_1, \ldots, X_n)$ be an n-ary variable which takes values in a universe of discourse $U = U_1 \times \ldots \times U_n$, with X_i, $i = 1, \ldots, n$, taking values in U_i. Furthermore, let F be an n-ary fuzzy relation in U which is characterized by its membership function μ_F. Then, the proposition

$$p \triangleq X \text{ is } F \tag{3.13}$$

induces an n-ary joint possibility distribution

$$\Pi_X \triangleq \Pi_{(X_1, \ldots, X_n)} \tag{3.14}$$

which is given by

$$\Pi_{(X_1, \ldots, X_n)} = F. \tag{3.15}$$

Correspondingly, the possibility distribution function of X is expressed by

$$\pi_{(X_1, \ldots, X_n)}(u_1, \ldots, u_n) = \mu_F(u_1, \ldots, u_n), \; u \triangleq (u_1, \ldots, u_n) \in U$$

$$= \text{Poss}\{X_1 = u_1, \ldots, X_n = u_n\}.$$

As in the case of probabilities, one can define marginal and conditional possibilities. Thus, let $s \triangleq (i_1, \ldots, i_k)$ be a subsequence of the index sequence $(1, \ldots, n)$ and let s' denote the complementary subsequence $s' \triangleq (j_1, \ldots, j_m)$ (e.g., for $n = 5$, $s = (1, 3, 4)$ and $s' = (2,5)$). In terms of such sequences, a k-tuple of the form $(A_{i_1}, \ldots, A_{i_k})$ may be expressed in an abbreviated form as $A_{(s)}$. In particular, the variable $X_{(s)} = (X_{i_1}, \ldots, X_{i_k})$ will be referred to as a k-ary *subvariable* of $X \triangleq (X_1, \ldots, X_n)$, with $X_{(s')} = (X_{j_1}, \ldots, X_{j_m})$ being a subvariable complementary to $X_{(s)}$.

The *projection of* $\Pi_{(X_1, \ldots, X_n)}$ *on* $U_{(s)} \triangleq U_{i_1} x \ldots x U_{i_k}$ is a k-ary possibility distribution denoted by

$$\Pi_{X_{(s)}} \triangleq \text{Proj}_{U_{(s)}} \Pi_{(X_1, \ldots, X_n)} \tag{3.16}$$

and definded by

$$\pi_{X_{(s)}}(u_{(s)}) \triangleq \sup_{u_{(s')}} \pi_X(u_1, \ldots, u_n) \tag{3.17}$$

where $\pi_{X_{(s)}}$ is the possibility distribution function of $\Pi_{X_{(s)}}$. For example, for $n = 2$,

$$\pi_{X_1}(u_1) \triangleq \sup_{u_2} \Pi_{(X_1, X_2)}(u_1, u_2)$$

is the expression for the possibility distribution function of the projection of $\Pi_{(X_1, X_2)}$ on U_1. By analogy with the concept of a marginal probability distribution, $\Pi_{X_{(s)}}$ will be referred to as a *marginal possibility distribution.*

As a simple illustration, assume that $n = 3$, $U_1 = U_2 = U_3 = a + b$ or, more conventionally, $\{a, b\}$, and $\Pi_{(X_1, X_2, X_3)}$ is expressed as a linear form

$$\Pi_{(X_1, X_2, X_3)} = 0.8aaa + 1aab + 0.6baa + 0.2bab + 0.5bbb \tag{3.18}$$

in which a term of the form 0.6baa signifies that

$$\text{Poss}\{X_1 = b, X_2 = a, X_3 = a\} = 0.6.$$

To derive $\Pi_{(X_1, X_2)}$ from (3.18), it is sufficient to replace the value of X_3 in each term in (3.18) by the null string Λ. This yields

$$\Pi_{(X_1, X_2)} = 0.8aa + 1aa + 0.6ba + 0.2ba + 0.5bb$$

$$= 1aa + 0.6ba + 0.5bb$$

and similarly

$$\Pi_{X_1} = 1a + 0.6b + 0.5b$$

$$= 1a + 0.6b$$

An *n-ary* possibility distribution is *particularized* by forming the conjunction of the propositions "X is F" and "$X_{(s)}$ is G", where $X_{(s)}$ is a subvariable of X. Thus,

$$\Pi_X[\Pi_{X_{(s)}} = G] \triangleq F \cap \bar{G} \tag{3.19}$$

where the right-hand member denotes the intersection of F with the cylindrical extension of G, i.e., a cylindrical fuzzy set defined by

$$\mu_{\bar{G}}(u_1, \ldots, u_n) = \mu_G(u_{i_1}, \ldots, u_{i_k}), (u_1, \ldots, u_n) \in U_1 x \ldots x U_n. \tag{3.20}$$

As a simple illustration, consider the possibility distribution defined by (3.18), and assume that

$$\Pi_{(X_1, X_2)} = 0.4aa + 0.9ba + 0.1bb.$$

In this case,

$$\overline{G} = 0.4aaa + 0.4aab + 0.9baa + 0.9bab + 0.1bba + 0.1bbb$$

$$F \cap G = 0.4aaa + 0.4aab + 0.6baa + 0.2bab + 0.1bbb$$

and hence

$$\Pi_{(X_1, X_2, X_3)}[\Pi_{(X_1, X_2)} = G] = 0.4aaa + 0.4aab + 0.6baa + 0.2bab + 0.1bbb$$

There are many cases in which the operations of particularization and projection are combined. In such cases it is convenient to use the simplified notation

$$X_{(r)}\Pi[\Pi_{X_{(s)}} = G] \tag{3.21}$$

to indicate that the particularized possibility distribution (or relation) $\Pi[\Pi_{X_{(s)}} = G]$ is projected on $U_{(r)}$, where r, like s, is a subsequence of the index sequence (1, . . . , n). For example,

$$X_1 X_3 \Pi[\Pi_{(X_3, X_4)} = G]$$

would represent the projection of $\Pi[\Pi_{(X_3, X_4)} = G]$ on $U_1 \times U_3$. Infomally, (3.21) may be interpreted as: Constrain the $X_{(s)}$ by $\Pi_{X_{(s)}} = G$ and read out the $X_{(r)}$. In particular, if the values of $X_{(s)}$—rather than their possibility distribution—are set equal to G, then (3.21) becomes

$$X_{(r)}\Pi[X_{(s)} = G].$$

If X and Y are variables taking values in U and V, respectively, then the *conditional possibility distribution* of Y given X is induced by a proposition of the form "If X is F then Y is G" and is expressed as $\Pi_{(Y|X)}$, with the understanding that

$$\Pi_{(Y|X)}(v|u) \triangleq \text{Poss}\{Y = v|X = u\} \tag{3.22}$$

where (3.22) defines the conditional possibility distribution function of Y given X. If one knows the distribution function of X and the conditional distribution function of Y given X, then the joint distribution function of X and Y may be constructed by forming the conjunction ($\Delta \triangleq \min$)

$$\pi_{(X, Y)}(u, v) = \pi_X(u) \wedge \pi_{(Y|X)}(v|u). \tag{3.23}$$

REFERENCES

Bartsch, R., and Vennemann, T., *Semantic Structures* (Frankfurt 1972).

Barwise, J., and Cooper, R., "Generalized Quantifiers and Natural Language", *Linguistics and Philosophy*, Vol. 4 (1981), pp. 159—219.

Bellman, R. E., and Zadeh, L. A., "Local and Fuzzy Logics", in: G. Epstein (ed.), *Modern Uses of Multiple-Valued Logic* (Dordrecht 1977), pp. 103—165.
Brachmann, R. J., "What's In a Concept: Structural Foundations for Semantic Networks", *Int. J. Man-Machine Studies*, Vol. 9 (1977), pp. 127—152.
Carnap, R., *Meaning and Necessity* (Chicago 1952).
Cercone, N. J., "Representing and Processing Grammatical Modifiers", *IEEE Trans. on Pattern Analysis and Machine Intelligence*, Vol. 3 (1981), pp. 357—367.
Cresswell, M. J., *Logics and Languages* (London 1973).
Davidson, D., and Harman, G. (eds.), *Semantics of Natural Language* (Dordrecht 1972).
Dowty, D. R., *et al, Introduction to Montague Semantics* (Dordrecht 1981).
Goguen, J. A., "Concept Representation in Natural and Artificial Languages: Axioms, Extension and Applications for Fuzzy Sets", *Int. J. Man-Machine Studies*, Vol. 6 (1974), pp. 513—561.
Grice, H. P., "Utterer's Meaning, Sentence-Meaning and Word-Meaning", *Foundations of Language*, Vol. 4 (1968), pp. 225—242.
Haack, S., *Philosophy of Logics* (Cambridge 1978).
Hisdal, E., "Conditional Possibilities: Independence and Interaction", *Fuzzy Sets and Systems*, Vol. 1 (1978), pp. 283—297.
Kaufmann, A., *Introduction to the Theory of Fuzzy Subsets, Vol. 2: Applications to Linguistics, Logic and Semantics* (Paris 1978).
Lakoff, G., "Hedges: A Study in Meaning Criteria and the Logic of Fuzzy Concepts", *J. Phil. Logic*, Vol. 2 (1973), pp. 458—508.
Mamdani, E. N., and Gaines, B. R. (eds.), *Fuzzy Reasoning and its Applications* (London 1981).
Miller, G. A., and Johnson-Laird, P. N., *Language and Perception* (Cambridge 1976).
Mizumoto, M., Umano, M., and Tanaka, K., "Implementation of a Fuzzy-Set-Theoretic Data Structure System", *Third Int. Conf. on Very Large Data Bases* (Tokyo 1977).
Moore, R. C., "Problems in Logical Form", Tech. Rep. 241, AI Center, SRI International (Menlo Park 1981).
Noguchi, K., Umano, M., Mizumoto, M., and Tanaka, K., "Implementation of Fuzzy Artificial Intelligence Language FLOU", *Technical Report on Automation and Language of IECE* (1976).
Partee, B. (ed.), *Montague Grammar* (New York 1976).
Putnam, H., "The Meaning of 'Meaning'", in: K. Gunderson (ed.), *Language, Mind and Knowledge* (Minneapolis 1975).
Rescher, N., *Theory of Possibility* (Pittsburgh 1975).
Rieger, B., "Fuzzy Feasible Semantics", in: A. J. Eißmeyer and H. Rieser (ed.), *Works, Worlds, and Contexts* (Berlin 1981).
Schank, R. C. (ed.), *Conceptual Information Processing* (Amsterdam 1975).
Schubert, L. K., "Extending The Expressive Power of Semantic Networks", *Artifical Intelligence*, Vol. 2 (1972), pp. 163—198.
Searle, J. (ed.), *The Philosophy of Language* (Oxford 1971).
Sugeno, M., "Fuzzy Measures and Fuzzy Integrals: A Survey", in: M. M. Gupta, G. N. Saridis and B. R. Gaines (eds.), *Fuzzy Automata and Decision Processes* (Amsterdam 1977), pp. 89—102.
Suppes, P., "Elimination of Quantifiers in the Semantics of Natural Languages by Use of Extended Relation Algebras", *Revue Internationale de Philosophie* (1976), pp. 117—118, 243—259.
Tarski, A., *Logic, Semantics, Metamathematics* (Oxford 1956).
van Fraassen, B. C., *Formal Semantics and Logic* (New York 1971).
Wenstop, F., "Deductive Verbal Models of Organizations", *Int. J. Man-Machine Studies*, Vol. 8 (1976), pp. 293—311.
Zadeh, L. A., "Quantitative Fuzzy Semantics", *Information Sciences*, Vol. 3 (1971), pp. 159—176.
Zadeh, L. A., "A Fuzzy-Set-Theoretic Interpretation of Linguistic Hedges", *Jour. Cybernetics*, Vol. 2 (1972), pp. 4—34.
Zadeh, L. A., "Fuzzy Logic and Approximate Reasoning (in memory of Grigore Moisil)", *Synthese*, Vol. 30 (1975a), pp. 407—428.
Zadeh, L. A., "The Concept of a Linguistic Variable and its Application to Approximate Reasoning", Part I, *Inf. Sci.*, Vol. 8 (1975b), pp. 199—249; Part II, *Inf. Sci.*, Vol. 8 (1975), pp. 301—357; Part III, *Inf. Sci.*, Vol. 9 (1975), pp. 43—80.
Zadeh, L. A., "Fuzzy Sets as a Basis for a Theory of Possibility", *Fuzzy Sets and Systems*, Vol. 1 (1978a), pp. 3—28.
Zadeh, L. A., "PRUF—a Meaning Representation Language for Natural Languages", *Int. J. Man-Machine Studies*, Vol. 10 (1978b), pp. 395—460.
Zadeh, L. A., "Possibility Theory and Soft Data Analysis", in: L. Cobb and R. M. Thrall (eds.), *Mathematical Frontiers of the Social and Policy Sciences* (Boulder 1981a), pp. 69.
Zadeh, L. A., "Test-Score Semantics for Natural Languages and Meaning-Representation Via PRUF", Tech. Report 247, AI Center, SRI International (Menlo Park 1981b).

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FIKTIVE GEGENSTÄNDE

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(1) *Worüber zu reden ist*: Fiktionen scheinen in zweierlei Hinsicht von philosophischem Interesse: einerseits als Hervorbringungen des menschlichen Geistes, als Produkte der Vorstellung und Phantasie, andererseits und in Abhebung von wirklichen Gegenständen und im Kontrast zu diesen als Gegenstände, deren logischer und ontologischer Status weniger klar ist als ihr Vorhandensein. So sind auch die Fragen, die ich hier aufwerfe, nur naheliegend: Was sind fiktive Gegenstände? Wodurch unterscheiden sie sich von anderen Gegenständen? Und wie entstehen sie? Für jede dieser Fragen muß freilich geduldig die Existenzvoraussetzung als erfüllt angenommen werden, soll man sie überhaupt sinnvoll stellen, formulieren können. So wird auch das Problem der Existenzvoraussetzung — neben dem semantisch-begrifflichen — mit zu behandeln sein.[1] Natürlich wird jede dieser Fragen nur kurz berührt und keine kann im gebotenen Rahmen beantwortet werden.

Akzeptiert man das programmatische Wort, daß es keine Entität, also kein Seiendes gibt ohne eine Identität, so sind die Fragen nach den jeweiligen Bedingungen der Identität die vorherrschendsten.

Manchmal, so möchte ich glauben, ist es freilich von Nutzen, von vorne zu beginnen. Und dann sieht man sogleich, was die Eingeweihten immer gewußt haben, daß die Probleme, die wir hier behandeln, zu den schwierigsten gehören, die sich bei ontologischen Betrachtungen, d.h. bei Betrachtung dessen, was es gibt, und dessen, was es nicht gibt, ergeben.

Und obschon sie schwierig sind, sind sie hauptsächlich nur von philosophischem Interesse, ja ich möchte sagen, es sind typisch philosophische Fragen.

(2) *Eine historische Zwischenbemerkung*: Zweimal rücken unsere Fragen in diesem Jahrhundert aus der Peripherie in das Zentrum des Interesses, und beide Male scheint der Name *Meinong* mit ihnen auf. Sicher, keineswegs als der einzige, denn an der Jahrhundertwende sind Brentano, Twardowski und Husserl an ihrer Untersuchung ebenso beteiligt wie Frege und Russell, oder Vaihinger. Und doch wird man nicht leugnen können, daß es vornehmlich Meinong war, der das bereits von Bolzano, Brentano und Twardowski behandelte Thema der unmöglichen Gegenstände in eine umfassende Theorie einbrachte, die diesen Gegenständen auch den ihnen zukommenden ontologischen Status zuwies. Ein Gegenstand wie *das runde Viereck* oder — um ein Beispiel von Dostojewski zu nehmen — ein *Kolumbus ohne Amerika* ist unmöglich, weil die ihm inhärente Widersprüchlichkeit seine Existenzmöglichkeit aufhebt. Solchen Gegenständen spricht man im allgemeinen leichtfertig darum gerne ab, überhaupt Gegenstände zu sein. Aber ein Blick auf unsere psychischen Akte und Tätigkeiten macht deutlich, daß wir dieser Gegenstände nicht so leicht entraten können: Wir denken über sie nach; wir urteilen über sie, wir verneinen ihre Existenz u.dgl.m. Also muß es sie nach Meinong in einem Sinne geben, der jenseits von Sein und Nichtsein liegt. Und er schreibt ihnen provisorisch den ontologischen Zustand des Außer-Seins zu.

Ich habe dies hier nur zur Erläuterung der Behauptung angeführt, daß Meinongs Position wesentlich mit den Problemen, die uns hier interessieren, verbunden und verflochten ist.

Und dies trifft auch für die zweite Periode zu, die in der Zwischenzeit ja dazu geführt hat, daß der Terminus „Meinongische Semantik“ nicht nur in den „Grazer Philosophischen Studien“ gebraucht wird, sondern eine Art Semantik zu betreiben überhaupt bezeichnet. Von den philosophischen Logikern, die dieser Tradition verbunden sind, erwähne ich hier nur Richard Routley und Terence Parsons, die in durchaus verschiedener Weise wesentliche Beiträge zu einer Meinongschen Semantik geliefert haben, der erstere ohne die Beziehung von Beschreibung und Gegenstand referentiell zu interpretieren, der letztere benützt eine

solche referentielle Interpretation. Und natürlich sehen sich auch alle Formen der Möglichen-Welten-Semantik mit Meinongs Vorschlag einer existenzfreien Ontologie konfrontiert.

(3) *Ein Zugang*: Es scheint mir naheliegend, von einer propositionellen Einstellung auszugehen, die jedenfalls zuläßt, von Dingen zu reden, die es nicht gibt und die zum allergrößten Teil ihr Vorhandensein nur der Tatsache verdanken, daß wir ihre Beschreibungen hervorbringen, sei es als Beschreibungen unserer Vorstellungen und Gedanken, sei es als solche unserer Wünsche und Hoffnungen, sei es als solche unserer Furcht und Angst. Diese propositionelle Einstellung ist die des Annehmens, deren eigenständige Stellung zwischen Vorstellen und Urteilen gleichenfalls Meinong als erster zu erweisen sich anschickte und darzulegen getrachtet hat.[2] Die Pointe des Annehmens liegt nun darin, daß unseren Annahmen keine Grenze gesetzt ist: Wir können jetzt annehmen, daß es nicht jetzt ist, wir können annehmen, daß das wahr ist, was wir vermuten oder für wahrscheinlich erachten, wir können annehmen, daß wir wissen, daß p, obschon wir wissen, daß non-p. Wir können auch annehmen, daß es etwas gibt, was es gar nicht geben kann, so wie wir annehmen können, daß ein sich widersprechendes Urteil wahr ist. In der Ontologie fiktiver Gegenstände und der zugehörigen Semantik müssen sonach weder Identität noch Wahrheit aufgegeben werden. Aber wir müssen zugeben, daß der Preis des Eintritts in dieses Reich nicht durch eine Trennung von Erkenntnistheorie und Metaphysik zahlbar ist: Wir brauchen Annahmen, um die Gegenstände, die nicht existieren, erfassen zu können. Im Fall der Namen und Beschreibungen von „Niemandem" müssen wir wissen, was angemessener Weise der Fall sein müßte, wenn ein Satz, in dem der Name oder die Beschreibung vorkommt, wahr ist. Doch das, was der Fall sein müßte, mag ein existierender, ein möglicher, aber auch ein unmöglicher Sachverhalt sein.

Etwas deutlicher und in Form von Beispielen gezeigt:

Wenn Faust Gretchen verführt, so nehmen wir an, daß, wenn Faust Gretchen verführt, dann schläft er mit ihr. Das heißt: wenn es Faust gäbe und wenn es Gretchen gäbe und wenn Faust Gretchen verführte, dann wäre es auch wahr, daß er mit ihr schläft.

Und wenn Raskolnikow beschließt, die Wucherin zu ermorden, dann nehmen wir an, daß — wenn es *ihn* gibt, es auch *sie* geben muß, soll Raskolnikow nicht an Halluzinationen leiden und eine nicht-vorhandene Wucherin ermorden wollen; zumal er die Wucherin ja *tatsächlich* ermordet. Und „tatsächlich" heißt hier u.a. — nicht nur in der Welt seiner Wünsche, Phantasien u.dgl.m. ermordet, sondern eben in jenem Sinne, in dem man nur dadurch zum Mörder wird, daß man jemanden absichtlich umbringt, wirklich tötet.

Und wenn ich annehme, daß es ein rundes Viereck gibt, dann ist es wahr, daß das Viereck, das ich annehme, ein *Viereck ist*, das *rund* ist und nicht bloß viereckig.

Das Prinzip der unbeschränkten Annahmefreiheit, das Meinong in seinem bahnbrechenden Werk aufgestellt hat, besagt nicht weniger, als daß es in bezug auf Gegenstände für das Annehmen keine Beschränkung gibt: Alles und jedes kann angenommen werden. Annehmen aber heißt hier: urteilen ohne jegliche Glaubensüberzeugung, oder das Setzen eines Falles, unabhängig von erkenntnismäßigen, bzw. meinungsmäßigen Einstellungen. Mit anderen Worten, da dem Annehmen keine Grenzen gesetzt sind, scheint es angebracht, die suspekten Gegenstände, wie z.B. impossibilia, als Gegenstände tatsächlicher Annahmen aufzufassen.

(4) *Fiktionen — was sie sind*: Fragen wir uns nun — zum nächsten unserer Punkte übergehend — was die Gegenstände solcher Einstellungen sind, so braucht hier nicht weiter argumentiert zu werden, daß wir als solche urteilsartige Satzklauseln oder Propositionen ansehen, deren Komplexität zwar über ihre Konstituentien hinausgeht, die aber dennoch rechtens als Gegenstände aufzufassen sind; wie Meinong sie zu nennen pflegt, freilich als *Gegenstände höherer Ordnung*. Dieser Terminus besagt nichts anderes, als daß die Gegenstände in verschiedener Weise geordnet werden können, wobei in Schichten geordnete Gegenstände jeweils durch die niedrigeren *fundiert* werden, soweit als nicht infima, nicht weiter zurückführbare Gegenstände, unserem durch Sparsamkeit nahegelegtem Ruhebedürfnis ein natürliches Ende bereiten.

Gegenstände können sonach einfach sein oder komplex. Und sie können ihrer Art ent-

sprechend entweder existieren oder nicht existieren, bestehen oder nicht bestehen, wirklich sein oder nicht wirklich sein, möglich oder nicht möglich, widerspruchsfrei oder in sich widerspruchsvoll sein, und welche Modalitäten und Attribute wir an ihnen noch ausprobieren wollen.

Es ist ganz klar, daß erfundene Gegenstände, d.h. solche Gegenstände, die ihr Vorhandensein einer Tätigkeit des menschlichen Geistes verdanken, von solchen unterschieden werden, die uns natürlich gegeben sind: Die Blume von der *blauen Blume*, das Pferd von *Rosinante*; aber natürlich auch von *Pegasus*. Den Reiter von *Don Quichotte*, aber natürlich auch vom *blauen Reiter* und vom *Schimmelreiter*. Das alles sind ungenaue Hinweise. Denn alle Blumen und nur die Blumen fallen unter den Begriff „Blume" und alle Pferde und nur die Pferde fallen unter den Begriff „Pferd". Aber nicht jedes Pferd, das „Rosinante" heißt, ist das Pferd Don Quichottes, sondern nur jenes, von dem Cervantes uns berichtet und das im ersten Teil des Romans „Don Quichotte" beschrieben wird. Es ist ein wirkliches Pferd, auf dem Don Quichotte reitet, und das doch nur in jenen Zügen uns bekannt ist, die in dem *Roman* tatsächlich vorkommen, bzw. impliziert sind. Es ist so wirklich wie das Pferd, auf dem Kaiser Maximilian, der letzte Ritter, geritten ist, oder jenes, von dem der Prince of Wales heruntergefallen ist. Aber während das Weltstück, in dem Kaiser Maximilian I. auf seinem Pferde ritt, mit wirklichen Augen wirklich zu sehen war, samt dem Kaiser und seinem Pferd, ist das Weltstück, wo man Don Quichotte einherreiten sieht, genaugenommen nur dem Zusammenhang der erzählten Ereignisse zu entnehmen, weshalb man ja auch sagt, daß das Pferd „Rosinante" nur in der Erzählersituation wirklich ist, tatsächlich aber nicht existierte. Aber wenn es kein wirkliches Pferd wäre, könnte Don Quichotte nicht auf ihm reiten, und Sancho Pansa könnte es nicht sehen. Wenn es aber wirklich ist und nicht existiert, muß es als wirklich angenommen sein, soll es sich um eine res extensa handeln. In *dieser* Hinsicht unterscheidet sich der Bericht über Rosinante nicht von dem Bericht über einen räumlich-zeitlich identifizierbaren Gegenstand, der aufgehört hat zu existieren.

Aus dem wenigen geht hervor, daß fiktive Gegenstände erstens unvollständige Gegenstände sind, zweitens erfundene Gegenstände sind, die nur kraft der Tätigkeit des menschlichen Geistes vorhanden sind, und drittens nur in dem Zusammenhange existieren, in den die Annahme sie stellt. Aber wenn wir sie betrachten, uns von ihnen ein Bild machen, wenn wir unsere gefühlsmäßigen und intellektuellen Reaktionen auf ihr Vorhandensein erwägen, dann scheinen die soeben gegebenen Charakterisierungen nicht auszureichen. Sie machen uns vergessen, daß fiktive Gegenstände selbst dann einen Bezug zur realen Welt natürlicher Ereignisse haben, wenn sie ihre Existenz innerhalb einer Geschichte oder Theorie einzig der menschlichen Erfindungskraft verdanken. Ihre Namen beziehen sich nicht nur auf Charaktere, sondern auch auf tatsächliche Ereignisse in unserer Welt, gesehen durch das individuelle Temperament etwa eines Künstlers, genauso wie theoretische Begriffe intendiert sind, im Netzwerk der Theorie sich auf die reale Welt zu beziehen, auch wenn der Gegenstand, für den sie stehen, in dieser Welt nicht existiert.

Darum glaube ich, daß der häufig anzutreffende Versuch, fiktionale Gegenstände bloß als Gegenstände *innerhalb* eines Beschreibungsrahmens zu konstituieren, nicht ausreicht für eine Theorie dieser Klasse unvollständiger Gegenstände. Terence Parsons, zum Beispiel, unterscheidet zwei Arten von Gegenständen einer Geschichte (oder eines Romans u.dgl.m.).[3] In bezug auf die Conan-Doyle-Folgen stellt Sherlock Holmes ein Beispiel für einen *ursprünglichen Gegenstand* („native object") der Geschichte dar, während die Stadt London ein Immigrant dieser Geschichte ist. D.h. die Unterscheidung ist insoferne primitiv, als die Tatsache, ob der Erfinder der Geschichte den Gegenstand *kreiert* hat oder nicht, darüber entscheidet, ob der Gegenstand als ursprünglich zur Geschichte gehörig oder als in die Geschichte importiert angesehen werden soll. Da die letzteren angeblich kein ontologisches Problem darstellen, bliebe nur die Frage zu klären, ob die ursprünglich zur Geschichte gehörigen Gegenstände einen eigenen ontologischen Status haben oder nicht. Und die Antwort auf diese Frage ist positiv, denn die nicht-existente Figur des Detektivs aus der Bakerstreet 221 B *hat* — entsprechend der Conan Doyle Geschichte — eben jene Charakteristika, die ihr der Autor zuschreibt.

Das ist im großen und ganzen richtig: unvollständige Gegenstände sind so weit und nur so weit bestimmt, wie ihre proponierte, überlieferte oder kreierte Beschreibung reicht. Insoferne können wir der Explikation des In-einem-Rahmen (in-der-Geschichte-) Vorkommens durchaus zustimmen.

> „x kommt im Rahmen [in der Geschichte etc.] R dann und nur dann vor, wenn es eine Characteristik, d.h. eine Eigenschaft E oder ein Bündel von Eigenschaften $E_1, \ldots, E_n$ gibt, so daß gilt: x hat — entsprechend R — die Eigenschaften E (die Eigenschaften $E_1, \ldots, E_n$).

Natürlich sind dann *alle* Gegenstände, die in einem Rahmen vorkommen, Gegenstände *in bezug* auf diesen Rahmen — und *nicht* nur die ursprünglichen. Es leuchtet überhaupt nicht ein, warum zum Beispiel ein Mädchen mit dem Namen „Fettfleck" in einer Geschichte mit dem Namen FETTFLECK[4] ein *ursprünglicher Gegenstand* sein soll, während ein Ort, der zufälligerweise uns bekannt ist, als ein Importprodukt ausgegeben wird. Vielleicht ist der Name „Fettfleck" nur ein Pseudonym für eine mimetisch abgebildete Figur? Oder ist „Wallenstein" ein in Schillers Drama WALLENSTEIN importierter Gegenstand, genauso wie Friedlands Sterne?

Es scheint mir viel naheliegender, den Gedanken von Stufen oder Schichten auf dieses Problem anzuwenden, um einen ausbaufähigen Apparat zur Verfügung zu haben, der uns über eine zu primitive Zwei-Klassengesellschaft von Gegenständen hinausführt. Fassen wir nämlich einen Rahmen oder eine Geschichte als einen Gegenstand höherer Ordnung auf, so leuchtet ein, daß der Komplex aus verschiedenen Elementen und Teilen zusammengesetzt ist. Einige Gegenstände sind Individuen, andere Charaktere, einige Eigenschaften.

Heben wir auf einem solchen Hintergrund die unvollständigen von den vollständigen Gegenständen ab, so bildet die vollständige Bestimmtheit aller Eigenschaften und Beziehungen der letzteren das tertium comparationis. Jeder existierende Gegenstand ist nach Meinong vollständig bestimmt, genauer: zu jedem Zeitpunkt einer Ereigniskette vollständig bestimmt. Und ich glaube, daß dies ein besseres Kriterium ist, als ein Hinweis auf die sogenannte Realität, die eben in nichts anderem bestehen kann als gerade darin, daß sie so ist, wie sie ist. Dies enthebt uns auch aller Abgrenzungsversuche mittels Beobachtungsprädikaten, zumal ja auch solche auf quasi-reale Gegenstände angewendet werden können.

Es scheint mir interessant zu sein, daß Vaihinger in seiner „Die Philosophie des Als Ob",[5] „die eigentliche(n) Fiktionen im strengsten Sinne des Wortes" in jenen Gebilden (Vorstellungsgebilden) verwirklicht sieht, die nicht bloß der Wirklichkeit widersprechen, sondern auch in sich selbst widerspruchsvoll sind, während er jene, die bloß von der gegebenen Realität abweichen, bzw. ihr widersprechen und in diesem Sinne kontrafaktisch sind, von ihm als „Halbfiktionen" oder „Semifiktionen" bezeichnet werden. Sonach ist die Annahme jener Gegenstände, deren Existenz möglich ist, nach Vaihinger, immer nur semifiktional. Das erinnert uns zum Schluß dieser kurzen Überlegungen noch einmal daran, daß Fiktionen sicher nicht nur durch ihre Kontrafaktizität bestimmt werden können, und darüber hinaus auch daran, daß fiktive Gegenstände von Geschichten bzw. der Literatur nicht nur auf die Dichtung im weitesten Sinne des Wortes und auf die Unterhaltungsliteratur als Rahmen beschränkt bleiben, sondern in allen Bereichen intentionaler Einstellungen anzutreffen sind. Kurz, in jeder Art von Rede, also auch in der wissenschaftlichen, kann man sich auf diese beziehen.

Wenn dem so ist, dann scheint es berechtigt und nötig, jeweils den Rahmen anzuführen, innerhalb dessen auf Gegenstände Bezug genommen wird, sei dieser Rahmen eine Fabel, eine Erzählung, ein Gedicht oder eben eine Hypothese oder Theorie. Natürlich wird dann erst recht belangvoll, die Unterschiede zwischen theoretischen Gegenständen und fiktiven Gegenständen etwa in Dichtungen herauszuschälen, die wir ja auch intuitiv dem Rahmen zuschreiben. Aber das ist ein Punkt, den ich hier — indem ich schließe — nicht weiter berühren werde.[6]

Worauf ich hauptsächlich hinweisen wollte mit meinen Fragen war:

> Erstens, daß es fiktive Gegenstände gibt. Daß sie, zweitens, eine Unterklasse fiktionaler Gegenstände bilden.

Drittens, daß wir uns in unseren propositionellen Einstellungen, insbesondere der des Annehmens, auf solche Gegenstände beziehen.
Viertens, daß sie zwar innerhalb eines Rahmens gegeben werden, aber auch außerhalb eines solchen bestehen können.
Fünftens, nicht einfach in ursprüngliche und importierte zu gliedern sind, sondern
sechstens, in einheitliche Komplexe von Gegenständen höherer Ordnung, und daß solche wie ihre Bestandteile
siebentens, nicht nur in Geschichten vorkommen, sondern, daß in diesem Sinne alle (fiktiven) Gegenstände in Geschichten verstrickt sind.

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ANMERKUNGEN

1 Vgl. im folgenden: R. Haller, Über Voraussetzungen, in: K. Weinke (Hrsg.), Logik, Ethik und Sprache: Festschrift für R. Freundlich (Wien/München 1981); sowie R. Haller, Reflexion und Fiktion: Ein Fragment, in: Manuskripte: Festschrift für A. Kolleritsch (Graz 1981).

2 Vgl. A. Meinong, Über Annahmen (Leipzig ^{2}1910), wiederabgedruckt in: Meinong Gesamtausgabe Bd. 4, bearbeitet von R. Haller, hrsg. von R. Haller und R. Kindinger gemeinsam mit R. Chisholm (Graz 1977); siehe auch R. Haller, Über Annahmen, in: R. Haller (Hrsg.), Jenseits von Sein und Nichtsein (Graz 1972); sowie R. M. Chisholm, Homeless Objects, in: Revue Internationale de Philosophie Bd. 27 (1973, wiederabgedruckt in: R. M. Chisholm, Brentano-Meinong Studies (= Studien zur Österreichischen Philosophie, Bd. 3); R. Routley, Exploring Meinong's Jungle and Beyond (Canberra 1980), S. 530 u.ö.

3 Vgl. T. Parsons, A Meinongian Analysis of Fictional Objects, in: Grazer Philosophische Studien Bd. 1 (1975), sowie T. Parsons, Nonexistent Objects (New Haven/London 1980), S. 51 ff.

4 Vgl. D. Kempff, Fettfleck (Roman) (Salzburg 1979).

5 Vgl. H. Vaihinger, Die Philosophie des Als Ob: System der theoretischen, praktischen und religiösen Fiktionen der Menschheit auf Grund eines idealistischen Positivismus (Berlin 1911), S. 24.

6 Vgl. R. Haller, Theories, Fables, and Parables, in: R. Haller (Hrsg.), Science and Ethics (Amsterdam 1981).

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DIVIDUENSEMANTIK

Klaus Mudersbach

Eines der Probleme der Semantik natürlicher Sprachen, bei denen die Mögliche-Welt-Semantik auf bislang unüberwindliche Schwierigkeiten gestoßen ist, ist das Ersetzungsproblem bei epistemischen Ausdrücken wie „glauben" und „wissen". Diese Schwierigkeiten hängen mit Idealisierungen der logischen Semantik zusammen,[1] die von der Vorstellung des allwissenden Logikers ausgehen, der Sprache und Ontologie so konstruiert, daß er sie vollständig kennt. Im Gegensatz dazu weiß ein Sprecher mit seinen Glaubensinhalten nicht alles über die Sprache, die er spricht, über die Objekte, die er kennt, und über logische und empirische Gesetze und deren Konsequenzen für seine Glaubensinhalte. Um dieser Unvollkommenheit gerecht zu werden, werden in der sogenannten *Kommunikantensemantik*[2] *Objektbereich*, *Eigensprache* und *Eigengesetze* aus der Sicht des jeweiligen Sprechers bzw. Glaubenden (*Kommunikanten*) eingeführt (*epistemistische Sicht*), ohne eine vorrangige objektive oder allgemeinverbindliche Sicht vorauszusetzen. — Was die Ontologie betrifft, so sollen die Objekte eines Kommunikanten nur dadurch voneinander unterscheidbar sein, wodurch sie sich für den betreffenden Kommunikanten unterscheiden. Sie sollen daher nur die Eigenschaften haben, die der Kommunikant von ihnen kennt, auch wenn diese versteckt widersprüchlich sein sollten. Solche Objekte existieren für den jeweiligen Kommunikanten ohne Bezug auf eine objektive Existenz.

Diese Grundforderungen führen dazu, in der formalen ontologischen Basis nicht Individuen zugrundezulegen, sondern sogenannte *Dividuen*, bzw. deren Eigenschaften, die *Attribute* genannt werden. Das soll nun in der DIVIDUEN-ONTOLOGIE und DIVIDUEN-SEMANTIK präzisiert werden.

DIVIDUEN-ONTOLOGIE. Wir betrachten einen Sprachbenutzer, hier *Kommunikant* genannt, abgekürzt durch K. Dem Kommunikanten K ist eine endliche nicht-leere Menge B^K zugeordnet: die Menge der *Grundattribute* des K. Dies sind die Bedeutungen der inhaltlichen *Grundausdrücke* der *K-Eigensprache* S^K, die jedem Kommunikanten K zugeordnet wird. Sie ist im Prinzip so aufgebaut, wie bei Montague,[3] nämlich aus 3 Teilen: 1.) aus einer natürlichen Sprache NS^K (bestehend aus Grundausdrücken bestimmter Kategorien und Syntaxregeln zur Verknüpfung der Grundausdrücke); 2.) aus einer formalen Sprache, die zur Darstellung der Bedeutungen der natürlichen Sprache dient (sie heißt in diesem Fall *Attributensprache*), AS^K; und 3.) einer Übersetzungsbeziehung zwischen der natürlichen Sprache und der Attributensprache. Die Bedeutungssprache, also die Attributensprache, wird ihrerseits durch eine *Extensionalisierungsfunktion* Ext interpretiert über einem *K-Objektbereich* O^K, der die Informationen enthält, die der Kommunikant über seine Objekte hat. Wie oben schon gesagt, sind die Bedeutungen der Grundausdrücke der K-Eigensprache gerade die Menge der Grundattribute B^K. Das entspricht der Übersetzungsvorschrift bei Montague, nach der die Grundausdrücke der natürlichen Sprache in Konstante der Bedeutungssprache übersetzt werden. Sie werden also als nicht-zerlegbare Bedeutungsatome aufgefaßt. Die Bedeutungsbeschreibung hat daher durch Bedeutungspostulate zu erfolgen, nicht durch Zerlegung in semantische Komponenten oder Marker. — Zu jedem Grundattribut wird außerdem die Anzahl der Argumentstellen angegeben, ohne daß dadurch das Grundattribut zu einem *ungesättigten* Ausdruck, wie z.B. bei Prädikatsausdrücken, wird, d.h. die Rolle der Argumentanzahl ist nicht dieselbe wie bei einer Relation oder Funktion, sondern ist eher als eine Art Zusatzinformation anzusehen, welche Rollen Objekte hinsichtlich des Attributs spielen können (aber nicht unbedingt spielen müssen). Im folgenden

sollen jedoch der Einfachheit halber nur einstellige (d.h. mit *einer* Rolle versehene Attribute, also Eigenschaften im herkömmlichen Sinn) betrachtet werden.

Die *Ontologie*, d.h. der Bereich, über dem die Ausdrücke der Attributensprache bzw. die der natürlichen Sprache interpretiert werden, hat als Grundlage nicht eine Menge von Individuen, sondern die Menge der Grundattribute. Das heißt, die Menge der Grundattribute spielt für den Kommunikanten die Doppelrolle, daß sie sowohl die Basis seines Ojektbereichs als auch die Basis seiner Eigensprache ist. Aus der Menge der Grundattribute sind also die *Objekte* des Kommunikanten K aufgebaut: jedes Objekt ist eine Teilmenge d von B^K. Eine solche Teilmenge stellt die Information dar, die K über ein Objekt hat. Sie soll *Dividuum* genannt werden. Als Objekt kann jede Einheit angesehen werden, über die der Sprecher Informationen hat. Sprachlich zeigt sich das daran, daß der Sprecher über diese Objekte, sei es einzeln, sei es kollektiv, etwas sagen kann, indem er einen Referenzterm verwendet. Bei dieser Sicht spielt es also keine Rolle, ob die Objekte in irgendeinem aktualen Sinn existieren, ob sie fiktiv sind oder empirisch unmöglich sind (wie der goldene Berg) oder ob sie widersprüchlich sind (wie das runde Quadrat), also sogenannte Meinongsche Objekte.

Eine Rehabilitation der Meinongschen Objekte, sozusagen zugunsten des Nicht-aktualen, hat T. Parsons in mehreren Artikeln und in seinem jetzt erschienenen Buch „Non-existent Objects" unternommen. Bei Parsons wird ebenfalls einem Objekt die Menge seiner Eigenschaften zugeordnet. Parsons hält aber an *beiden* fest: dem Objekt und der dazugehörigen Menge der Eigenschaften. Außerdem an der dichotomischen Trennung zwischen existierenden und nicht-existierenden Objekten. Im folgenden wird dagegen ein Objekt *nur* als Menge von Eigenschaften aufgefaßt, ohne Differenzierung von existierend bzw. nicht-existierend.

Ein Beispiel: Angenommen die Menge B^K sei $\{b_1, \ldots, b_{20}\}$.

Der Objektbereich bestehe aus drei Dividuen:
$\{b_1, \ldots, b_5\}$, $\{b_2, \ldots, b_6\}$, $\{b_6, \ldots, b_{10}\}$. An diesem Beispiel kann man das Charakteristische der Dividuen-Ontologie veranschaulichen: 1.) Dividuen sind, im Gegensatz zu Individuen, nicht präfabriziert, d.h. als atomare Einheiten vorgegeben. Dividuen bestehen aus Attributen. Sie können verändert werden durch die Mitteilung einer neuen Eigenschaft oder die Eliminierung einer vorhandenen Eigenschaft. Die Frage nach der Vollständigkeit, nämlich ob z.B. die Menge $\{b_1, \ldots, b_5\}$ *alle* Eigenschaften eines Objekts enthält, läßt sich überhaupt nicht sinnvoll stellen; 2.) in den Dividuen sind keine negativen Attribute enthalten. Negative Attribute sind in der Ontologie überhaupt nicht formulierbar. Negativ formulierte Eigenschaften treten erst in der Sprache unter bestimmten Bedingungen auf, auf die ich hier nicht eingehen kann. Es ist also unmöglich, daß ein Dividuum ein Attribut und dessen Negation enthält. Dividuen sind daher nie widersprüchlich. Ebenso sind empirische Unmöglichkeiten nicht unterscheidbar an den Attributen selbst, sondern erst durch die Erfahrungsgesetze, die, ähnlich wie die Bedeutungsbeziehungen, die Attribute miteinander in Beziehung setzen. Diese Gesetze gehören jedoch zu einem anderen Bereich und haben keinen direkten Einfluß auf die Dividuen.

DIVIDUEN-SEMANTIK. Welche Extension haben Referenzterme bzw. Sätze der Eigensprache eines Kommunikanten in bezug auf den dazugehörigen Objektbereich: Das Verhältnis von Eigensprache zu Objektbereich ist, wie gesagt, ähnlich dem bei Richard Montague, PTQ. Ich gehe daher nur auf die Unterschiede ein, insoweit sie für das Thema relevant sind. Die Ausdrücke der Eigensprache NS^K werden in die der Attributensprache AS^K übersetzt; so z.B. der Beispielsatz: „die Linde stirbt" in eine Formel $\ll 1, \textit{Linde}>, \textit{sterben}>$. Hier zeigt sich ein wichtiger Unterschied zur intensionalen Sprache Montagues: in der Attributensprache treten keine Variablen für Individuen auf. Die Interpretation dieses Ausdrucks ergibt die dazugehörige Extension, nämlich: $<1, \textit{Linde}>$ wird extensionalisiert über dem Objektbereich des K, indem dasjenige oder diejenigen Dividuen gesucht werden, die das Attribut *Linde* enthalten. Dies ergibt eine Menge von Dividuen, von Linden-Dividuen. Der 1-Quantor

wird nun als die Zusatzvorschrift interpretiert: daß diese Menge der Lindendividuen eine Einermenge sein muß, d.h. daß auf genau ein Dividuum zutrifft, daß es *Linde* enthält. Für das Beispiel nehmen wir nun an: der Objektbereich enthält genau ein Lindendividuum als Extension von ,,die Linde". Dann ist die Extension des Satzes $\ll 1$, *Linde*$>$, *sterben*$>$ der Sachverhalt $<$D, *sterben*$>$ ($\hat{=}$ daß die Linde stirbt); d.h. das Lindendividuum soll auch das Attribut *sterben* enthalten. Wenn das der Fall ist, dann ist der Satz *wahr für den Kommunikanten K* (Wahrheit im absoluten Sinn gibt es nicht). Man sieht an dieser Extensionsvorschrift, daß es nicht nötig ist, dem Attribut *sterben* die Menge aller sterbenden *Individuen* zuzuordnen. Attribute werden für sich genommen nicht extensionalisiert! Nur Referenzterme werden durch eine Menge von Dividuen (die das entsprechende Attribut enthalten) extensionalisiert.

Das *Verhältnis der Dividuen-Semantik* (*DIVS*) *zur Individuen-Semantik* (*INDS*), wie sie der Prädikatenlogik zugrundeliegt, läßt sich kurz so charakterisieren:

a) einem *singulären Referenzterm* wird zugeordnet:
INDS: ein Individuum (als Element der ontologischen Basismenge der Individuen)
DIVS: eine Menge von Attributen,

b) einem *Eigenschaftsausdruck* wird zugeordnet:
INDS: eine Menge von Individuen
DIVS: ein Attribut (als Element der ontologischen Basismenge der Attribute).

Rein formal handelt es sich also um eine Umkehrung von Element und Menge im Verhältnis zu Referenz- und Eigenschaftsausdruck. Folgende ontologische und semantische Gründe sprechen für DIVS:

G1. Alle Referenzterme können gleichartig übersetzt und extensionalisiert werden (auch die Eigennamen vgl. G3.). Das entspricht dem Vorgehen Montagues in PTQ.

G2. In der INDS wird ,,rot" genauso interpretiert wie ,,alle roten Dinge". Dieser Basisfehler der extensionalen INDS führt zu Identitätsproblemen (vgl. G5.), die in der DIVS vermieden sind, dadurch daß ,,rot" durch das Attribut zu ,,rot" interpretiert wird.

G3. Eigennamen werden als definite Kennzeichnung mittels einer Namenseigenschaft (z.B. Karl-heißend) aufgefaßt. Das heißt, ,,Karl" wird interpretiert wie ,,der Karl heißende". Damit sind quantifizierte Eigennamen wie ,,alle Karl", ,,einige Karl" usw. auch behandelbar. Eigennamen sind daher keine starren Designatoren. (Kripke hat m.E. die Rolle der logiksprachlichen Individuenkonstanten fälschlicherweise auf natürlichsprachliche Eigennamen übertragen.)

G4. Die Auffassung, daß Individuen ein klares Identitätsverhalten haben, Eigenschaften aber nicht, kehrt sich aus der Sicht eines Kommunikanten gerade um: das Inventar an voneinander gestaltlich unterschiedenen lexikalischen Ausdrücken seiner Eigensprache ist dem Kommunikanten bekannt. Damit sind auch die jeweils 1-1-zugeordneten Bedeutungsatome (Grundattribute) voneinander unterschieden. Dagegen hängt die Frage, welche singulären Referenzterme ein Kommunikant verwendet, davon ab, welchen Ausschnitt seiner Wirklichkeit er hinsichtlich bestimmter Attribute als Einheit ,,sehen" und damit zu individuellen (aber nicht präfabrizierten) Objekten machen kann.

G5. In der INDS liegen zwei Identitätskriterien vor: das *Basiskriterium*, das die Elemente der Basismenge der Individuen dadurch voneinander unterscheidet, daß jedes Individuum durch ein anderes Symbol dargestellt wird (z.B. $I = \{a_1, \ldots, a_n, \ldots\}$), und das Leibnizkriterium, nach dem zwei Individuen gleich sind, wenn sie all ihre Eigenschaftsklassen

gemeinsam haben. Damit diese Überdeterminiertheit nicht zu Widersprüchen führt, müssen beide Kriterien aufeinander abgestimmt sein. Das fällt in der DIVS weg, da das Kriterium der Attributidentität unabhängig ist vom Leibnizkriterium für die Dividuenidentität. (Ein Basiskriterium für Dividuen gibt es nicht.)

G.6 Da ,,rot'' nicht als Eigenschafts*klasse* extensionalisiert wird, fällt auch der Freiheitsgrad verschiedener möglicher ,,rot''-Extensionen weg. Die dazugehörigen verschiedenen Interpretationen (bzw. mögliche Welten) können daher nicht aufgespannt werden. Zur Darstellung der Glaubensinhalte eines Kommunikanten genügt *eine* (unvollständige) Dividuenwelt (Objektbereich). Die erst in der Möglichen-Welt-Semantik aufgekommenen Probleme der Querweltein-Identität bzw. der (nicht-) rigiden Designatoren lösen sich auf.

G7. Die möglichen Welten werden auch nicht zur Darstellung von Modalausdrücken (z.B. ,,unmöglich'', ,,notwendig'') benötigt, da diese Wörter in DIVS als Hinweis darauf interpretiert werden, daß der Kommunikant ein Eigengesetz aktiviert hat, um es auf Dividuen anzuwenden. Eigengesetze werden als ausgezeichnete Attribut-Kombinationen (Gesetzesdividuen) aufgefaßt, die in einer Dividuenwelt nicht erfüllt sein müssen. Daher sind versteckt widersprüchliche oder unmögliche (Meinongsche) Objekte für einen Kommunikanten solange als Dividuen existent, wie er kein entsprechendes Eigengesetz aktiviert und angewandt hat, das ihm die Inkompatibilität evident macht. Beispiele wie ,,das runde Quadrat'', ,,der goldene Berg'' werden unglücklicherweise immer so gewählt, daß die Anwendung des entsprechenden Gesetzes jedermann sofort einleuchtet, so daß er den Schritt der Anwendung übersieht.

Daß dieser Schritt aber wesentlich ist für solche Meinongschen Objekte, zeigen Objekte der Mathematik, die z.B. in Beweisen aus dem Widerspruch (reductio ad absurdum) eingeführt werden. Der Beweis muß ja erst vollzogen werden, um zu zeigen, daß diese Objekte eliminiert werden müssen.

Im Rahmen der Dividuen-Semantik sind trotz der sparsameren ontologischen Mittel (Verzicht auf mögliche Welten) die epistemischen Probleme lösbar bzw. auflösbar, wie an anderer Stelle gezeigt wird.[2]

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1 Vgl. dazu B. Hall Partee, Semantics—Mathematics or Psychology?, in: R. Bäuerle et.al. (Hrsgg.), Semantics from Different Points of View (Berlin/Heidelberg 1979), S. 1 f.

2 Mudersbach, K., Glaubens- und Wissensäußerungen in der Kommunikantensemantik (Habilitationsschrift 1981). Erscheint voraussichtlich 1982 bei de Gruyter (Berlin/New York) unter dem Titel ,,Kommunikation über Glaubensinhalte: Grundlagen der Epistemistischen Linguistik''.

3 Montague, R., PTQ: The Proper Treatment of Quantification in Ordinary English, in: R. H. Thomason (Hrsg.), Formal Philosophy: Selected Papers of R. Montague (New Haven/London 1974), S. 247—270.

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BEMERKUNGEN ÜBER DESIGNATION UND ONTOLOGIE

E. Wüst

Man kann, wie S. A. Kripke dies tut,[1] zwischen *kontingenten* und *essentiellen* Eigenschaften unterscheiden. Essentielle Eigenschaften haben nichts mit Metaphysik zu tun; sie lassen sich *sprachlogisch* explizieren. Es entsprechen ihnen Regeln für den Gebrauch des Identitätssymbols (z.B. *negative Identitätskriterien*). Solche Regeln gelten für *Einzeldinge*, *Substanzen*, *Begriffe*. Für die folgenden Betrachtungen wähle ich den Begriff des *analytischen Schlusses* bzw. *Schlusses a priori* als Grundbegriff. (Ein Schluß heiße „a priori" oder „analytisch", wenn er *unbedingt* gültig ist, d.h. von keiner empirischen Prämisse abhängig ist.) Sei nun beispielsweise F eine essentielle Eigenschaft des Individuums a. Dann ist für ein beliebiges Individuum x (von der gleichen *Art* wie a) der Schluß von $Fa \wedge \neg Fx$ auf $\neg x = a$ analytisch. Dies entspricht einer Regel für die Verwendung von Prädikatoren essentieller Eigenschaften (ich will sie „E-Prädikatoren" nennen): Ist „F" ein E-Prädikator für eine Art von Gegenständen, der a angehört, so ist „F" entweder immer oder nie auf a anzuwenden. Daher ist es sinnlos zu sagen, „a hat zum Zeitpunkt t die Eigenschaft F" bzw. „a hat immer diese Eigenschaft" usw. Man kann z.B. nicht sagen: „$a = b$ gilt zum Zeitpunkt t". Da der Ausdruck „$= b$" ein E-Prädikator ist, gilt der Schluß von $a = b \wedge \neg x = b$ auf $\neg a = x$ a priori (für jedes x). Auch bei Substanzen kann man von essentiellen Eigenschaften sprechen. Ein E-Prädikator ist z.B. der Ausdruck „wasserlöslich". Dieser wird so angewendet, daß der Schluß von „es gibt ein Individuum x, das aus (reiner) Substanz S besteht und wasserlöslich ist" auf „jedes x, das aus S besteht, ist wasserlöslich" a priori ist. Der Gewißheitsgrad der Konklusion ist also größer oder gleich dem Gewißheitsgrad der Prämisse. (Dies wirft auch ein Licht auf das Problem der empirischen *Induktion*.) Ferner ist der Schluß von „S ist wasserlöslich und x ist nicht wasserlöslich" auf „x besteht nicht aus S" a priori. Daß ein Schluß analytisch ist, beruht auf dem *Gebrauch* der involvierten Ausdrücke. Wir *entscheiden* uns dafür — und dies hat nichts mit Willkür zu tun — gewisse Zeichen als E-Prädikatoren zu verwenden (sie also in analoger Weise nach strengen Regeln zu gebrauchen wie logische Konstanten). Der Chemiker legt (aufgrund von Beobachtungen) essentielle Eigenschaften der Substanzen fest, also Regeln der Verwendung von Ausdrücken, indem er Substanzbezeichnungen mit E-Prädikatoren in der Form der Prädikation verbindet (z.B. „Zucker ist wasserlöslich").

Eines der wichtigsten Ergebnisse Kripkes ist die Auffassung, daß es Aussagen gibt, die (erkenntnistheoretisch gesehen) „a posteriori" sind und trotzdem mit „Notwendigkeit" gelten. (Nach Kripke gehört dieser Begriff der Notwendigkeit zur Metaphysik.[2]) Von dieser Art sind z.B. die Aussagen „Morgenstern = Abendstern" und „Zucker ist wasserlöslich". Nach Kripke gibt es Eigenschaften F, so daß für jedes Individuum a gilt: wenn Fa wahr ist, dann gilt Fa mit Notwendigkeit. Gilt nun Fa mit Notwendigkeit, so ist (nach Kripke) F eine *essentielle Eigenschaft* von a. Aber, wir haben bereits gezeigt: Daß eine Aussage oder Formel „mit *Notwendigkeit* gilt", liegt in der *Art ihrer Verwendung*. Um dies einzusehen, muß man nur schauen, wie etwa die Aussage „Zucker ist wasserlöslich" tatsächlich angewendet wird (s. oben). Der Naturwissenschaftler legt (aufgrund von Beobachtungen) Regeln des Gebrauchs für Bezeichnungen naturwissenschaftlicher Entitäten fest. Der Satz „Zucker ist wasserlöslich" ist ein *Regelausdruck*. Und hier haben wir eine interessante Analogie zur *Mathematik*: Wir anerkennen (aufgrund von Rechnungen und Beweisen) Formeln als *Theoreme* und akzeptieren damit Regeln des Gebrauchs mathematischer Zeichen (z.B. Substitutionsregeln für arithmetische Terme). Regeln des Gebrauchs sprachlicher Ausdrücke können als *Denkgesetze* aufgefaßt werden. In diesem Sinne kann man auch *Naturgesetze* als Denkgesetze auffassen. So drücken z.B. Newtons Prinzipien (das Trägheitsgesetz usw.) Regeln des Gebrauchs

theoretischer Terme aus. *Solche Prinzipien werden in der Physik wie Definitionen verwendet*; sie dienen dem analytischen Schließen. — Mit diesem sprachphilosophischen Ansatz einer ,,prozeduralen Semantik"[3] kann das Problem der essentiellen Eigenschaften und damit das der ,,metaphysischen Notwendigkeit" (Kripke) ohne ,,mögliche Welten" u.dergl. einfach und überzeugend gelöst werden. In gleicher Weise ergibt sich auch eine neue Lösung des alten Kantischen Problems: Wie sind ,,synthetische Urteile a priori" möglich?

Kripke hat eine ,,kausale Theorie der Referenz" formuliert.[4] Dabei geht er von Freges Standpunkt aus: Jedes in einem Aussagesatz p vorkommende *gesättigte Zeichen (Designator)* muß eine ,,Bedeutung" haben (ein *Referenzobjekt* besitzen), ansonsten hat p keinen Wahrheitswert. Im Unterschied zu Frege ist Kripke jedoch der Auffassung, daß Namen (proper names) nur eine ,,Bedeutung" aber keinen ,,Sinn" besitzen. Kripke: ,, . . . the function of names is *simply* to refer, and not to describe the objects so named . . ."[5] Kripke geht somit wie Frege von einem *ontologischen Prinzip der Denotation* aus. Der Designator ,,a" muß ein *ontologisch reales Objekt* denotieren, sonst besitzt ,,Fa" keinen Wahrheitswert. Oder anders formuliert: Wenn ,,Fa" einen Wahrheitswert besitzt, dann denotiert ,,a" ein ontologisch reales Objekt. Wir hingegen trennen uns (mit Wittgenstein) von der ontologischen Auffassung der Referenz. Daß ein Zeichen einen Gegenstand denotiert, ist eine *grammatische Feststellung*, die den Gebrauch des Zeichens als Designator charakterisiert und einen Unterschied hervorhebt etwa zum Gebrauch eines Prädikators. Daß der Ausdruck ,,1" die Zahl 1, ,,Fritz" die Person Fritz und ,,Wasser" die Substanz Wasser denotiert, kennzeichnet den spezifischen Gebrauch dieser Ausdrücke. Es ist grammatisch (und damit trivial) richtig, daß ein Personenname eine *Person* und nicht einen Körper denotiert; daß das Zahlzeichen ,,1" die *Zahl 1* und nicht etwa ein Zeichen denotiert; daß der Ausdruck ,,Schwefel" die *Substanz Schwefel* und nicht etwa ein besonderes Schwefelstück denotiert. Man könnte ein *grammatisches Prinzip der Denotation* formulieren: Das Zeichen ,,a" muß grammatisch denotieren, sonst besitzt ,,Fa" keinen Wahrheitswert.

Das Wort ,,bezeichnen" hat einen bestimmten Gebrauch in unserer Sprache. Von diesem leiten sich die Modelle der *referentiellen Semantik* und die tradierten Ontologien her. Man geht von der (,,Oberflächen"-) Grammatik[6] aus und konstruiert (in der Philosophie) *ontologische Modelle* dieser Grammatik. Ein solches Modell ist eine bildhafte Vorstellung von der Art und Weise, wie Zeichen funktionieren. Es führt uns über die Sprache hinaus zur Vorstellung *ontologisch realer Wesenheiten*, aus denen die Welt besteht. Mittels der Zeichen reden wir über diese Entitäten, machen wahre bzw. falsche Aussagen über sie etc. Auf der einen Seite die Welt ontologisch realer Wesen, auf der anderen Seite die sprachlichen Zeichen (Designatoren, Prädikatoren, Sätze etc.) — *Das ist das Bild.* Nun kann es noch verschiedene Auffassungen darüber geben, welche Zeichen *echte Designatoren* sind (,,logical proper names" etc.). Es ergeben sich so verschiedene Formen des *metaphysischen Realismus.* Im Sinne der referentiellen Semantik besteht zwischen (echten) Designatoren und ontologisch realen Objekten die *Beziehung der Referenz.* Diese wird als eine abstrakte oder mentale Relation aufgefaßt, und man wird nun durch das ontologische Bild dazu verführt, Fragen nach der *Natur der Gegenstände* (dem *Wesen* der ontologisch realen Referenzobjekte) zu stellen, ferner Fragen wie: welches sind *echte* Designatoren (logical proper names)? Nach Kripke gehört es zum *Wesen der Katze*, daß sie ein Lebewesen ist; zum *Wesen des Goldes*, daß es die Atomzahl 79 hat; zum *Wesen der Hitze*, daß sie Molekularbewegung *ist.* Aber diese ,,metaphysischen" Aussagen spiegeln nur die Grammatik der Begriffe — d.h. die Verwendung der entsprechenden Zeichen — wider.

Referentielle Semantiken gehen von dem Prinzip aus: (Echte) Designatoren denotieren ontologisch reale Objekte. Die Frage lautet nun: *Welches sind die ontologisch realen Objekte?* Darauf antworten *wir*: Ontologisch reale Objekte werden von Philosophen von altersher nur *postuliert* aber nicht aufgewiesen! So z.B. *Zahlen* (allgemein: *mathematische Objekte*), *mentale Objekte* (,,mentale Akte" wie Denken, Verstehen und Meinen), *menschliche Personen, Körper, Sinnesdaten* usw. Je genauer man den Gebrauch sprachlicher Zeichen betrachtet, desto größer wird die Diskrepanz zwischen dem ontologischen Bild der Referenz und den

Fakten des Sprachgebrauchs. Man wird schließlich zu dem Ergebnis kommen: Obige Entitäten sind nicht ontologisch identifiziert — es liegen dem Gebrauch der entsprechenden Ausdrücke keine *ontologischen Identifikationen* zugrunde. Und ganz allgemein wird man finden: *Es liegt dem Gebrauch keines Zeichens eine ontologische Identifikation zugrunde.* Diese These möchte ich das *Prinzip der ontologischen Unbestimmtheit* nennen. Sie ist Ausdruck einer *philosophischen Sichtweise.* Es sei noch angemerkt, daß durch eine *Definition* die ontologische Unbestimmtheit nicht beseitigt werden kann (die ontologische Unbestimmtheit der Grundbegriffe). Es gibt nur *grammatische Identifikationen.*

Welche Folgen ergeben sich aus dem Prinzip der ontologischen Unbestimmtheit für die Lösung philosophischer Rätsel? Gehen wir von Kripkes Behandlung des *Leib-Seele-Problems* aus! Wenn ,,a'' Designator einer physikalischen (bzw. materiellen) Entität und ,,b'' Designator einer psychischen oder geistigen Entität ist, kann man nach Kripke fragen: Ist a = b oder ¬ a = b? Nun gibt es nach Kripke eine starke Intuition gegen a = b und damit folglich *für* ¬a = b. Es erhebt sich dann die (von Kripke nicht mehr erörterte) *metaphysische Frage*: In welchem Verhältnis stehen a und b zueinander? Wechselwirkung, Parallelismus etc? Hier ist die Domäne der eigentlichen *Metaphysik*. Als Antworten werden uns von altersher intelligente (rationale) *Märchen* aufgetischt. Vom Standpunkt der ontologischen Unbestimmtheit aus betrachtet, gibt es hingegen kein Leib-Seele-Problem. Die metaphysische Fragestellung ist nicht mehr sinnvoll. Kripke geht von der ontologischen Bestimmtheit der Begriffe aus (das ontologische Bild der Referenz) und plädiert unter dieser Voraussetzung für ontologische Diversitätsthesen. Somit gibt es für ihn echte metaphysische Probleme. Dagegen *gibt es vom Standpunkt der ontologischen Unbestimmtheit aus betrachtet keine Probleme der Metaphysik.*

Man kann die Problematik der essentiellen Eigenschaften auch von der Seite der *Begriffe* her betrachten. Dies ändert eigentlich nur die Sprechweise: Statt von Dingen reden wir von Begriffen. Und selbstverständlich ist der Begriff des Begriffs ontologisch unbestimmt: der Ausdruck ,,der Begriff Φ'' denotiert keine ontologisch reale Entität.[7] Da ein solcher Ausdruck grammatisch als Designator fungiert, kann man auch von Eigenschaften — insbesondere essentiellen — der Begriffe sprechen. Z.B. wird durch die Aussage, daß a ein *Paradigma* für den Begriff Φ ist, eine essentielle Eigenschaft von Φ gekennzeichnet. Der Unterschied zu einer gewöhnlichen Subsumtion eines Gegenstands unter den Begriff Φ liegt darin, daß durch eine paradigmatische Anwendung von Φ auf a eine ,,starre'', d.h. analytische Beziehung zwischen Φ und a hergestellt wird.Die Aussage Φa gilt nun mit ,,Notwendigkeit''. Z.B. ist *Schach* ein Paradigma für den Begriff des Spiels und *logisches Folgern* ein Paradigma für den Begriff des Denkens. Alle Aussagen, die mit ,,Notwendigkeit'' gelten, die also das ,,Wesen'' der Dinge auszudrücken scheinen — mithin alle Aussagen, die als *Maßstäbe des Urteilens* angesehen werden können, also eine Praxis des analytischen Schließens charakterisieren — z e i g e n essentielle Eigenschaften der involvierten Begriffe. Man darf dabei das Phänomen des ,,Rollenwechsels'' empirischer Aussagen nicht ausser Betracht lassen: Eine Aussage, die zunächst nur hypothetische Geltung hat, kann später zu einem Maßstab des Urteilens (einem Prinzip analytischen Schließens) erstarren — *die Verwendung der Zeichen ändert sich.* In der Wissenschaft werden immer wieder neue (essentielle) Eigenschaften der Begriffe festgelegt, so daß es zu einem ständigen *Begriffswandel* (bzw. *Bedeutungswandel* der Begriffs- und Funktionszeichen) kommt. Wie kann Kripke diesem Wandel gerecht werden?

Eine solche *historische Auffassung der menschlichen Vernunft* ist ein wesentlicher Aspekt des Wittgensteinschen spätphilosophischen ,,Paradigmas'', dessen Ausgangspunkt ein Prinzip ist, das folgendermaßen formuliert werden kann: Alle Synthesis ist das Resultat der Tätigkeit bzw. des Verhaltens (endlicher, keineswegs ,,unfehlbarer'') *realer Maschinen* (realer Menschen, Computer usw.).[8] Diesem ,,*Prinzip der realen Maschine*'', wie ich es nennen möchte, entsprechen alle weiteren Aspekte von Wittgensteins erkenntnistheoretischem und sprachphilosophischem Ansatz. Auch das Prinzip der ontologischen Unbestimmtheit steht damit in unmittelbarem Zusammenhang. Der sich aus diesen beiden Prinzipien er-

gebende *Anti-Mentalismus* führt zwangsläufig zu einer Sprachphilosophie, in der nicht nach „Sinn" und „Bedeutung" sprachlicher Zeichen gefragt wird, sondern nach deren *Verwendung*. Und so ergibt sich als Aufgabe einer „philosophischen Grammatik" die Beschreibung des (offen zutage liegenden) Gebrauchs der Zeichen. (Die Sprache hat sozusagen eine komplexe Flächenstruktur, aber keine Tiefendimension). Die philosophische Grammatik hat es also letztlich mit menschlichem *Verhalten* zu tun. Dieses ist von der Philosophie nicht kausal zu erklären (Kausalerklärungen sind Aufgabe der Naturwissenschaft). Wittgenstein: „Das *Wesen* ist in der Grammatik ausgesprochen".[9]

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ANMERKUNGEN

1 Kripke, S. A., Naming and Necessity, in: D. Davidson und G. Harman (Hrsgg.), Semantics of Natural Language (Dordrecht 1972).
Kripke, S. A., Identity and Necessity, in: M. K. Munitz (Hrsg.), Identity and Individuation (New York 1971).
2 Kripke (1972), S. 261.
3 Dieses Konzept einer „prozeduralen Semantik" entspricht Wittgensteins sprachspieltheoretischem Ansatz, bei dem die Verwendung sprachlicher Zeichen *an die Stelle* der „Bedeutung" tritt.
4 Kripke (1972), S. 298—303.
5 Kripke (1971), S. 140.
6 Wittgenstein, Philosophische Untersuchungen, § 664.
7 Man denke hier auch an Freges Schwierigkeit, für den die Worte „der Begriff ‚Pferd'" einen Gegenstand bezeichnen, aber eben darum keinen Begriff (s. Freges Abhandlung „Über Begriff und Gegenstand").
8 Dieser Satz ist *Ausdruck einer bestimmten erkenntnistheoretischen Sichtweise*, und sein Verständnis setzt eine *Änderung der Denkart* voraus. Vgl. damit Kants „Kritik der reinen Vernunft" (Kant: Alle Synthesis ist ein Werk des Verstandes).
9 Wittgenstein, Philosophische Untersuchungen, § 371.

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ONTOLOGICAL OBJECTIVITY

Edward F. Becker

Suppose a foreign linguist, generally unfamiliar with English, but aware of the English meanings of 'Yes.' and 'No.', was trying to determine the extension of an English term, say, 'ball'. He might proceed by pointing to various objects while in the presence of English speakers, and, as he pointed to each one, uttering the word, 'ball', in a querying tone of voice. By this procedure, one might think, the linguist would eventually find out what he wanted to know, namely, which objects were balls, and which were non-balls.

W. V. Quine, however, denies the efficacy of such procedures. In his view, the extension of a term like 'ball' could not be settled by any amount of pointing and querying, however protracted. This view of Quine's, which might be dubbed the Doctrine of the Impotence of Ostension, is important because it is presupposed by his more famous doctrines of Ontological Relativity and the Inscrutability of Reference. This paper seeks to cast doubt on these latter doctrines by showing that the power of ostension is more extensive than Quine supposes.

Quine's argument about the impotence of ostension can be stated in either a one-language version or a two-language version, the difference depending upon whether the terms whose coextensiveness is in question belong to the same language or not. I shall briefly summarize the two-language version. Suppose we have established the stimulus synonymy of the one-word sentences 'Gavagai' and 'Rabbit'. Can we forthwith equate 'gavagai' and 'rabbit' as terms? According to Quine we cannot. "Stimulus synonymy of . . . 'Gavagai' and 'Rabbit'" he says, "does not even guarantee that 'gavagai' and 'rabbit' are coextensive terms, terms true of the same things".[1]

'Gavagai' might be true not of rabbits but of rabbit stages, or of integral parts of rabbits, or of the rabbit fusion, or of the universal rabbithood. In any of these cases 'gavagai' and 'rabbit' would fail of coextensiveness, yet the sentences 'Gavagai and Rabbit' would remain stimulus synonymous. Stimulus meanings are thus seen to be insensitive to certain differences in extension. Given the plausible additional premise that stimulus meanings *do* reflect whatever semantical information can be gained by pointing and querying, it follows that extensions are ostensively indeterminate.

As a step toward assessing this view, let us consider the 'rabbithood' option. Even in comparison to the other exotic alternatives, this one seems especially implausible. Rabbit stages, integral parts of rabbits, and the rabbit fusion, strange entities though they are, are concrete objects occupying definite portions of space and time. There is therefore at least some plausibility in maintaining that when a native informant points toward a rabbit and says 'Gavagai' he is really talking about one of them. Rabbithood, on the other hand, is an abstract entity not located anywhere in space or time. How then could it be what the native is pointing out?

One possible answer to this question is suggested by a passage in which Quine argues that the issue among the alternative translations of 'gavagai' cannot be settled by pointing. "Point to a rabbit," he writes, "and you have pointed to . . . where rabbithood is manifested".[2] This passage suggests that the translation Quine may actually have had in mind was 'manifestation of rabbithood'.

Unfortunately this interpretation raises a new problem. There does, indeed, seem to be no way of choosing between 'rabbit' and 'manifestation of rabbithood' as translations of 'gavagai', but this is just because the terms are coextensive. A manifestation of rabbithood *is* a rabbit, and vice-versa.

Another possible interpretation of the 'rabbithood' alternative is suggested in Quine's essay "Ontological Relativity", where he tells us that, "The ostensive indistinguishability of the abstract singular and the concrete general turns on what may be called 'deferred ostension', as opposed to direct ostension". "The *ostended* point", he goes on to say, ". . . is the point where the line of the pointing finger first meets an opaque surface. What characterizes direct ostension, then, is that the term which is being ostensively explained is true of something that contains the ostended point".[3] Deferred ostension is ostension which is not direct. As an example of deferred ostension he mentions a case where we ". . . point at the gauge, and not the gasoline, to show that there is gasoline".[4] Applied to rabbithood the suggestion is that referring to the universal by pointing to a particular rabbit is a case of deferred ostension. Unable to point out rabbithood directly, we call it to our listener's mind by indicating an object with which it is associated.

Unfortunately it is not yet clear how the possibility of deferred ostension makes 'rabbithood' a possible translation of 'gavagai'. Somehow the sentence 'Gavagai' would have to be construed as involving a reference to rabbithood, but it is difficult to see how it could be so construed. We are here assuming that 'gavagai' is a word (specifically, a term) of the native language; hence the sentence 'Gavagai' must be a one-word sentence. Now one-word sentences, admit, as I have argued elsewhere, of various readings.[5] We can construe 'Gavagai' as saying that a gavagai is present, or that the indicated object is (a) gavagai, or that it looks like one. The question then would be whether any of these interpretations is compatible with the hypothesis that gavagai is rabbithood. The answer may seem to be "No", for it could be argued that rabbithood, being an abstract entity, is not anywhere, and so in particular not *there*; that it is not a rabbit; and that it does not look like one.

There is, however, a loophole in this argument. If the native is practicing deferred ostension, then the ostended object might be rabbithood. If, therefore, we take the second of our three readings and construe 'Gavagai' as saying that the ostended object is (a) gavagai, gavagai might turn out to be rabbithood after all. Here, finally, we see how deferred ostension could affect translation. Combined with the second way of reading one-word sentences, it could lead us to construe the term as abstract singular. Indeed, if we allow for deferred ostension, it is hard to see how *any* translation of 'gavagai' could be excluded. Perhaps the native associates rabbits with carrots, and when he points to a rabbit he is really referring, via deferred ostension, to carrots. In this case 'carrot' would be the correct translation of 'gavagai'. Alternatively, he may associate rabbits with a certain type of automobile, in which case his pointings to rabbits are really pointings to cars; or, as a reader of a certain magazine, the native may associate rabbits with voluptuous women, in which case he would be ostending bunnies of a different sort. The possibilities are limited only by the native's imagination.

Should we conclude, in view of the possibility of deferred ostension, that radical translation is hopeless? No. It is true that if the natives practiced deferred ostension, we could not penetrate their language. But, after all, it should have been clear in any event that translation could be prevented by bizarre or misleading behavior. If the natives confined themselves, while in the presence of the linguist, to reciting nursery rhymes, or if they constantly lied, then their language could not be translated. But this is hardly surprising. In calling attention to the difficulties of radical translation, Quine cannot simply be saying that the natives could prevent the linguist from translating their language. If he were saying this, his claim would be trivial. To be of interest, claims about the difficulties of radical translation must assume that the natives are as cooperative as they can be; in particular, they must assume that the natives eschew deferred ostension. Quine therefore cannot appeal to such ostension to show that 'rabbithood' is a viable translation of 'gavagai'. Since there seems to be no other argument by which he could establish the viability of this translation, let us set 'rabbithood' aside and turn to the other possibilities.

I shall not have much to say about rabbit stages. The reason is that we are here concerned with observation sentences and that the distinction between rabbits and their stages

cannot be made on observational grounds. Rabbits and rabbit-stages look exactly the same. Thus the distinction between them would not arise during the earliest stages of radical translation, when the linguist was concerned exclusively with observation sentences. Of course he would have to make the distinction eventually, but only after he had mastered a good bit of the native idiom, especially its tense distinctions. Questions about how he would learn these distinctions, though no doubt interesting, do not pertain to the present topic.

Leaving rabbit stages for another day, then, let us consider 'integral part of a rabbit'. The claim that stimulus synonymy of 'Gavagai' and 'Rabbit' does not exclude this as translation of 'gavagai' is in effect the claim that the sentences 'Rabbit' and 'Integral part of a rabbit' are stimulus synonymous. Let us see whether they are. Again it will be helpful to distinguish different readings of one-word sentences. 'Rabbit' may be taken as short for

(1) A rabbit is there. ,

(2) That's a rabbit. ,

or

(3) That looks like a rabbit.

Corresponding to the readings (1), (2), and (3) of 'Rabbit' we have, as readings of 'Integral part of a rabbit',

(4) An integral part of a rabbit is there.

(5) That's an integral part of a rabbit.

and

(6) That looks like an integral part of a rabbit.

The pairs (1) (4), (2) (5), and (3) (6) represent three different ways of construing one-word sentences. It turns out that the answer to our question about stimulus synonymy depends upon which of these construals we adopt. (1) and (4) are stimulus synonymous. A rabbit is present if and only if an integral part of one is present, so a speaker who understands both of these sentences will assent to and dissent from both under the same stimulus conditions. (2) and (5), however are not stimulus synonymous, and neither are (3) and (6). A stimulation which directs a speaker's attention to an integral part of a rabbit, such as its ears, by spotlighting them or by concealing the rest of the animal behind a screen, will prompt assent to (5) and (6) but not to (2) and (3).

Similar results obtain for the rabbit fusion. We can take the sentence 'Rabbit fusion' to mean either

(7) The rabbit fusion is there.

(8) That's the rabbit fusion.

or

(9) That looks like the rabbit fusion.

Since the rabbit fusion is present whenever a rabbit is, (1) and (7) are stimulus synonymous. On the other hand, a stimulation featuring a good view of a rabbit will prompt assent to (2) and (3) but not to (8) and (9), for the indicated animal will neither be, nor look like, the rabbit fusion.

To summarize: Quine's claim that 'gavagai', as a term, can be translated either as 'rabbit', as 'integral part of a rabbit', or 'rabbit fusion' rests on the claim the sentences 'Rabbit', 'Integral part of a rabbit', and 'Rabbit fusion' are stimulus synonymous with each other and with 'Gavagai'. Whether this latter claim is true depends, in turn, upon how the sentences are interpreted. If they are taken as saying that such and such an entitiy is present, the claim is true; but if they are taken as saying that the indicated object is, or looks like, such and such, it is false.

In the light of these conclusions, it is interesting to consider Quine's remarks about divided reference in his paper "On the Reasons for Indeterminacy of Translation", "Readers have responded", he says,

> with suggestions of how, with help of screens or other devices, we might hope to give the native informant an inkling of the desired distinctions and so settle the reference.
>
> Ingenuity in this vein proves unrewarding because of vagueness of purpose. The purpose cannot be to drive a wedge between stimulus meanings of observation sentences, thereby linking *Gavagai* rather to 'Rabbit' than to 'Rabbit stage' or 'Undetached rabbit part'; for the stimulus meanings of all these sentences are incontestably identical. They comprise the stimulations that would make people think a rabbit was present.[6]

From the perspective of the preceding paragraph, we can understand both why readers would have responded with suggestions about screens and why Quine rejects their suggestions. If sententialized terms are construed as affirming that the indicated object is, or looks like, a so-and-so, screens and other devices *can* be used to drive a wedge between the stimulus meanings of 'Rabbit' and 'Undetached rabbit part'. If, on the other hand, one construes these sentences, as Quine does in this passage, as affirming the presence of a so-and-so, their stimulus meanings are, indeed, "incontestably identical".

Should we conclude that the reference of 'gavagai' might prove inscrutable after all, in case the native were so perverse as to use one word sentences in the manner of (1), (4), and (7)? No. We saw earlier that claims about the possibility of radical translation can avoid trivialization only by assuming that the natives are cooperative. We have just now seen that the natives would be being *un*cooperative if they were to use one-word sentences in the manner of (1), (4), and (7). The possibility that the natives might use 'Gavagai' to affirm the *presence* of gavagais may therefore be dismissed as irrelevant to the issue before us. The question is whether we can determine the reference of 'gavagai' on the assumption that the natives are cooperative enough to use one-word sentences in the manner of (2), (5), and (8), or of (3), (6), and (9). Since one-word sentences used in either of these ways are, in their stimulus meanings, sensitive to differences in the extensions of the corresponding terms, the answer is that we can.

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NOTES

1 Quine, W. V. O., *Word and Object* (New York 1960), p. 51.
1 Ibid., pp. 52—3.
3 Quine, W. V. O., "Ontological Relativity", in: *Ontological Relativity and Other Essays* (New York 1969), p. 39 (his emphasis).
4 Ibid., p. 40.
5 Becker, E., "Collateral Information and Stimulus Meaning", in: *Proceedings of the 4th International Wittgenstein Symposium* (Vienna 1980), p. 559.
6 "On the Reasons for Indeterminacy of Translation", *Journal of Philosophy*, Vol. 66 (1970), p. 181.

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THE ROLE OF PROPOSITIONS IN NATURAL LANGUAGE SEMANTICS

Peter Bosch

The purpose of this paper is twofold: I want to show that (a) the currently most generally applied explication of the notion of proposition in terms of truth-definitional semantics is inapplicable to the notion as it is needed for natural language semantics, and (b) that the intuitive notion of propositions, which arises from our use of natural language, rests on a confusion, so that it is highly questionable that one should even want to reconstruct that notion. The purposes of natural language semantics can probably be served better by a theory that does not make use of propositions.

The best understood and most explicit method of giving the semantics of a language is by giving a truth-definition for the well-formed sentences of that language: i.e. by saying under what conditions each of its sentences may be counted as true or false. Plainly, this method cannot be directly applied to natural languages like English, French, or Yoruba for that matter, unless a number of factors that do not usually play a role in formal languages are taken into account. Indexicality is one of these factors.

If Fred says "I'm tired" and John says "I'm tired", one utterance will make a true statement iff Fred is tired and the other iff John is tired. Obviously, truth-definitions for English will have to take this into account. One way of doing this is given with the following scheme that was, in principle, proposed by Bar-Hillel (1954):

sentence: contexts $\longrightarrow$ propositions

proposition: possible worlds $\rightarrow \{0,1\}$

where the first line deals with indexicality and yields the objects for which straightforward truth-conditions can be defined: propositions. The second line (which is actually not part of Bar-Hillel's proposal) then comprises the actual semantics, i.e. only here we define truth. It is roughly, and with minor modifications, this scheme that underlies current work in formal semantics for natural language (cf. e.g. Cresswell 1973, Kaplan 1977, Lewis 1980, Stalnaker 1978, and others): sentences are functions from contexts, i.e. utterance-situations, into the set of propositions; and propositions are functions from the set of possible worlds, or, if taken in a wider sense, the set of circumstances of evaluation, into the set of truth-values.

The account is transparent and straightforward. But it must make a number of assumptions about the languages to which it is to be applied. And these assumptions are not automatically fulfilled by just any language. Natural languages in particular would not seem to satisfy all of them. The assumptions I mean are, in particular, the following two:

1. The set of contexts is either finite or, at least, denumerable.

2. The set of propositions consists of elements that are mutually independent, both logically and semantically.

Assumption 1 is certainly not true in the sense that the set of contexts, i.e. utterance-situations, is finite. There is no reason to assume that only in a finite number of situations sentences should "mean" something, i.e. "Express propositions". This would be no problem however, and assumption 1 could still be true, if, at least, we could give an algorithm that creates the set of all those situations, i.e. creates a set of identifying descriptions of all

those situations, in which at least one sentence of the language can be used to "mean" something. If this set of descriptions is to fulfill the purpose at hand, the descriptions would have to differ in each case where the difference in the situation amounts to a difference in the proposition expressed. In brief, such an algorithm would presuppose a parametrization of contexts of utterance that is fine enough to contain any parameter that could make a difference for what is said by a particular sentence-type. But this task is hopeless. The point has been argued very well by Travis (1976), Ziff (1972), and also by Cresswell (1973) (cf. also Bosch 1979b). We conclude for the time being that it would be irresponsible speculation to assume that assumption 1 above is true for natural languages, as long as there is no indication of how contexts are to be parametrized.

The trouble with assumption 1 being doubtful, or, as is more likely, simply being false, is that we lose our way of getting from sentences to propositions. If sentences are functions from the set of contexts into the set of propositions, and if we cannot enumerate the set of contexts, then we will not be able to thus construe the set of propositions.

Another way of trying to get at propositions starts at the other end: if propositions are functions from the set of possible worlds into the set of truth values, then we may equate any proposition with a particular set of possible worlds, e.g. those in which the proposition is true. The familiar problem with this approach is that we will have only one proposition that is necessarily true (which is identified with the set of all possible worlds) and only one that is necessarily false (the one that is identified with the empty set). But suppose this problem is solved somehow. Then we would still need some way or other for identifying possible worlds, i.e. some way of enumerating the set of all possible worlds. One way of trying to do this is by identifying each possible world with the set of propositions that are true with respect to that world. Now this would plainly be circular. But let us grant, in order to put the problem more sharply, that the problem of indexicality is solved and that propositions are identified by their link to sentences of natural language. Then however, those propositions still would not do as means for identifying possible worlds, because there would not only be no guarantee that assumption 2 is fulfilled, but we could even be certain that it would not be fulfilled. For the set of propositions resulting from relativizing the set of well-formed sentences of English to contexts would not consist of semantic or logical atoms. One proposition being true would entail and presuppose a host of other propositions being true or being false. Hence not any arbitrary set of propositions would be consistent or describe a possible world. Some such sets would describe impossible worlds. But if we want to sort the consistent from the inconsistent sets, we need a full truth-theory for the set of propositions. If we have such a theory however, then there is no good reason why we should still aim at identifying possible worlds or at construing the set of possible worlds. Because these aims were only conceived as parts of the task of giving a truth-definition for all propositions.

To sum up: suppose we have solved the problem of idexicality and we have mapped the set of English sentences onto the set of propositions. Then this set of propositions cannot be used, without a semantics for them already assumed, for the identification of possible worlds. And if possible worlds cannot be identified, we cannot give a truth definition (i.e. a semantics) for propositions. Secondly, suppose we have identified propositions as sets of possible worlds, and by some, as yet unknown, device we know how to identify possible worlds. Then these propositions must be atomic ones and hence are not what sentences are mapped on by a theory of indexicality. And in order to analyze into atomic propositions an arbitrary element from the set of mixed complex and atomic propositions that is the result of removing indexicality from English sentences, we have to assume a full semantic theory for complex propositions.

If the above arguments are correct and the attempt of explicating the notion of proposition in terms of a truth-definitional semantics indeed is a failure, one may want to either improve this account or try and find another account not subject to the above objections.

If we go back to this level of discussion, we had better first ask what it is we want to explicate. What are the intuitions concerning "propositions" we want to base our account

on? Fundamentally, propositions tend to be regarded as the things "people express when they make predictions or promises, give orders or advice . . . things people doubt, assume, believe . . ." etc. (Stalnaker 1976), in brief: the objects of speech acts and propositional attitudes. Or, again intuitively: a proposition is "what is said" by certain linguistic expressions.

Now if there are to be such "things said", we may reasonably ask for their identity. "No entity without identity", as Quine once put it, seems a minimal requirement. But if we take our intuitions about the identity of "what is said" at face value, we end in paradox. Suppose, Fred says "I'll never do it again" and John says "I won't do it again", then we will probably be inclined to say that Fred and John promised the same thing. Now suppose Fred says "I'll never do it again" and John says "Fred will never do it again"; again, we may say that both promised the same thing, i.e. that Fred will never do it again. Now let us call what Fred promised on the first (and on the second) occasion "A", and what John promised on the first occasion "B", and what he promised on the second occasion "C". Then we get: A = B, and A = C; hence: B = C, i.e. John should be promising the same thing when he says "I won't do it again", and when he says "Fred will never do it again". This however must be false by any stretch of imagination.

What is going wrong? As I have argued elsewhere for synonymy relations (Bosch 1979a), I would claim also here that the notion of identity between what is said, promised, etc. by various utterances or expressions depends on the context in which we ask the question. Native speakers, in order to master their language, must be able to judge identity in each individual context. But they need not be able to judge identity with respect to all contexts, and hence they need not be assumed to possess a general notion of identity of "what is said". Hence they will ordinarily be able to judge "what is said" by a particular utterance in a particular context (i.e. in comparison with anything else that is or perhaps could be said in that context) without being able to judge "what is said" independent of context, or, which is the same, for all contexts. In effect this means that the native speaker's competence gives us no reason to assume anything as abstract and general as "propositions". The assumption of propositions may be understood as a mere mistake: an over-generalization that ignores the dependence of the relevant identity-intuitions on context. But if the notion we wanted to reconstruct thus dissolves into thin air, what is there to be reconstructed?

Applied to the above puzzle, we may say that there are plenty of contexts in which A and B are the same, and there are also plenty of contexts where A and C are the same. But, as it happens, it seems difficult to find a context in which B and C are the same. This is no problem, clearly, as long as we rest with a context-dependent notion of identity of "what is said". It grows into something like a paradox only, if we assume a context-independent notion of identity of "what is said", i.e. if we assume propositions.

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REFERENCES

Bar-Hillel, Y., "Indexical Expressions", *Mind*, Vol. 63 (1954).
Bosch, P., "Synonymie im Kontext", in: W. V. Quine, *Von einem logischen Standpunkt* (Berlin 1979a).
Bosch, P., "Vagueness, Ambiguity, and all the Rest", in: M. Van de Velde and W. Vandeweghe (eds.), *Sprachstruktur, Individuum und Gesellschaft* (Tübingen 1979b).

Cresswell, M. J., *Logics and Languages* (London 1973).
Gochet, P., *Outline of a Nominalist Theory of Propositions* (Dordrecht 1980).
Kaplan, D., "Demonstratives" (unpublished).
Lewis, D., "Index, Context, and Content", in: S. Kanger and S. Ohmann (eds.), *Philosophy and Grammar* (Dordrecht 1981).
Stalnaker, R., "Propositions", in: A. F. MacKay and D. D. Merrill (eds.), *Issues in the Philosophy of Language* (New Haven 1976).
Stalnaker, R., "Assertion", in: P. Cole (ed.), *Pragmatics* (New York 1978).
Travis, C., "What Semantics is Not", in: P. A. M. Seuren (ed.), *Symposium on Semantic Theory* (Nijmegen 1976).
Ziff, P., "What is Said", in: D. Davidson and G. Harman (eds.), *Semantics of Natural Language* (Dordrecht 1972).

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IDENTIFIZIERUNGSFUNKTION UND REFERENZ

Edmund Runggaldier

Die Rolle der Subjektausdrücke singulärer Prädikationen ist eine zweifache: a) Die Subjektausdrücke sind Träger von Sinn und vermitteln somit identifizierendes Wissen. b) Die Subjektausdrücke haben Referenz, d.h. sie liefern einen Beitrag zur Bestimmung der objektiven Wahrheitswerte der Prädikationen. Es soll im vorliegenden Essay gezeigt werden, daß die zwei Rollen sich nicht decken, wohl aber komplementär sind. Bedeutungstheorien, in denen die eine Rolle auf die andere reduziert, bzw. die eine zugunsten der anderen vernachlässigt wird, sind einseitig und geraten in Engpässe — so z.B. die Theorien Tugendhats und Davidsons[1] —. Es soll schließlich gezeigt werden, daß die Fregesche These, der Sinn bestimme die Referenz, gerettet werden kann. Sie muß nicht der Einsicht Putnams und Kripkes widersprechen, daß das identifizierende Wissen, welches durch den Sinn vermittelt wird, nicht notwendigerweise auf das Referenzobjekt zutrifft.

Wird die Rolle der singulären Termini auf dem Hintergrund der Kommunikation zwischen Sprecher und Hörer untersucht, so wird sie als Identifizierungsfunktion aufzufassen sein. Der Sprecher teilt nämlich durch die Verwendung des singulären Terminus im Rahmen der jeweiligen Prädikation dem Hörer mit, wovon er das Prädizierte prädiziert. Wird allerdings die Referenz des singulären Terminus auf dessen Identifizierungsfunktion bzw. dessen Verwendung reduziert, so gerät die Beantwortung der Frage nach der Rolle bzw. nach der Bedeutung des singulären Terminus unweigerlich in Engpässe. Tugendhat z.B. bemüht sich, rein sprachanalytisch vorzugehen und die Referenz singulärer Termini letztlich auf deren Verwendung zurückzuführen; dabei gerät er in Schwierigkeiten: Um festzustellen, ob eine Prädikation wahr ist, muß man die Verifikationsregel des Prädikates kennen. Man muß aber auch die Situation kennen, in der die Regel anzuwenden ist, d.h. die Verifikationssituation relativ zu allen anderen Situationen. Die Angabe der richtigen Situation im Raum-Zeit-Gefüge erfolgt durch die Verwendung der singulären Termini in Subjektposition. Das ist also nach T. „. . . die besondere Rolle, die ihnen für die Feststellung der Wahrheit prädikativer Sätze zukommt: sie geben die Verifikationssituation an, an der die Verifikationsregel des Prädikates zur Anwendung zu bringen ist".[2] Soll diese Erklärung sinnvoll sein, so muß eine Bezugnahme auf Raum-Zeit-Stellen im Raum-Zeit-Gefüge möglich sein. Diese wiederum ist allerdings nur möglich, wenn bestimmte Stellen im Gefüge markierbar sind; markierbar können sie aber nur sein, wenn sie durch wahrnehmbare Gegenstände gekennzeichnet sind: d.h. es braucht einen Bezug auf wahrnehmbare Gegenstände als vorrangig zum Bezug auf Raum-Zeit-Stellen. Andererseits braucht es den Bezug auf diese Stellen, um sich auf wahrnehmbare Gegenstände beziehen zu können. Der Bezug auf diese Stellen ermöglicht nämlich erst die Verifikation der jeweiligen Prädikationen. T. selbst sagt von seiner letzten und untersten Erklärungsebene der sprachanalytischen Reduktion der Referenzbeziehung: „Da nicht deutlich geworden ist, wie in diesen Zirkel hineinzukommen ist, muß ich betonen, daß die Analyse der identifizierenden Ausdrücke keine eigentliche Klarheit erreicht hat und nur als eine vorläufige Skizze angesehen werden kann".[3] In Engpässe gerät man mit Sicherheit auch dann, wenn man die Rolle der singulären Termini in unseren alltäglichen Prädikationen allein von ihrer Funktion in den Standardsemantiken her zu verstehen sucht. Als Beispiel dafür sei Davidsons Versuch eines Entwurfs einer Bedeutungstheorie durch Anwendung der Tarskischen Bi-Subjunktionen erwähnt. Tarskis Zugang zur Wahrheitsproblematik gründet in der Berücksichtigung der notwendigen und hinreichenden Bedingungen für die Wahrheit der Sätze der zu untersuchenden Sprache (Objektsprache). Diese Bedingungen werden von Davidson aufgegriffen, um darauf die Bedeutung der Sätze zurückzuführen.

Wissen wir, was es heißt, daß ein Satz wahr ist, und wissen wir, was die Bedingungen für die Wahrheit des betreffenden Satzes sind, so verstehen wir — laut Davidson — den Satz, d.h. letztlich, wir haben seine Bedeutung erfaßt. Die Tarskischen metasprachlichen Bi-Subjektionen bieten nach Davidson die Möglichkeit, die Bedeutungen der Sätze der Objektsprache anzugeben: ,,Den Wahrheitsbegriff einer Sprache kennen heißt wissen, was es heißt, daß ein Satz — [und zwar] irgendein beliebiger Satz — wahr ist; und dies kommt dem Verstehen der Sprache gleich . . .".[4] Selbst wenn man die Ansicht teilt, die Bedeutung eines Satzes bestehe in seinen Wahrheitsbedingungen, so muß man dennoch die Ansicht zurückweisen, man könne die Bedeutung eines Satzes durch Angabe seiner Wahrheitsbedingungen in Form von Bi-Subjunktionen explizieren. Die Kenntnis der Bedeutung des Satzes ,,Die Erde bewegt sich" wird nicht in der bloßen Kenntnis bestehen können, daß der Satz ,,,,Die Erde dreht sich" ist wahr, dann und nur dann wenn sich die Erde dreht" wahr ist. Zwischen der bloßen Kenntnis, daß die Bi-Subjunktion wahr ist, und dem Wissen, was ihr Inhalt ist, gibt es einen großen Unterschied. Will man eine Bedeutungstheorie erstellen, so muß man diesen Unterschied berücksichtigen.[5] Man wird nicht dadurch erklären können, was Bedeutung ist, daß man für jeden Satz der zu untersuchenden Sprache seine Bedeutung in Form seiner Wahrheitsbedingungen angibt. Im Fall der Erkenntnistheorie — so Dummett[6] — wäre eine solche Kurzschlüssigkeit evident: man wird nicht dadurch erklären können, was Erkenntnis ist, daß man die einzelnen Erkenntnisse aufzählt. Genausowenig kann man erklären, was die Bedeutung eines Satzes ist, wenn man diese in Form von Bi-Subjunktionen in der Metasprache angibt. Eine adäquate Theorie der Bedeutung müßte in der Lage sein, anzugeben, wie es dazu kommt, daß wir fähig sind, Aussagen als wahr oder falsch zu bewerten. Diese Bewertungsfähigkeit hängt von dem ab, was wir erfassen, wenn wir einen Satz verstehen, und danach muß gefragt werden: was ist das, was wir erfassen und wissen, wenn wir einen Satz verstehen? Die Frage drängt sich auch deshalb auf, weil wir in der Bewertung der Sätze Fehler machen, die nicht auf eine falsche Einschätzung der Sachlage, sondern auch auf eine falsche Einschätzung von dem, was man gemeinhin die Bedeutung bzw. den Inhalt des Satzes nennt, zurückzuführen sind. Man wird somit die Rolle der singulären Termini in Prädikationen nicht auf ihren Bezug, d.h. ihre Referenz reduzieren können [— vorausgesetzt, man interessiert sich für eine umfassende Bedeutungstheorie]. Selbst für Frege gibt es kein reines Wissen darüber, was die Referenzobjekte der singulären Termini sind: Eine ,,Bedeutung", d.h. ein Gegenstand, ist uns immer nur auf eine bestimmte Art gegeben. Man kann sich nicht auf Gegenstände schlechthin beziehen, man kann sie nicht als solche identifizieren, sondern immer nur als auf eine ganz bestimmte Art gegebene. Das, was Fr. ,,den Sinn" eines singulären Terminus nennt, ist die Art des Gegebenseins bzw. die Art der Spezifizierung des jeweiligen Gegenstandes. Hat jemand einen singulären Terminus verstanden, so hat er dessen Sinn erfaßt und wird wissen, auch wenn oft nur implizit, wie er auf eine bestimmte Art auf das Referenzobjekt des Terminus vorstoßen kann, wie er es identifizieren kann. Dieses Wissen wird in unseren Umgangssprachen ein vielfältiges sein. Es wird zu- oder abnehmen können, es wird je nach Kontext und Wissensstand der Sprechergemeinschaft variieren. Fragt man nach der Rolle der singulären Termini im Rahmen einer umfassenden Bedeutungstheorie, so kann man nicht umhin, auch einen Bestimmungszusammenhang zwischen ihrem Sinn und ihrer Referenz anzunehmen. Man wird dann nach der Art und Weise fragen, wie das jeweilige Referenzobjekt mit dem Sinn des singulären Terminus, der auf es referiert, verknüpft ist. Durch die revolutionären Arbeiten von Kripke und Putnam[7] dürfte mittlerweile klar geworden sein, daß viele s.Termini nicht nach dem Muster von Kennzeichnungen oder von Bündeln von Kennzeichnungen, die attributiv (im Unterschied zu referentiell) verwendet werden, gedeutet werden könnten; attributiv insofern als sie als ihr Referenzobjekt dasjenige bestimmen, welches — was immer es auch sei — als einziges die Bestimmungen der Kennzeichnung erfüllt. Wäre das der Fall, so würden — wie Kripke und Putnam es erläutern — bestimmte kontrafaktische Annahmen unmöglich. Man ist nicht verpflichtet, das identifizierende Wissen, welches mit dem Sinn des jeweiligen singulären Terminus gekoppelt ist, so zu deuten, als würde es nur attributiv zur Anwendung

gebracht werden können. Man kann dessen Anwendung durchaus — und wird es wohl auch in verschiedenen Fällen tun müssen — referentiell deuten. Aufgrund dieser Deutung wird man das jeweilige Wissen als ein bloß vorläufiges Mittel deuten, um auf das Referenzobjekt vorstoßen zu können. Die Bestimmungen und Eigenschaften, die durch dieses Wissen dem Referenzobjekt zugeschrieben werden und die hilfreich sind, um es leichter identifizieren zu können, müssen keine wesentlichen Bestimmungen sein. Dieses Wissen wird die Einsicht einschließen, daß es sich jederzeit herausstellen könnte, daß das Referenzobjekt diese Bestimmungen nicht hat oder nicht mehr hat. Das Wissen über das jeweilige Referenzobjekt wird sich aufgrund neuer Entdeckungen ändern, das schließt aber nicht aus, daß der singuläre Terminus in vielen Fällen trotzdem fix bzw. ,,rigid" — wie besagte Autoren sagen — auf das Objekt referiert. Die These, daß singuläre Termini Sinn haben, ist durchaus kompatibel mit der These, daß verschiedene unter ihnen ,,rigid" sind: die Identifizierungsbedingungen nämlich, die mit dem Sinn eines Ausdrucks gegeben sind, implizieren nicht, daß sie notwendigerweise, d.h. in allen Welten, auf das Referenzobjekt des Ausdrucks zutreffen.

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ANMERKUNGEN

[1] Tugendhat, E., Vorlesungen zur Einführung in die sprachanalytische Philosophie (Frankfurt 1976).
Davidson, D., Wahrheit und Bedeutung, in: M. Sukale (Hrsg.), Moderne Sprachphilosophie (Hamburg 1976).

[2] Tugendhat (1976), S. 416.

[3] Tugendhat (1976), S. 475 f.

[4] Davidson (1976), S. 111.

[5] Dummett, M., What is a Theory of Meaning, in: S. Guttenplan (Hrsg.), Mind and Language (Oxford 1975), S. 113.

[6] Dummett (1975), S. 97.

[7] Kripke, S., Naming and Necessity, in: D. Davidson und G. Harmann (Hrsg.), Semantics of Natural Language (Dordrecht 1972).
Putnam, H., Mind, Language and Reality (Cambridge 1975).

* * *

PRINCIPLES OF PROCEDURAL SEMANTICS

Hans-Jürgen Eikmeyer

A procedural grammar is basically a model concerning the understanding of natural language discourses. Consequently, it is a dynamic model which tries to describe the techniques speakers apply in analysing discourses. Procedural grammar starts from the assumption that discourses do not have meaning *per se*. Instead, it describes the subjective position of a recipient who relates the physical event constituting a discourse to a meaning. The recipient makes use of the fact that natural language is learnt, experienced, and regarded as regular in classes of contexts. Language use, however, is not regular because of a more or less perfect realisation of the abstract language system. Its regularity is due to self-stabilisation caused by the fact that successful communication is rewarded in some way or other. Hence, no existence assumption concerning *the* system of a natural language is made. Moreover, procedural grammar does not assume that the interpretation of a physical event starts only after a complete utterance is there. The interpretation begins when a relatively small part of a discourse is available for the recipient.

Procedural grammar distinguishes two types of *interpretation processes*, *local* and *global* ones. In local analysis an event is separated from the flow of events, and then supplied with a phonetic, a syntactic and a semantic interpretation. These analyses depend on the *history of the interpretation process*, the *context* in which they are arrived at, and the grammatical background, i.e. the grammatical knowledge applied. The local analysis yields a result which, as a whole, is then evaluated by some *principle of global analysis*, i.e. a strategy for the interpretation represented in the form of a decision tree. The non-terminal nodes of the tree represent *tests* performed on the local interpretation, the terminal nodes are labelled with so-called *recipient properties* expressing the recipient's expectations concerning the next interpretation step. Local interpretation, context, grammatical background and recipient property taken together determine the context for the next interpretation step. Hence, by alternating changes between local analyses and evaluations by a global principle, the whole discourse will be interpreted step by step.

In the semantic component of procedural grammar stereotypes and individuals are distinguished. However, their relation can neither be expressed by elementhood as in extensional models, nor by functional application as in intensional logic, since both views depend upon unrealistic ontological commitments. I prefer to talk about the attribution of a stereotype to an individual or about the realisation of a stereotype by an individual. Thus, individuals serve as "coat hangers" to which stereotypical properties can be attached by *realisation* or *attribution relations*. The relations are associated with context-dependent requirements which have to be met in the case an individual realises the stereotype or is attributed the stereotype. According to the aim of dynamically modelling as many components as possible, the relations have to be given a procedural interpretation, too. Moreover, procedural semantics does not assume that the set of all individuals is given to the recipient in advance. Such a view would neglect the fact that the interpretation of a discourse forces the recipient to introduce individuals new to him.

Assume that the recipient of a discourse assigns some meaning involving the realisation of a stereotype s by an individual to a physical event. He may then start a checking procedure in order to find out whether the actual universe of discourse already contains an individual realising s. The recipient takes some individual out of his universe, call it a, and has to decide whether a realises s. Two cases are to be distinguished: First, the meanings accumulated thus far allow for a direct decision. If a realises s, then a is the result of the checking procedure, if a does not realise s, the next individual is checked. In the second case

conceivable, the recipient cannot decide directly on the attribution of *s* to *a*, but has to rely on other stereotypes associated with *s* in the actual context. With respect to these associated stereotypes again both cases are possible. If the most relevant stereotypes associated with *s* are realised by *a* then *s* counts as realised by *a*, too. Otherwise the next individual is checked until a suitable one is found. If no individual can be found, a new one has to be created.

Noun phrases in terms of traditional grammar trigger off the checking procedure concerning the domain of individuals. Let me demonstrate this by a simplified artificial example, namely the utterance "The boy runs". Four stereotypes are involved: the boy-stereotype, the run-stereotype, the stereotypical attribution relation expressed by the third person singular "-s", and the attribution relation associated with the noun phrase category. The recipient has to apply two procedures now: First, he has to find the individual which realises the boy-stereotype by means of the realisation relation associated with the noun phrase category. Secondly, he has to add to the semantic information, that this individual realises the run-stereotype by means of the attribution relation associated with the "-s". In the case of more complex sentences containing objects such as e.g. "The boy hits the girl with a stick", three individuals have to be found or created: the boy *b*, the girl *g* and the stick *s*. In this case, the recipient has to construct the complex stereotype 'hitting *g* with *s*' by the aid of the attribution relations assigned to the accusative case of "girl" and the proposition "with" respectively. This stereotype is then attributed to *b*, the boy, and this fact is stored in the semantic memory.

The previous considerations referred to fields treated by traditional grammatical paradigms as well. Spoken language, however, contains phenomena which, from a normative position, would be considered as disturbances. These are, e.g., interrupted and newly started utterances or hesitation marks yielding information about the speaker's relation to his utterance. Other expressions give the recipient hints for his own interpretation. They concern, e.g., the relation of current meanings to past meanings or refer to the relation between the speaker and the hearer, e.g., the turn distribution. In many cases, these meanings are not conveyed by completely lexicalised forms but rather by non-wordlike entities. In this case no complete syntactic structure is interpolated the meaning of which is considered as the meaning conveyed. On the contrary, a functional stereotype is assigned to the utterance by procedural semantics. Since the events corresponding to *functional meanings* are not necessary for the meaning construction concerning the rest of the event, they are barred from further consideration by special recipient properties.

In procedural semantics propositions are identified with meanings containing at least one attribution relation. In comparison to traditional theories of grammar, however, the relation of propositions to sentences is reversed. Traditional paradigms give priority to the level of syntax in that only sentences can be attributed propositions. This procedure obviously fails for spoken natural language, since the syntactic structure of unplanned discourse contains tokens bound up with functional meanings and sentences in the sense of some normative pattern are hardly to be found. Thus, although a traditional notion of sentence cannot play the central role in a model for spoken language, semantics can do this job if it is supplied with suitable strategies. The strategies are to be localized within the principles of global analysis which evaluate the local interpretation. If a proposition has been set up in one step, the global principle has to check whether the proposition is *consistent* with the most prominent propositions of the current step. However, consistency in this sense is not to be identified with the corresponding logical notion, since that one is too strong for various reasons. First, consistency in procedural grammar is a context-dependent notion. A set of propositions can be consistent with respect to the everyday knowledge of a speaker, his historical or biological knowledge, etc. Secondly, consistency has to take account of nonlogical relations, especially those labelled coherence or cohesion properties in text linguistics. Thirdly, logical consistency is a closure property under all possible inferences. A recipient, however, is normally not aware of all conclusions he can draw from the propositions at his disposal. In addition, he draws inferences not following logically valid patterns.

Once consistency has been confirmed by some global principle, different strategies can be

pursued concerning the interpretation of the next event. Some principle may expect that the next event is assigned a new proposition or it may try to regard the meaning of the next event as a modification of the last proposition. Clearly, every principle has to have some mechanism in order to compare its structural anticipations with the local interpretation of the next event in the next step. This mechanism is tied up with the notion of *meaningfulness*. Meanings combined by attribution relations within one proposition may not fit together. This is indicated by considering the proposition as senseless, undefined or — with reference to the theory of programming languages — as $\perp$ (bottom).

Assume that an event has been assigned to a meaningful proposition and that it is consistent with the most prominent propositions. If the global principle used expects that a modification of this proposition will be expressed by some following event, it will put these two events together and analyse this new entity in the next step. If the interpretation then leads to the conclusion that the new proposition is $\perp$, this result may indicate, that the two events have to be regarded as belonging to two different propositions. However, the decision concerning meaningfulness and consistency can not be limited to the actual context of interpretation since natural recipients can mobilize alternatives. This ability is modelled in procedural grammar by checking consistency and meaningfulness also with respect to different contexts in case inconsistency or undefinedness has been detected in the actual one. As a rule, a recipient will change into the nearest context where he can find a consistent and meaningful interpretation.

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REFERENCES

Eikmeyer, H.-J., "Kontexte und Stereotype", in: W. Heydrich (ed.), *Lexikoneinträge* (Hamburg 1981).
Eikmeyer, H.-J., *Discourse Representations and Processes of Understanding* (Cleves 1981).
Eikmeyer, H.-J., and Rieser, H., *A Formal Theory of Context-Dependence and Context-Chance* (Bielefeld 1980).
Eikmeyer, H.-J., and Rieser, H., *Prozedurale Analyse: Eine Pilot-Untersuchung zu Kontextwechsel und Sprachdynamik* (Bielefeld 1980).
Eikmeyer, H.-J., and Rieser, H., "Procedural Grammar for a Fragment of Black English Discourse", in: Thomas T. Ballmer (ed.), *Dynamic Linguistics* (Berlin 1982).
Eikmeyer, H.-J., and Rieser, H., "Meanings, Intensions and Stereotypes", in: H.-J. Eikmeyer and H. Rieser (eds.), *Words, Worlds, and Contexts: New Approaches in Word Semantics* (Berlin 1981), p. 133.

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ONTOLOGY AND SEMANTICS IN THE COMPUTER*

Robert Trappl, Elisabeth Leinfellner, Ingeborg Steinacker, Harald Trost

"And if Nature could speak,
it would not speak our
language." [1]
(Fritz Mauthner)

One of the most important problems of ontology, and especially a Wittgensteinian ontology, is the problem of whether a system of signs mirrors reality totally, partially, or not at all. At one end of the scale stands the early Wittgenstein and the Tractarian concept of logic mirroring the world; on the other end the sceptical view of Mauthner who said something to the effect that language is like a map of the Tyrol which one wants to use in the Tibet.[2] This brings us at once to the more general aspects of ontology. Ontology, then, is seen as a philosophical discipline which concerns itself with the mirroring of the most general structures of the world in language. In the course of time some philosophers arrived at the conclusion that it was not language itself, be it the language of the sciences or of everyday life, which was the great mirror of reality, but the abstract kernel of language, namely, logic. Wittgenstein clearly expresses this view in the *Tractatus*. But, as is well known, Wittgenstein turned away from the great logical mirror and towards a semantic view of language which is very important for the topic of this paper. However, Wittgenstein's semantic turn brought him closer to Mauthner's scepticism: it now seemed to be doubtful whether language mirrors or does not mirror. One of the results of this paper will be that the truth, like ever so often, lies in the middle: language both mirrors and does not mirror and this can be shown in an exemplary fashion in the realm of Artificial Intelligence (AI), more specifically, a computer implemented natural language understanding system (NLU) where a semantic parser (SP) maps a natural language unto a conceptual semantic net (SN).[3] Speaking ontologically: How reality is mapped onto everyday language is shown in SP; how reality is mapped onto a system of concepts is shown in SN.

It is important to explain what we mean by "concept". In present day usage "concept" refers to any general or abstract representation and it is assumed that concepts of this kind can be arranged in a Porphyrian tree. In the semantic net of our system a concept is a semantic class which is itself structured in a non-Porphyrian way through other concepts via the so-called roles (which we will explain shortly with the aid of some examples). In order to avoid confusion we will use a prefix "s-" whenever we deal with concepts which belong to SN.

We can see here already that the problems of NLU embrace traditional ontological problems. We will now give a short description of NLU as far as it is relevant for our topic.[4] NLU works with a semantic parser SP, and for this semantic parser no specific difference is made between semantic and syntactic structures. This corresponds to an ontological—and linguistic—view according to which syntax is petrified or frozen semantics which does away with the artificial separation of pragmatics, semantics, and syntax, at least as far as natural language is concerned. Later on we will see that this view holds also for the languages of the sciences.

The lexico-semantic component of the parser is a link between the morphological lexicon and the semantic net; the semantic net contains knowledge in the form of s-concepts.[5] The lexico-semantic component assigns the lexemes to the s-concepts in the semantic net to which they belong, and states their selectional restrictions in relation to the so-called roles.[6] The roles are (1) either the equivalent of a deep case in a case grammar; or they are (2) derived

from structural or functional properties or constituents of the phenomena which are subsumed under a specific s-concept, seen as a class. This shows the class-aspect of the s-concept.

If we, however, stress the mirroring function of s-concepts, then we should rather say that roles are essential, not to the structure, but to the semantic definition of the respective s-concept. Then we interpret roles as abstractions either from empirical terms which denote empirical structural or functional properties or constituents, or from empirical roles. In such a case, we treat s-concepts and roles as terms rather than as classes, structures, and the like. S-concepts and roles share this twofold aspect with axioms (see below). For instructive purposes it is, however, often less cumbersome to treat concepts as classes and roles either as deep cases or as derivations from empirical structural or functional properties or constituents, and we will stick to this notion whenever feasible. We can then say that, e.g., in Fig. (2) the roles have the character of functional constituents and in Figs. (1) and (4) the roles *AGENT, *INSTRUMENT, *TOOL and *OBJECT are deep cases.

The relationship between roles and selectional restrictions is defined in the following manner: Each s-concept is semantically defined by certain roles, and these roles are specified or restricted by other s-concepts. We will give two fairly simple examples; "h/h" means "hyponomy/hyperonomy":

Fig. (1)

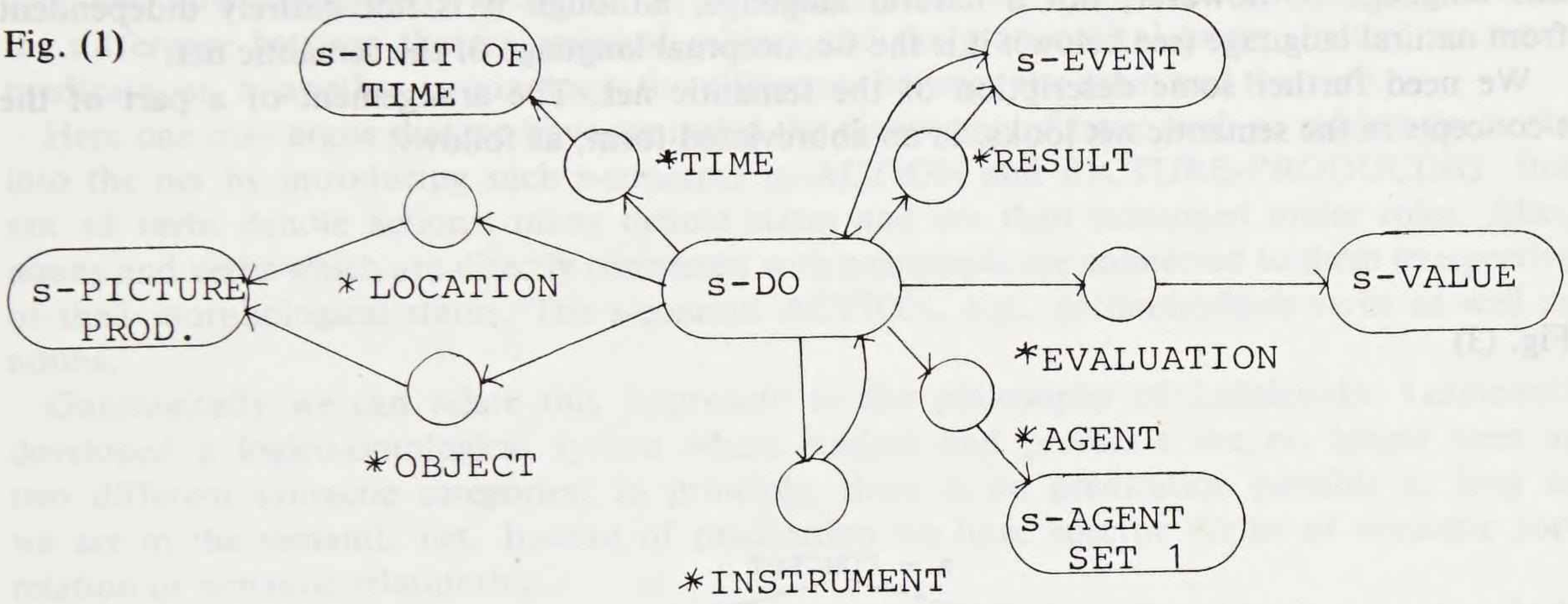


Fig. (1a)

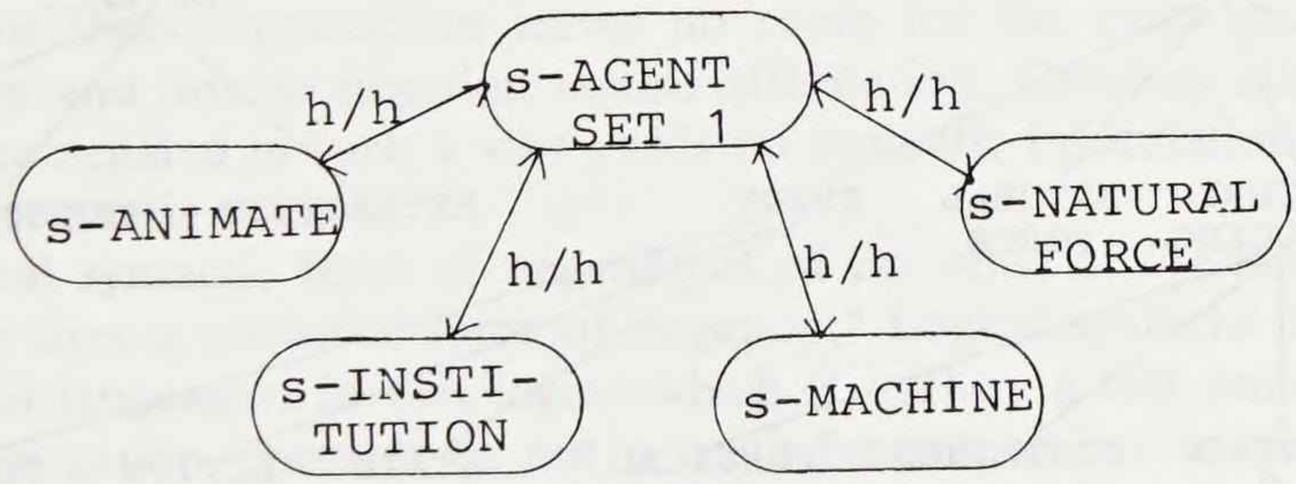
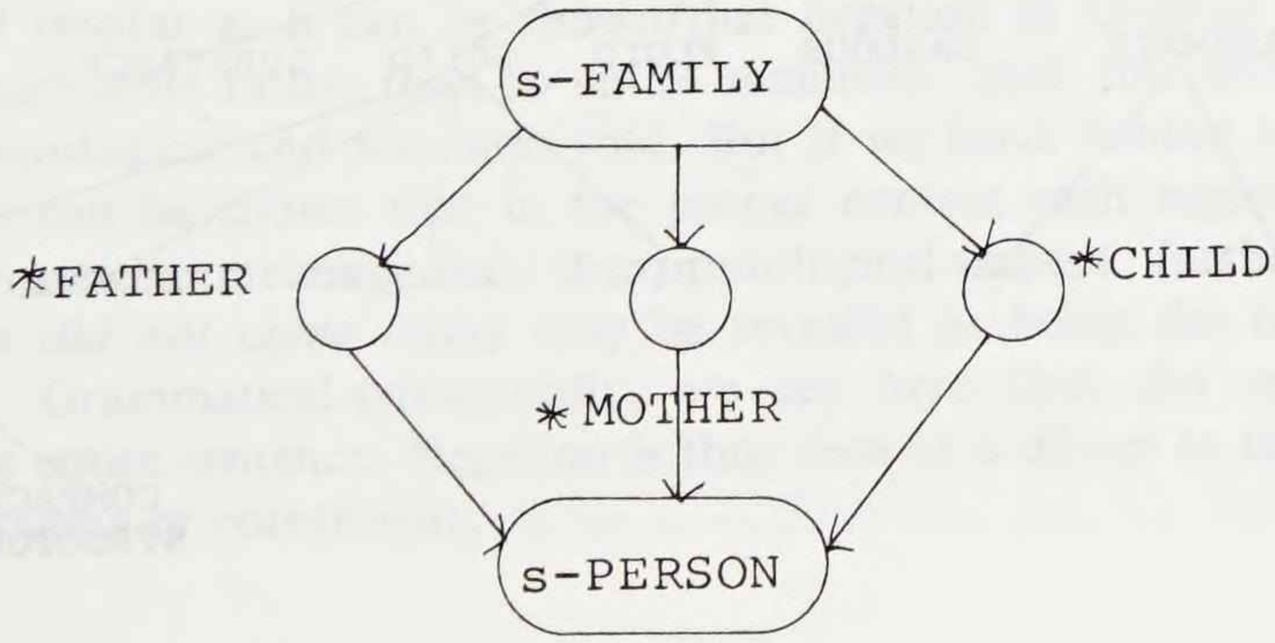


Fig. (2)



The capitalized words in the circumscribed areas represent s-concepts (or, in a more nominalistic vein, are concepts); the capitalized and starred words beside the squares represent (are) roles. The words DO, UNIT OF TIME, etc. in Fig. (1), the words FAMILY and PERSON in Fig. (2), and the words TO HAMMER, PERSON, etc. in Fig (4) are, therefore, not lexemes but represent (are) s-concepts which could be expressed otherwise, e.g. PICTURE PRODUCING OBJECT by VISIBLE OBJECT, FAMILY by BASIC UNIT OF SOCIETY. In Fig. (2), all roles are restricted by the same s-concept, PERSON.

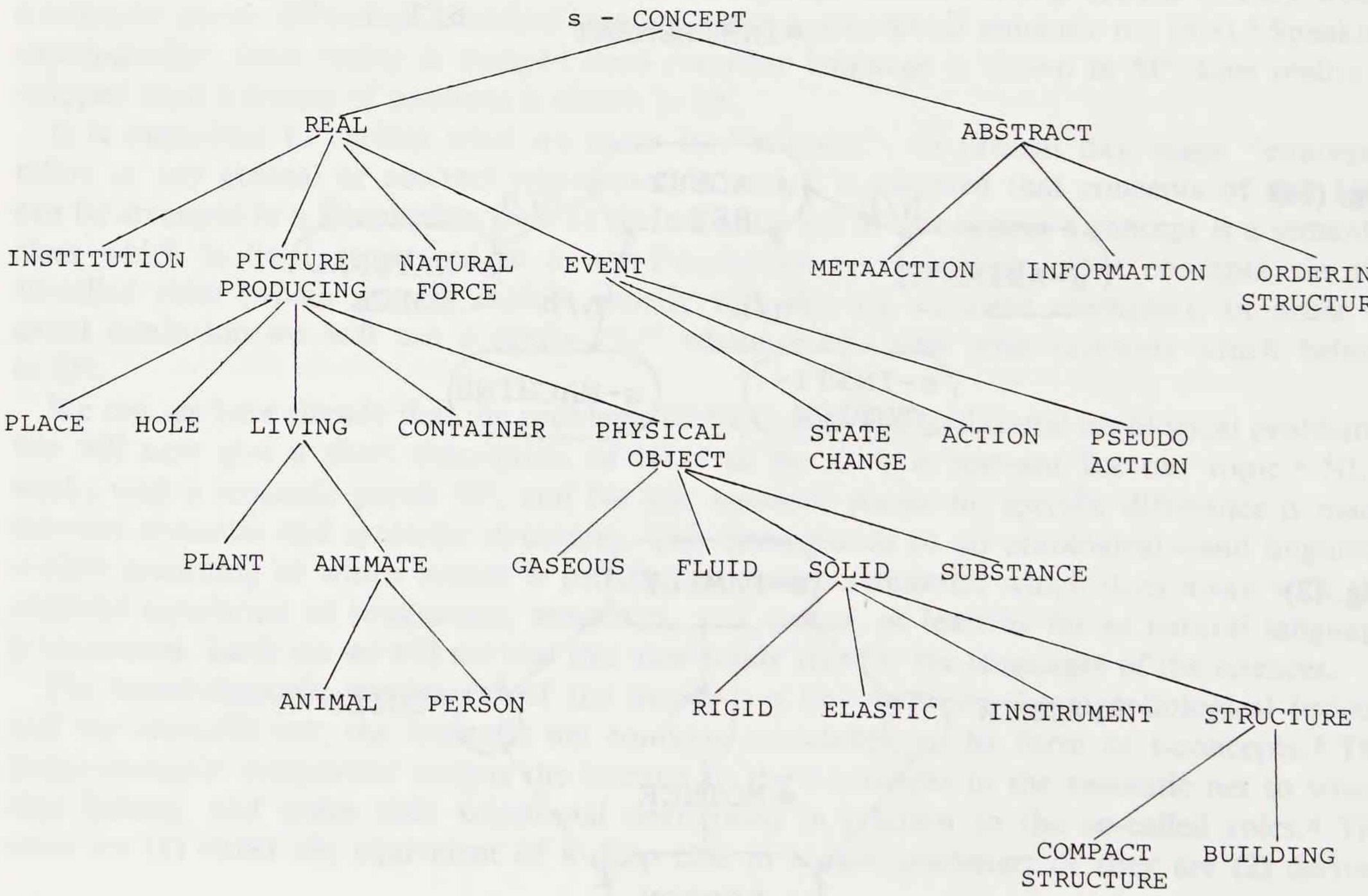
Figs. (1), (2), and (4) also yield the "positive" aspect of role restrictions which we can interpret as selectional restrictions in the linguist's sense of the word. (From this we may infer that s-concepts resemble, or have the same function as, semantic markers. In Fig. (3) this is indicated by starting the graph with CONCEPT rather than with WORLD, REALITY, or the like).

When we concentrate on the negative aspect of the selectional restriction we say that it is—in the case of Fig. (2)—forbidden to define semantically the s-concept FAMILY (in part) by a role like *INGESTIBLE or (in part) by a role which is not essential, e.g., *DURATION (TIME). Also, the s-conceptual restrictions—PERSON in Fig. (2)—cannot be ignored.

For instance, in Fig. (2) we cannot substitute ANIMATE for PERSON. Figs. (1), (2), and (4) are a representation of the statistically invariant semantic usage of an element of a language; this language is, however, not a natural language, although it is not entirely independent from natural language (see below): it is the s-conceptual language of the semantic net.

We need further some description of the semantic net. The arangement of a part of the s-concepts in the semantic net looks, in an abbreviated form, as follows:

Fig. (3)



One should, however, not imagine that all lexemes of a natural language are assigned to s-concepts. Those which are not assigned to s-concepts are assigned to roles. What, e.g., does not belong to the s-concept "layer" of the net?

When we study other semantic nets we see that it is customary to introduce two s-concepts FATHER and MOTHER which then have to be repeated as often as necessary, e.g. as sub-concepts of HUMAN and ANIMAL.[7] In NLU, however, the categories father and mother are treated as roles, and, from the ontological standpoint, quite rightfully so, since to be a father or a mother belongs to the "essential" makeup of many living things."Essential" means here "theoretically essential" since not everything which seems to be essential in the world of things and actions proves to be essential when scrutinized closely. We will see later on that s-concepts and their roles plus the s-conceptual role restrictions can be seen together as semantic definitions and perhaps even elements of semantic axiomatic systems. Then we will be forced to return to the notion already mentioned, namely, that s-concepts and roles are terms.

The so-called logical operators of natural languages are also represented by s-concepts. This means that lexemes like *or*, *and* etc. are believed to have meaning, even empirical meaning. This brings us to a topic that we already hinted at when we talked about the parser and stated that in this parser no specific difference is made between syntax and semantics. The net now completely abolishes a distinction dear to traditional ontologists, namely the difference between the grammatical subject and the grammatical unary, binary, or n-ary predicate, or, in another terminology, the difference between the noun and the verb.

Here one may argue that we have smuggled the dichotomy of noun-verb or subject-predicate into the net by introducing such s-concepts as ACTION and PICTURE-PRODUCING. But not all verbs denote actions; many denote states and are then subsumed under roles. Also, nouns and verbs which are directly connected with s-concepts are connected to them irrespective of their morphological status. The s-concept ACTION, e.g., accommodates verbs as well as nouns.

Ontologically we can relate this approach to the philosophy of Leśniewski. Leśniewski developed a logico-ontological system where subject and predicate are no longer seen as two different syntactic categories. In principle, there is no predication possible as long as we are in the semantic net. Instead of predication we have specific forms of semantic correlation or semantic relationship.

A good example of the dominant role of semantics in NLU is offered by the way in which we may look at negation. In the *Tractatus*, Wittgenstein uses the well known and, by now, well worn metaphor that contradiction leaves no room for the empirical world.[8] Negation is sentence negation and double negation equals affirmation. Ontologically and semantically speaking, a sentence negated in such a way yields no semantic information and leaves behind an ontological and semantic void.

This purely logical syntactic form of negation is of no value in the language of scientific theories where one uses a semantic form of negation.[9] Logical-syntactic negation is equally unsuited for natural languages. In text logic—which is, rather, a text semantics—it has been assumed that the negation operator is not a truth-functional but a modal operator; this would put *nicht* (*not*) in one class with *möglich* (*possible*), *notwendig* (*necessary*), etc.[10]

In our system NLU the logical aspect of negation disappears. A grammatical-syntactic aspect is retained insofar as it can be shown that negation in German ordinarily applies to syntagmas or constituents rather than to entire sentences. Still, this would not save us from falling into the ontological and semantic void. But if we leave behind logic, and even grammatical syntax, it can be shown that in the proper context each negated syntagma or constituent acquires positive meaning and, thus, ontological impact. In the proper context, the meaning of *Hans did not come today* may be revealed as being the meaning of *Hans will come tomorrow.* Grammatical-syntactically, we see here that *did not* belongs to *today* rather than to the entire sentence. Negation is thus seen as a device to temporarily change the meaning of a syntagma or constituent.

Here we stand at an important point in the relationship between reality and language. Hegel, and Marx after him, had interpreted nature as a dialectic process and had assumed also that in nature thesis and antithesis stand in the relationship of affirmation and negation to one another. But there exists nothing negative in the empirical world, and this is mirrored in our system by giving negation a positive interpretation. (See also footnote no. 19 for further examples of how logical operators are to be modified for natural languages and the languages of theories.)

What is now the semantic and ontological status of the semantic net including its roles? In its idealized version it must, on the one hand, accommodate all lexemes, sentences, and texts of at least one natural language by either assigning them to s-concepts or to roles. Thus the net is language-dependent, and, as Wittgenstein put it, using the word *Netz* (*net*): "Human beings are entangled in the net of language, and they do not know it".[11] But since the semantic net also represents our present knowledge it cannot be allowed to represent obsolete or faulty knowledge which has become embedded in the semantic structure of language. We have to eliminate "grammatical illusions" as Mauthner called them, or "misunderstandings" in Wittgenstein's terminology.[12] It is not difficult to find examples. For instance, in the German language a sentence like *Der Stein fällt* (*The stone falls*) gives the impression that *Stein* (*stone*) is to be assigned to the concept s-ANIMATE and could, therefore, appear in the role of *AGENT. If we are to believe the semantic structure of German, whales are fish and should be subsumed under the respective s-concept, etc. These examples look rather simple. But when it comes to the point where large amounts of lexemes have to be codified and the proper s-concepts and roles assigned to them, one realizes that the removal of grammatical illusions is a difficult and very time-consuming task. About this we will make some more remarks later on.[13]

In the semantic net s-concepts are defined semantically through their roles and the s-conceptual restrictions of the roles. Which s-concepts are thus defined is governed by pragmatic principles.

We have stated already that one may consider certain parts of the semantic net as semantic definitions: each s-concept in connection with its roles and s-conceptional restrictions would be such a definition, and there could be chains of such definitions in accordance with the structure given in Fig. (3). Definitions, on the other hand, are said to be analytically true and they need no longer be viewed in the light of the empirical world, or perhaps any world if we adopt a rigidly constructivist viewpoint. Does this mean that, in fine, the semantic net is semantically self-sufficient? The answer is: yes and no. The best way to explain this answer is to look at the semantic net without scientific blinkers. Then we realize that everywhere in the net where s-concepts are defined semantically through roles and s-conceptual restrictions we have before us a kind of semantic axiom, and this axiom resembles the axioms we find in the so-called empirical axiomatic systems, that is, axiomatizations of empirical theories or, at least, empirical knowledge.[14]

It is, of course, inconceivable, that the entire semantic net forms one axiomatic system. But at least each one of its s-concepts may be viewed as an axiom, that is, an axiomatic definition. The semantic net SN is also invariant or stable over a certain period of time.

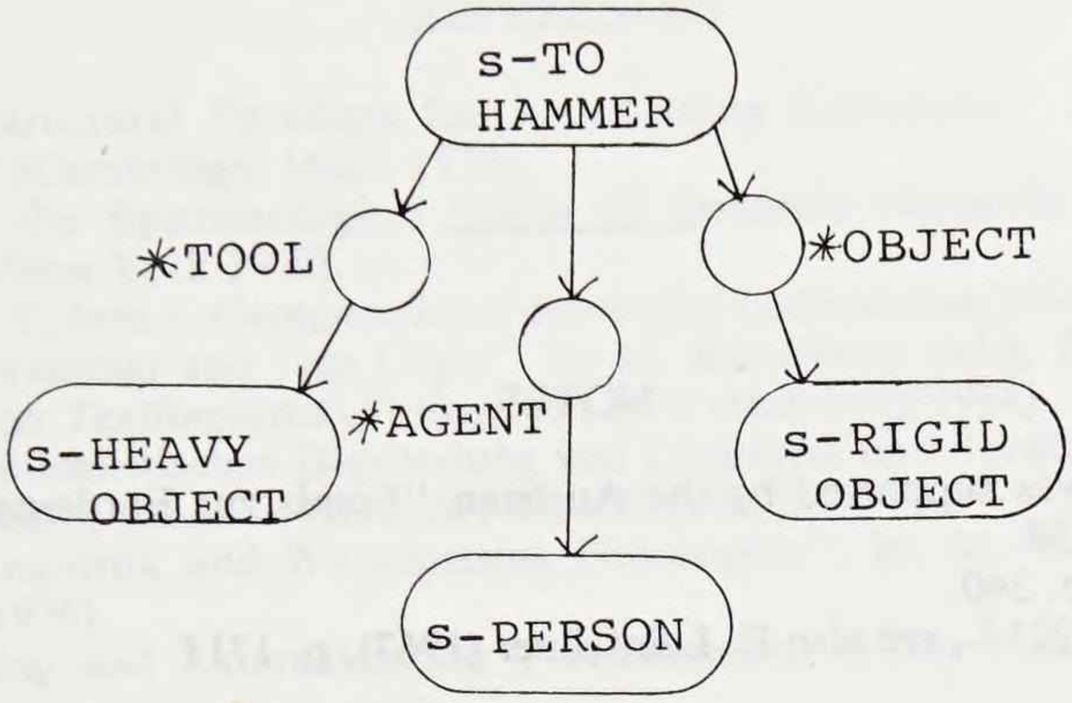
Since trees or directed graphs can be considered as games we might have here a possibility for the application of the Wittgensteinian concept of language games.

Various authors have put forth the view that axioms are definitions, e.g., Poincaré, Schlick, Helmholtz, and von Mises; but those authors differ when it comes to answering the question of whether such definitions have to be changed when our empirical knowledge changes.[15] For scientific theories, the most natural standpoint is that of von Mises and Helmholtz: axioms have to be changed when our knowledge (theories) changes.

What does this add to the solution of the problem of the ontological status of the semantic net in NLU? An empirical axiomatic system is a generalization of our empirical knowledge, of statements which have empirical or referential meaning.[16] The axioms themselves, being definitions, acquire what we may call contextual or language-immanent meaning. Thus, they

define what is semantically admissible in the whole theory, including the theory's empirical statements. For instance, once it has been stated as an axiom that the distance d between two identical points is zero, $d(x, x) = 0$, no empirical sentence which contradicts this axiom semantically is admissible. The same holds for our semantic net as far as s-concepts are defined through the roles and their s-conceptual restrictions. Once we have an s-concept, e.g. s-TO HAMMER, and we establish that the s-concept s-TO HAMMER needs a role *AGENT, which has to be s-conceptually restricted by s-PERSON, we can no longer admit the sentence *The hammer hammers* as semantically correct. This, of course, does not mean that we wish to correct or improve natural language; it simply means that an s-conceptual analysis of *The hammer hammers* is not possible.

Fig. (4)



As we have already seen, the semantic structure of a natural language and of the semantic net may clash: then grammatical illusions and linguistic misunderstandings ensue. What do we do in such cases? We use lexical semantic transformations which adapt natural language to the structure of the net, or, in other words: we adapt natural language to our knowledge. When we encounter a sentence like *The hammer hammers* we have to restore the structure given in Fig. (4), e.g. by introducing a dummy to fill the role of *AGENT and by changing the status of the noun *Hammer* to a role-filler for the role *TOOL with the s-conceptual restriction (e.g.) s-HEAVY OBJECT. Mauthner called a theory of knowledge which does away with grammatical illusions an "unmenschliche Erkenntnistheorie", a theory of knowledge which is divorced from humanity.[17] However, if we interpret the semantic net, or, rather, parts of it, as various semantic axioms or semantic axiomatic systems which can be seen as separated from the empirical world but which, nevertheless, can at any time be related to it, or mirror this empirical world, then this non-human aspect disappears. Also, the semantic net is, of course, revisable; it is not a Platonistic structure.

In case certain s-concepts are s-subconcepts of other s-concepts, or in case definitions of s-concepts (through their roles and s-conceptual restrictions) hang together, we have to consider the "how" of this connection. On the received view, such s-concepts would be connected through a purely logical-syntactic or logical form of deduction, e.g., the modus ponens;[18] but this is not the case with our semantic net. We will add only a few remarks. The idea of a purely syntactic logical deduction in an empirical axiomatic system is a chimera. In the same way it is a chimera in the sciences in general and in natural language. Deduction or, rather, inference, in the sciences and in natural language is either based on semantics, e.g., semantic inclusion, or on mathematics, but not on formal logic.[19]

As is also to be expected, the semantic net or parts of it do not hang together logically in the sense of logical syntax, but semantically. The structural relations of the net cannot be defined merely by explaining them in the framework of logical syntax, although this is done in related systems.

In conclusion we may say the following. It is interesting for the philosopher that our system NLU cannot function when based solely on logical syntax. Semantics is prior to logical

syntax, and even to grammatical syntax. This has been shown for scientific languages (theories),[20] and the project under consideration, as described in this paper, does the same for everyday language as well as for the s-conceptual language of the net.

One final remark: The problems of traditional and modern ontology and semantics do not change their shape or disappear because we have computers to work with. On the contrary: they become more obvious, more pressing, and sometimes more intractable. On the other hand, the computer offers a unique testing ground for certain semantic and ontological systems.

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NOTES

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1 Mauthner (1980), Vol. 1, p. 340.
2 Leinfellner, E., (1969), p. 221 f., see also E. Leinfellner (1967), p. 171 f.
3 Brachman (1978).
4 Steinacker (in press).
5 Brachman (1978); Brachman (1979).
6 Brachman (1978); Trost/Steinacker (in press (b)).
7 Trost/Steinacker (in press (b)).
8 *TLP* 4.463, p, 42; see also Leinfellner/Leinfellner (1978), p. 24 f.
9 Leinfellner/Leinfellner (1978), p. 303.
10 Dik (1974), p. 92.
11 *PG*, p. 462.
12 *PI*, § 90, p. 43: "Our investigation is therefore a grammatical one. Such an investigation sheds light on our problem by clearing misunderstandings away. Misunderstandings concerning the use of words . . ."
13 To produce grammatical illusions still seems to be a favorite pastime. Viz. the following quotation from Ryer (1977), p. 43: "One may say, 'It thinks in the universe', in the neuter gender, in the same way as the weather forecast announces: It rains along the Atlantic coast." In our analysis, *it* in *It rains* or *It thunders* is a place-holder, a dummy subject which has no semantic import since it cannot be exchanged for any other subject term. Of course, in the framework of Greek or Roman mythology a sentence like *Jupiter thunders* is admissible.
14 Leinfellner/Leinfellner (1978), p. 331 ff.; Leinfellner/Leinfellner (1977), p. 172 ff.
15 Leinfellner, E. (1978), p. 110 f.
16 For an exposition of the philosophical aspects of a dual semantics in all its ramifications see Leinfellner/Leinfellner (1978).
17 Mauthner (1980), Vol. 2, p. 284.
18 It has even been maintained that the connection between what we call roles—of type (2)— and what we call s-concepts is deductive and takes the form of the modus ponens; see Dik (1974), p. 130 f.
19 Leinfellner/Leinfellner (1978), p. 335. It is well known that the so-called "logic of texts"—which is, rather, a form of semantics—deviates from formal logic (Dik (1974), p. 93). The same applies to scientific texts, that is, theories (Leinfellner/Leinfellner (1978), p. 278 f.). It is interesting to note that the linguist and the philosopher have independently arrived at the same or very similar conclusions, and we will list some of them:

(1) The law of double negation does not apply: $\sim\sim p$ is not equal to p (Dik (1974), p. 93; Leinfellner/Leinfellner (1978), p. 303 f.). In scientific languages it matters whether we decide for the left or the right side of a tautology, e.g. the tautology $\sim\sim p \leftrightarrow p$ (double negation).

(2) The law of the excluded middle has many exceptions in natural languages, and, according to the linguist, those exceptions are stylistically relevant. In other words: contradiction is not meaningless in natural language (Dik (1974), p. 93). For an example see the second paragraph of this paper: "language both mirrors and does not mirror". For scientific languages, the law of contradiction has to be formulated semantically, not syntactically (Leinfellner/Leinfellner (1978), p. 42 f., 209, 279, 304, 309).

(3) The deMorgan laws hold only when the sentential connectives in a natural language are interpreted in a specific (semantic) way (Dik (1974), p. 92 f.).

(4) The same holds for the associative, distributive, and commutative law (Dik (1974), p. 93).

(5) All tautologies (wff's) of formal logic are not necessarily tautologies in natural languages, that is, they are not tautologies with respect to meaning and they convey information in the intuitive sense of this expression (Dik (1974), p. 93; Leinfellner/Leinfellner (1978), p. 24f.; see also above (1)).

(6) It is not necessary to introduce expressions like $p \rightarrow (p \vee q)$, $q \rightarrow (q \vee p)$ into the "logic of texts" (Dik (1974), p. 93).

(7) The logical connectives undergo changes when used in natural and scientific languages. Neither in a natural language (Dik (1974), p. 92) nor in a scientific one (Leinfellner/Leinfellner (1978), p. 25f., 306, 308ff.) does material implication hold or make sense. The same is valid for entailment (Dik (1974), p. 92). For negation see above and E. Leinfellner (1982).

20 Leinfellner/Leinfellner (1978), p. 216ff.

REFERENCES

Brachman, R. J., "A Structural Paradigm for Representing Knowledge" (= Report No. 3605, Bolt, Beranek and Newman) (Cambridge, Mass. 1978).

Brachman, R. J., "On the Epistemological Status of Semantic Networks", in: N. V. Findler (ed.), *Associative Networks* (New York 1979).

Charniak, E. and Wilks, Y. (eds.), *Computational Semantics* (Amsterdam 1976).

Dik, T. A. van, "Text Grammar and Text Logic", in: M. Rüttenauer (ed.), *Textlinguistik und Pragmatik: Beiträge zum Konstanzer Textlinguistik-Kolloquium 1972* (Hamburg 1974).

Leinfellner, E., "Zur nominalistischen Begründung von Linguistik und Sprachphilosophie: Fritz Mauthner und Ludwig Wittgenstein", *Studium Generale*, Vol. 22 (1969).

Leinfellner, E., "Die Linguistik und Wittgensteins Philosophie", in: M. Wagner (ed.), *Im Brennpunkt: Ein Österreich* (Wien 1976).

Leinfellner, E., "Meaning and Axiomatization", *Transactions of the Nebraska Academy of Sciences*, Vol. 5 (1978).

Leinfellner, E., "Negation and Semantics", in: T. Bennett-Kastor (ed.), *Papers from the 1981 Mid-America Linguistics Conference* (Wichita 1982).

Leinfellner, W. and Leinfellner, E., "Ontologie, Semantik und Struktur in den Wissenschaften", *Conceptus* (*Sonderband*) (Innsbruck etc., 1977).

Leinfellner, W. and Leinfellner, E., *Ontologie, Systemtheorie und Semantik* (Berlin 1978).

Mauthner, F., *Beiträge zu einer Kritik der Sprache*, Vol. 1—3 (Leipzig, ³1923).

Mauthner, F., *Wörterbuch der Philosophie*, Vol. 1—2 (Zürich 1980).

Ryer, R., *Jenseits der Erkenntnis: Die Gnostiker von Princeton* (Wien/Hamburg 1977).

Schank, R., *Conceptual Information Processing* (Amsterdam 1975).

Steinacker, I., "Parsing Between Syntax and Semantics" (in press).

Trost, H., "Konzept eines sprachverstehenden Systems" (= Reports of the Austrian Society for Cybernetic Studies, No. 21) (Wien 1980).

Trost, H., and Steinacker, I., "Representing Real World Knowledge in a Semantic Net", in: R. Trappl et al. (eds.), *Progress in Cybernetics and Systems Research*, Vol. 10 (Washington, D.C., in press (a)).

Trost, H., and Steinacker, I., "The Roles of Roles: Some Aspects of World Knowledge Representation", *Proceedings 7th IJCAI* (in press (b)).

Wilks, Y., "A Preferential, Pattern Seeking, Semantics for Natural Language Inference", *Artificial Intelligence*, Vol. 6 (1975).

Wilks, Y., "Good and Bad Arguments About Semantic Primitives", *Communication and Cognition*, Vol. 10 (1977a).

Wilks, Y., "Making Preferences More Active" (= D.A.I. Research Report No. 32) (Edinburgh 1977b).

Wittgenstein, L., *Tractatus logico-philosophicus*, in: L. Wittgenstein, *Schriften*, Vol. 1 (Frankfurt 1960).

Wittgenstein, L., *Philosophische Untersuchungen/Philosophical Investigations*, translated by G. E. M. Anscombe (New York 1953).

Wittgenstein, L., *Philosophische Grammatik* (Frankfurt 1973).

* * *

HOW WE CAN BELIEVE THAT THE METER MIGHT NOT HAVE BEEN A METER LONG

Michael Losonsky

An idealist theory of reference is one in which the reference of proper names is fixed solely by the contents of name users' minds. Anti-idealists and advocates of the causal theory of reference claim that idealists cannot handle certain facts of reference. These facts are illustrated by Kripke's and Donnellan's counterexamples in which a name user succeeds in referring with the name to its referent, although she does not appear to have beliefs, intentions, thoughts, or whatever, whose contents uniquely identify the referent.[1]

An idealist will (or should) handle these facts with essences. Essences (or, if you wish, individual concepts) are attributes such as *being Aristotle*, that is attributes expressed by predicates such as 'x = Aristotle'. I will not say anything about essences except that they uniquely identify an object and they do so in all possible circumstances in which the object exists. My aim here is to say that we do express essences by our beliefs, thoughts, etc., and that support for this claim can be gathered from certain modal beliefs we have.

I think most of us believe that it is possible that Aristotle is not identical to the tutor of Alexander. Philip of Macedon might not have wanted the court physician's son to tutor his heir and thus Aristotle would have had to seek his fortune elsewhere. Most of us also believe the length of the meter standard in Paris (let's suppose it still is the meter standard) might have been different than it is in fact.

Before I turn to these beliefs, let me look at the claims expressed in them. How are we to understand the claim that it is possible that Aristotle isn't identical to the tutor of Alexander? I am assuming that objects are necessarily self-identical, so the claim is not that Aristotle, who is Alexander's tutor, might not have been identical to Aristotle. The way to understand the claim is as follows: The very individual Aristotle is such that he might not have been Alexander's tutor. In some possible circumstance Aristotle isn't identical to an individual who in that possibility tutors Alexander. That is, Aristotle is such that it is possible that he is not identical to the tutor of Alexander.

Since Aristotle is in fact identical to the tutor of Alexander, from the claim that Aristotle is such that he might not have been the tutor of Alexander it follows that

(1) The tutor of Alexander is such that it is possible that he is not identical to the tutor of Alexander.

Now, although (1) is true, this is not:

(2) Aristotle is such that it is possible that he is not identical to Aristotle,

given that objects are necessarily self-identical. Wherein lies the difference between (1) and (2)?

The difference lies in the terms 'Aristotle' and 'the tutor of Alexander'. Kripke calls the former a "rigid designator" and the latter a "non-rigid designator". He writes:

> Let's call something a *rigid designator* if in any possible world it designates the same object, a *non-rigid* or *accidental designator* if that is not the case.[2]

This is a bit misleading because in some possible worlds Aristotle does not exist and in those 'Aristotle', although it is a rigid designator, does not refer to Aristotle. The clearest way to distinguish rigid from non-rigid designators is contextually. If a claim of this form is true:

t is such that it is possible that *it* is not identical to t,

where 't' is a term, then 't' is not a rigid designator. If it is not true, then 't' is a rigid designator. We can see that if 't' is a rigid designator, it refers to the same object inside and outside the modal context. (What follows 'necessary that' or 'possible that' is *inside the modal context*; what precedes those expressions is *outside the modal context.*) For non-rigid designators this is not so. The 't' outside the context refers to one thing, while inside it refers to something else.

Let's now look at modal beliefs of the form 't is such that it is possible that *it* is not identical to t', where 't' is non-rigid, a bit more closely. Consider the belief that the meter standard might not have been a meter long. Of the meter standard Ludwig Wittgenstein writes:

> There is one thing of which one can say neither that it is one meter long nor that it is not one meter long, and that is the standard meter in Paris. (*PI*, § 50)

Kripke takes Wittgenstein to task for this. He does not see why one can't meaningfully and truthfully say that the meter standard in Paris is one meter long. In fact, Kripke doesn't even believe that this standard, let's call it 'S', is necessarily one meter long.

Kripke writes:

> Even if . . . [stick S] is the *only* standard of length that he [Wittgenstein] uses, there is an intuitive difference between the phrase 'one meter' and the phrase 'the length of S . . .'. The first phrase is meant to designate rigidly a certain length in all possible worlds, which in the actual world happens to be the length of stick S . . . On the other hand 'the length of S . . .' does not designate anything rigidly. In some counterfactual situations the stick might have been longer and in some shorter if various stresses and strains had been applied to it.[3]

In short, according to Kripke there is this intuitive difference between 'one meter' and 'the length of S' because he believes that the length of S is such that it is possible that *it*—that very length of S—is not identical to the length of S.

So in order for there to be this intuitive difference, Kripke must, in his belief, distinguish between the length that S in fact has and the length S might have had. How can Kripke do this, given that S is "the *only* standard of length?" That is, with S as his only ruler, how can Kripke believe that the length of S might have been different than it is in fact?

To see the problem and how it will be solved, suppose that Kripke is a modal traveler whose task is to measure S in all the different possibilities that S exists, and that the only thing he has with which to identify length is S. What ruler would he use to measure S in the different possibilities? By hypothesis the only thing he can rely on is S. But with S as his only ruler, he will not measure a difference in the length of S in the different possibilities. In each possibility S is however long it is in that possibility. So the only measurement Kripke will make with S is that S is however long it is, and, of course, S is always however long it is.

If Kripke measures a difference in the length of S in different possibilities, he relies on some other ruler besides S. To measure a difference he must keep the length of S in fact constant as he goes to the possibility in which S is of a different length. That is, he must have something that identifies the length S in fact has and keeps it constant from possibility to possibility. Since Kripke's modal travels are a metaphor for his modal belief, we can say that what Kripke needs in order to measure a difference in S' length in different possibilities is something that identifies S' factual length *inside and outside modal contexts.*

It is now easy to see why someone would assert that the length of S is necessarily as long as it is. If S is the only standard of length in the sense that it is the only thing there is that identifies length inside and outside modal contexts, then it would *not* be true that the length of S might have been other than it is.

Given that Kripke does believe that the length of S might have been different, the length of S is not the only standard of length in the sense that it is the only thing that identifies length inside and outside modal contexts. What, then, identifies for Kripke the length S has

in fact inside and outside modal contexts? In other words, what is the '*it*' expressed in Kripke's belief that

> the length of S is such that it is possible that *it* is not identical to the length of S?

Since '*it*' identifies the same length inside and outside modal contexts, it will be a rigid designator. What is expressed in Kripke's belief that '*it*' rigidly refers to the length S in fact has?

An idealist has a simple answer to this question. What is expressed in such modal beliefs are essences. Kripke's belief expresses the attribute *being a particular length*. Since we are talking about the meter, the attribute expressed in his belief is *being one meter*, i.e., the attribute expressed by 'x = one meter'. (It is being assumed that 'one meter' is a proper name for a particular length.) So for an idealist

> Kripke believes that the length of S is identical to the x(x = one meter) and it is possible that the x(x = one meter) is not identical to the length of S.

Kripke's belief expresses the meter's essence, which identifies the meter inside and outside modal contexts.

The idealist thus has some reason for joy. An idealist needs essences in order to handle certain facts of reference, and we now see that he can find essences in modal beliefs such as that the length of S might have been distinct from the length of S. Unfortunately, this joy is premature. Such modal beliefs can be understood without relying on essences. There is a view according to which sometimes descriptions are akin to acts of pointing.[4] On such occasions a description identifies the object that in fact satisfies it and identifies that object inside and outside modal contexts. Such descriptions will be symbolized by replacing the article 'the' with '*dthat*'. On this view,

> Kripke believes that the length of S is identical to *dthat* length of S and it is possible that *dthat* length of S is not identical to the length of S.

The demonstrative description '*dthat* length of S' identifies an object as rigidly as does the essential description 'the x(x = one meter)'.

A defense of idealism thus requires an examination of demonstratives. This shouldn't be surprising. The arch-idealist Hegel begins his *Phenomenology of Mind* by examining demonstratives.

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NOTES

1 Kripke, S., "Naming and Necessity" and K. Donnellan, "Proper Names and Identifying Descriptions", in: D. Davidson and G. Harman (eds.), *Semantics of Natural Language* (Dordrecht 1973), pp. 253—355 and pp. 356—379, respectively.

2 Kripke (1973), p. 269 f.

3 Kripke (1973), p. 279 f. References to time have been deleted because I'm assuming that S' length remains constant over time.

4 Kaplan, D., "Dthat", in: P. French *et al.* (eds.), *Contemporary Perspectives in the Philosophy of Language* (Minneapolis 1979), pp. 379—400.

* * *

MINIMAL ONTOLOGY AND THE THEORY OF MEANING*

Johan Van der Auwera

1. In her "Some Preliminaries to Ontology" Susan Haack[1] suggests that when an ontologist denies existence to an entity of a certain type, he often does not *really* mean this. He only wants to deny that the entity in question is what it is generally thought to be. He actually accepts *that* the entity exists, but disagrees as to *what* it is and his contribution bears on the 'what' side. This contrasts with what I will call 'minimal ontology'. Minimal ontology focuses on the 'that' side. Let it be a strategy of abstracting rather a lot from the details of what things are and of restricting oneself, again to a rather large extent, to the acceptance that things exist. Let me illustrate this as follows. Suppose that I have just dropped my pen on the table. I am willing to claim that there was, only a very short while ago, a state of affairs in which I drop my pen on the table, i.e. that reality was characterized by something like a small and abstract spacetime slab in which I drop my pen on the table. So I commit myself to the existence of states of affairs. Yet I do not really know what they are. I have no idea how small and abstract states of affairs are and I am not even sure whether it is good to make them spatio-temporal. Still, despite this uncertainty, I feel sure enough to claim that there are states of affairs. I furthermore do not hesitate to claim that there are objects. My pen, for example, is an object, and so is the table and even I am an object. But my assurance that objects exist does not imply that I have a theory of 'objecthood'. It is clear that I am quite different an object from my pen, the table, a star, a poem, a meaning, and a unicorn. But these differences will not concern me here. I also believe that there are processes and actions. The dropping of my dropping my pen on the table, for instance, is a process and it may be an action. But I have nothing interesting to say about what a process is and I will not develop a theory of action. To conclude, I claim that there are states of affairs, objects, processes and actions, and that they all at least *somehow* exist. This 'somehow existing' is a minimal existence, the type of existence that minimal ontology is all about. The 'how' of the 'somehow existing' is the question on which minimal ontology tries to maintain a certain neutrality.

The minimal ontology that I have in mind prevents me from treating questions such as the following:

> Isn't the existence of an object much more basic than that of a process in that the latter would only be 'something about objects' which we, humans, have attributed a concept or a word to?

Even if a process were indeed *only* something that humans have given a concept or a word to, it still *is* something, i.e. it still enjoys a minimal existence. This is not to deny that an object may indeed be more basic than a process and that processes may be primarily conceptual or linguistic constructs. These are detailed 'what' questions of non-minimal ontology. On the level of non-minimal ontology one may worry about the realism-conceptualism-nominalism controversy. Minimal ontology, however, is innocent in this debate. It is true that it definitely incorporates a realism, but the latter is a variety (a minimal one) that does not contrast with conceptualism or nominalism.

In a way minimal ontology is maximal.[2] As it does not take all that much for an entity to at least 'somehow' exist, minimal ontology is extremely generous. This can best be shown with the example of possible words. I am absolutely convinced that things could have been different from the way they actually are and that counterfactuality and mere possibility is just as ontological a feature of reality as actuality. So even what does not actually exist or

only possibly exists, still *somehow* exists, i.e. in a non-actual way. Translated in the possible worlds jargon, this means that there are possible worlds other than the actual one and, as far as I can see—here I come to the maximality—the number of possible worlds is exceedingly large, if not infinite.

2. In the rest of the paper I will further clarify minimal ontology by way of treating some objections.

2.1. "Minimal ontology is supposed to be restricted to 'that' questions and abstract from 'what' questions. Hence minimal ontology is just as impossible as it is to separate 'that' from 'what' aspects."

The objection is too crude. First, I do not claim that the separation between 'that' and 'what' is unproblematic. It is obvious that when I claim *that* there are states of affairs, I have some idea about *what* they are. Otherwise, I could not even claim that there are entities that differ from states of affairs. Second, I do not claim that minimal ontology should *totally* abstract from 'what' aspects, but only that it should abstract to a large degree. It is true that minimal ontology contains a large dose of non-commitment, but that does not mean that the minimal ontologist does not commit himself at all.

2.2. "Of course states of affairs, objects, processes, and possible worlds *somehow* exist. This idea merely precedes philosophical speculation. Ontology only starts when one distinguishes between derived or shadowy and underived or real existence. So 'minimal ontology' is perhaps minimally interesting in so far as it represents an uncontroversial common sense understanding that precedes ontology, but it is not ontology."

This objection gets a threefold answer. First, while it may be true that my minimally ontological treatment of objects and processes represents something like an ordinary parlance understanding, such does not seem to be the case for states of affairs and possible worlds; I do not think that there are common sense notions of states of affairs and possible worlds. Second, why wouldn't minimal ontology be ontology? Surely, I am every bit as concerned with a theory of existence and with the sorts of things that exist as the traditional ontologist. If Haack is correct in her suggestion that classical ontology contains a lot of hidden 'that' claims, then even classical ontology seems to contain a minimally ontological fragment. Third, the question of whether minimal ontology is interesting or not cannot be settled a priori. I make the a posteriori contention that it *is* interesting. This leads to the next objection.

2.3. "Minimal ontology cannot be *too* interesting, for it necessarily misses out on what is perhaps the most interesting controversy concerning ontology, viz. the debate between realism, conceptualism and nominalism."

My answer has two sides. On the one hand, I admit that minimal ontology as such is neutral in the controversy. On the other hand, I contend that it *allows* for a most interesting stand. Very often, so I believe, *each* of the three classical positions is correct. To go back to the example of my dropping my pen on the table: I am a realist in that I am convinced that there really are pens, independent of my thinking and talking. I espouse conceptualism, for I have a 'pen' concept and so have most Westerners, I assume. I accept nominalism for there is, in English, for example, a word that corresponds to both the real thing and the concept. In English this word is 'pen'. So, in the case of pens, realism, conceptualism, and nominalism are *jointly* correct. To 'glue' the three positions together, I propose a *reflection* thesis, i.e. the idea that, to some extent, language reflects both mind and reality. I further claim that the 'pen' case lends itself to an interesting generalization, such that one can build an entire reflectionist theory of meaning, which I have called '*Speculative Grammar*' comprising a reflectionist logic (see Van der Auwera (1980), (1981)).

The feasibility of a reflectionist theory of meaning and logic is very important. In a way, it defines the minimality of minimal ontology. Remember that minimal ontology is a strategy of abstracting from details. Nothing in the earlier exposition explicitly states what is to be considered a detail and what not. It is implicit, of course, that the feature distinguishing a state of affairs from a possible world or a process or an object is *not* a detail. If it were, we would

get an *absolutely* minimal ontology that only postulates 'somehow existing somethings'. But we do not push the abstraction that far and the reason is the reflection thesis. We abstract to the point that we get the 'somethings' that can be held to be reflected in cognition and language. This does not make minimal ontology psychology or linguistics, incidentally; I still claim that there are objects or states of affairs, independent of mind and language.

2.4. "Minimal ontology is despicable. It blatantly flouts Occam's razor. A universe that has a (near-)infinity of possible worlds and that has many of its 'somethings' tripled in cognition and language is vastly overpopulated."

My answer has two parts. First, I accept the validity of Occam's razor. I think, however, that it is often overused and that it should be counterbalanced with Menger's comb.[3] The comb serves to disentangle and individuate various threads of thought: "entities must not be suppressed below sufficiency". Barbers need both combs and razors; so do thinkers. Second, the issue about ontological generosity and parsimony should not be confused with that of methodological economy. Let me illustrate this with reflectionist logic. The latter is supposed to be a theory about speech acts and certain words (e.g. "if . . . then"), mental states and valid inference, as well as about states of affairs and certain general features of the universe. The reflectionism lies in the fact that the ontological is taken to be reflected by the mental and the linguistic. A law like "if p and q, then q" now holds for speech acts, mental states, as well as for states of affairs. If I assert that p and q, for instance, then I also assert that q. Similarly, if I believe that p and q, I also believe that q, and if there is a state of affairs in which p and q, then there is also a state of affairs in which q. I can therefore abstract from the purely linguistic side of speech acts, the purely mental side of mental states, and the purely ontological side of states of affairs, and formulate the law in terms of what speech acts, mental states, and states of affairs have in common. In short, to a large extent reflectionist logic does not offer three separate theories, but only *one* theory that has three interpretations.

2.5. "The sketch of minimal ontology is too vague and programmatic to be taken seriously."

I accept that the sketch is vague and programmatic. What else could be expected of a paper of this size? I *would* accept that it need not be taken seriously, if I hadn't tried to dispell the vagueness and carry out the program elsewhere. But I have (see Van der Auwera (1980), (1981)).

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NOTES

* Thanks are due to Andrew Roper for helpful discussions.

1 Haack (1976), p. 471.

2 The phrase is due to Jaakko Hintikka.

3 Menger (1979), p. 106.

REFERENCES

Haack, S., "Some Preliminaries to Ontology", *Journal of Philosophical Logic*, Vol. 5 (1976).
Menger, K., *Selected Papers in Logic and Foundations, Didactics, Economics* (Dordrecht 1979).
Van der Auwera, J., *Regaining Speculative Grammar: Speech Acts, Logic, and Focus* (Ann Arbor 1980).
Van der Auwera, J., *What Do People Talk About When They Talk: Speculative Grammar and the Semantics and Pragmatics of Focus* (Amsterdam 1981).

* * *

BEYOND SEMANTICS AND ONTOLOGY

C. Douglas McGee

It is a truism that when mystics claim to know something about the existence or nature of the deity they claim to have encountered, they speak in lyrical self-contradictions. By showing why it cannot be otherwise it is possible to draw one defensible line between what can and what cannot be spoken. The argument of this paper is that no claims concerning the existence or nature of anything whatever, when those claims are based on 'mystical experience', can be coherently articulated in any language whatever. The minimal conditions required for sense and reference are precisely those from which the mystic must claim exemption. Conversely, the experiences at the center of mysticism cannot be made to serve time in any system.

The position taken with respect to 'language' will plainly be seen to be analogous to Kant's position on 'knowledge' and Schopenhauer's on the world as idea. Even so, the argument does not depend on these elective affinities, which are mentioned primarily to call to mind a position both like that of this paper and generally familiar. Their quasi-psychological claim is that whatever it is that serves as knowledge it cannot be the mere having of an experience but must be an organization of experience according to rules; my claim is that whatever it is that serves as language it cannot be mere utterance but must be informed by syntactic and referential rules—or at least reliable regularities—and that rules or regularities analogous to these are required to organize any form of life.

I.

The Kantian point that experience is organized into knowledge through the forms of intuition and the categories is apposite, but we need not embrace the Kantian categories as such, neither with respect to their origin, nature, nor with the particular categories Kant proposes. We can, however, steal a phrase from Royce and speak of 'categorial ways of acting'. The relation of knowledge to action and the activity of the knower in ordering experience are points held in common by Kant and the pragmatists. One need not accept Kant's account of forms of intuition to argue that temporal discrimination is necessary to the distinction of one experience from another like it: every experience can be assigned a temporal label, a date, a place in order of time. This order appears to have certain characteristics: temporal relations (unlike spatial relations) are irreversable; the time of our lives has only one dimension, one line along which events are ordered; we take this line to stretch from what we call past through present to future. Even under the aspect of eternity where passage is seen as an illusion there must be relations of *this* before *that* if the view from eternity is to show anything more distinct and speakable than a blur, or a featureless, Brahmin all-at-once, or the fantastic scene that impossibly shimmers in the aleph of Borges's story.

A language suited to the uses of experience must provide some means for distinguishing among experiences in a point of time. A similarly sub-Kantian point can be made about objects which we claim to exist as something more than our own momentary, firstpersonal experiences. Difference in spatial location is necessary to distinguish one object from another: objects alike in all other respects can be distinguished as two, or many, if they can be assigned different places in space at the same time. If Tom, Dick, and Harry are identical triplets we can say they are not one but many because "Tom", "Dick", and "Harry" can be used

to name distinguishable members of a spatial order. Without this naming of parts no language could convey any claims regarding the 'external existence' or 'independent existence' of any 'object'. Indeed, one could not refer to oneself as one object among others and related to them. The entire linguistic apparatus for determination of spatial position operates further to set and relatively to fix a field for movement and action. 'Here/there', 'inner/outer', 'one/many', 'near/far', 'above and beyond', 'up/down/sideways', 'finite/infinite', 'ten meters'—such are the terms and distinctions necessary to a language able to speak of self and other and of their relations.

It is unnecessary to follow far the specific discriminations, distinctions and differences that must inform any language adequate to the needs of human forethought and action. It may even be practically impossible, since there is no compelling reason to believe that different languages share particular patterns of articulation beyond some bare spatio-temporal minimum. On the other hand, it is hard to believe that any language could get along without some analog of 'because'. The particular sequences thus linked may seem to us bizzare, but the witch-doctor who stabs thorns into the effigy of his enemy holds there to be something like a causal relation between his pricks and his enemy's pains.

But even on this we need not insist. No particular interpretive category or contrast, no particular syntactic or semantic pattern, need operate in any particular language. Perhaps even spatio-temporal organization could differ so greatly as to preclude translation from one language to another. Once again to echo Kant, if from an interestingly different context, the only rule, so to speak, is that there be rules.

One may feel obliged to say a word on the origin of these prescriptive regularities, but a case can be made for saying that it does not really matter where they came from: what matters is that they do and must operate. Even so, an account of their ground (that need not be more than possible and plausible) can be suggested. The classic claims are, of course, those of Hume and Kant to the effect that regular relations of matters of fact are psychological habits laid up in us by custom or that they obey necessary rules of thought (fecund ambiguity!) existing *a priori* in the generically human mind. The objections to both claims are too well known to bear repeating, but Kant's position has the virtue of insisting that unless some rules of understanding are *a priori* there can be no understanding. This much of his position can be retained if we abandon—albeit at terrible cost to Kant's overall position and most ambitious claims—all hope for an absolute and settle for a relative *a priori*, for patterns of interpretation logically prior not to all human experience but to the particular experience of any particular person. While the entire Kantian, semi-psychological knowledge mechanism is required to justify universal forms of intuition and categories absolutely prior to all possible experience, our modest claim can be sufficiently justified if we can say that we learn our ways of order in learning our language.

Every language is, in its ordinary use, an interpretive system, a means of ordering and managing experience. Our relation to our language is peculiar, and to remark its peculiarity may help us understand the temptation to believe in synthetic *a priori* knowledge. Each of us is born into a linguistic community: the language is at once antecedent to each of us and dependent on all of us, living and dead. Nothing is as deeply personal and deeply shared, at once unique to each and common to all. None of us sounds or writes or thinks exactly like any other, but insofar as we share definitional and syntactic structures and semantic regularities we understand each other. Nor is this a matter of mere words: *we* are structured, each of us, more intimately and deeply than we can tell, by the shared language we grow into and make our own.

We have so far been speaking of cognitive language. At some minimum we can say that here there is no meaning without differentiation, without contrast, and there is no language without paradigmatic regularities of structure and reference. But this is not true of cognitive order alone: the same holds true of evaluative language and moral order. Here too the possibility of speaking and acting depends on hierarchies and contrasts of required/optional, good/evil, right/wrong, ought/ought not, beautiful/ugly. These terms get their uses by contrast

and by their place in a system. Such as these, regulative as they are of desire and need, are more obviously related to action, to practice, than are cognitive structures. (But only more *obviously* related.) The immediate point is that all together these categories and distinctions are the principles implicit in the organization of life itself. Whether cognitive or evaluative, our ways of understanding or interpretation inform our choices and actions and thus structure every language, every form of life.

II.

To all of this I would contrast the wistful, devout or desperate attempts to speak of the experience at the heart of mysticism. My claim comprehends the (accurate) Humean point that any immediate experience—of, say, the taste of pineapple—is ineffable, but cuts a wider swath. My contention is that the essential and most puzzling features of the 'mystical experience', about its report and all claims based on it, are explicable in negatives: on the supposition that the experience and its report depend on the diremption of all interpretive patterns, cognitive and moral, from all their occasions and uses.

Given what has been said of the ordinary ordering of experience, what can be said of experience not thus mediated and organized? Of awareness not sorted out into general patterns, not constrained to the purposes of reference and action? To try to speak of immediate, intuitive awareness is to plunge helplessly into negatives. Think of the set-aside distinctions: the uncategorized experience will not be temporal, or spatial, or part of any causal web; it will present no object. Since objects are spatio-temporal constructs in it there will be no distinction of subject and object. There will be no discipline of rules, no distinctions, no discrimination of causal/coincidental, etc.

It is no more than a suggestion, but I would suggest that not only the Platonic 'beyond being' but the peculiar nature and numinousness of the Platonic forms themselves, out of space and out of time as they are, may owe something to the attempt to give philosophic sense and status to something toward which we can, in the end, only gesture. Think of the Seventh Letter. And think of Spinoza's third level of knowledge—substance wholly and perfectly manifest in each mode and every mode in all its particular specificity perfectly present in substance. Perhaps here—where there is no distinction of one and all—we can discover the temptation to speak of the concrete universal. And here there is at least a negative sense in which one can be beyond good and evil.

The awareness toward which I would gesture gets its unspeakable character from its freedom from all rules, all discriminations, contrasts, interpretations. The constraints essential to ordinary experience and its language are broken and burned away, and experience comes with a rush or release, with an excruciating freshness, newness and depth. The experience seems, in an impossible reconciliation, at once noetic and absolutely, miraculously immediate. And it seems so because whatever distinctions we commonly make between the cognitive, the moral and the aesthetic are broken and swept away along with all others.

III.

There are any number of ways to escape the discipline of rule and distinction, the limits of language pointed out in the first part. They range from drugs to saying one word over and over again to physical and breathing exercises to the most subtle spiritual disciplines. Only some of these means can hope to give the experience a continuing and fruitful place in the structure of one's life, and hence a 'meaning'. Drugs cannot do this: it is not merely that the drug-experience is ephemeral—experience is always ephemeral; only the form, the

pattern exists through some time—but that it is inconsequential, however profound it may be at the time. The meaning and consequence of an experience depends on its place in a relatively stable categorial structure. Unless it is a focus of a regularly articulated and language-like form of life, the mystical experience has no significance, does not steadily irradiate the whole of life, has no reliable effect on understanding or practice, but furnishes only a fitful illumination, an enchanting fool's fire, a distraction, a temptation.

But the letter killeth and the spirit giveth life. The order, definition and limitation required to give a significant place to mystical experience are fruits of spiritual discipline—but the spirit bloweth where it listeth. The problem is only in the first instance political. The experience is always new wine: the immediate knowledge of God's existence and nature claimed by the mystic must be seen by those concerned with discipline and meaning, with a decent order of life in the world, as dangerously explosive. And they are right. The experience at the center of the spiritual life is a universal solvent meaningful only if it is contained in an ordering form of life. The situation is impossible.

When mysticism is satisfied to be a lyrical expression of the experience at its heart, it is as true to its inspiration as words can be—but even the aptest words do not improve on silence. The discipline of life and of language required to give the experience distinct meaning and effective place in the whole of life is precisely antithetic to the mystic experience itself. Every placement sets limits. Every interpretation draws lines. The lines may be as arbitrary as those that figure out the constellations but that fixity of them, necessary to sense and reference, falsifies by binding, particularizing and thus giving a significant place to an experience the essence of which is an empty, negative freedom from all limitation. Where definitional and semantic schemes are denied governance, language has no purchase and no existential claim can be made.

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6. Ontologische Grundlagen der Naturwissenschaften

6. Ontological Foundations of the Natural Sciences

INTERNAL TRANSLATIONS AND REALITY IN SCIENCE

Jules Vuillemin

A science is not only a well made language, that is to say a system of concepts and axioms appropriate to express and to foresee the reality. Precisely because it is well made, such a language also depends on a very particular organization, which divides it, so to speak, into several parts, each one of which translates more or less adequately the others. Logic, geometry, kinematics and physics are organized in that way. We distinguish there some parts possessing their own concepts and axioms; and between these parts science allows us to establish a translation relation as much at the dictionary level as at the sentence level.

We shall examine how from different kinds of internal translation systems science derives specific concepts of reality and how these concepts, in their turn, create equally specific philosophical conflicts.

We shall go from the abstract to the concrete, that is to say from internal logical and geometrical translation systems to kinematical systems and from these to physical systems.

I

Internal logical and geometrical translation systems

Under this classification we shall distinguish three kinds of systems: the system of Schröder, of Poncelet and of Klein-Poincaré.

1) Schröder is the first who observed that logical calculi allow a duality law. We obtain a sufficient base for sentence calculus by adding to the negation either the disjunction or the conjunction. Consequently, in order to establish a logical dictionary it suffices to define the dual expressions of the affirmation, of the negation and of the four kinds of disjunction that we obtain by combining these connectors with the negation.[1]

The duality principle results in determining the internal translation system for sentential logic. It stipulates that if A is a theorem and if B is the dual of A, then $\sim$B is a theorem.[2] We easily extend duality to the first order predicate calculus, as soon as we notice the affinity between the existential quantifier and an infinite disjunction on one hand, and between the universal quantifier and an infinite conjunction on the other hand.

If a sentence expresses that a certain state of things occurs or does not occur, the same occurrence or the same non-occurrence will be expressed by denying the dual of this sentence. A sentence and that same sentence preceded by a double negation will thus indicate the same thing. And a linguistic illusion would result from seeking in the two different signs two different things which would be called fundamental concepts or "logical constants". From this consideration Wittgenstein drew a confirmation of his picture theory. If a picture can represent the reality of which it has the form,[3] it cannot represent its own form of representation. The logical form, common to every representation, is thus an absolute. Thereby, the connectors are confined to being improper symbols and punctuation signs:[4] what, nevertheless, is the reason for the redundancy of the logical language, Wittgenstein does not explain.

He is content to notice that the linguistic illusion arises as soon we ignore the independency of proposition compared with fact.[5]

2) Poncelet is justly famous for having isolated projective geometry from metric geometry. He has been justly criticized for having expressed his discovery in the narrow and exclusive form of synthetical method. In fact, the projective coordinates, that Plücker was to adopt, permit us to express analytically the projective properties of a figure. We will use these coordinates to give the geometrical duality all its extension.[6]

An equation of the n-th degree expressed in projective coordinates allows two interpretations, because it represents either a curve of the n-th *order* as a continuous sequence of points, or a curve of n-th *class* as a continuous sequence of straight lines in the plane (or of planes in the space) enveloping the first curve.

For the second degree Poncelet's dictionary directly results in the celebrated reciprocal translations between Pascal's and Brianchon's theorems.[7]

Order curves and class curves can respectively be said to correspond respectively to eye interpretation and to touch interpretation.[8]

3) With a Klein-Poincaré internal translation system, we approach, it seems, the concrete, since space is therein described as the form of exteriority.

To be able to compare the three kinds of geometry which result from studying the independency of Euclid's fifth postulate, the geometers had to determine both the genus that was common to these geometries and the difference which specifies them. Projective space did not constitute this genus, or at least this proper genus, since the projective group which characterizes it does not conserve as invariant the metrical properties of the figures, as is required by each of the three geometries. Choose however in the projective space a certain quadric (a conic for the plane), called the "Absolute", and postulate that the projective group leaves the Absolute invariant. We are said to have "adjoined" the Absolute to the projective group. Because this group conserves the anharmonic ratio, it allows us to define a generalized metric of distance and, dually, of angle.[9] The space thus obtained, that is endowed with a constant curvature, is the proper genus we sought after. Its group is the group of rigid movements. The specific differences remain to be assigned. When the Absolute is not degenerated, the distinction between imaginary projectivities and real projectivities decides between Riemann's geometry and Bolyai-Lobatschewsky's. The Absolute degeneracy amounts, in its turn, to Euclidean geometry. The curvature of space becomes, respectively, positive, negative or null.

Now choose respectively for the Absolute of the plane a degenerated and a real conic. The first choice corresponds to Euclidean geometry, the second to hyperbolic Bolyai-Lobatschewsky geometry. Represent the Lobatschewsky plane by means of the area which a real circle Σ cuts in the Euclidean plane. Inside Σ the rigid movements will be defined as the linear transformations which leave it invariant. The well known dictionary of Poincaré translates all the plane hyperbolic geometry concepts into Euclidean terms.[10]

By virtue of this Poincaré dictionary or model, the plane hyperbolic geometry axioms become demonstrable theorems in Euclidean geometry.[11] Consequently, hyperbolic geometry is consistent relatively to Euclidean geometry and the parallel postulate is independent. The dictionary is not universal but is valid only for a limited and normal piece of space. The Euclidean plane corresponds to the region inside Σ; the circumference represents the infinite Euclidean points; and the outside points, considered as "ideal" points, are at complex distances from the inside points.[12]

The incompatibility between the geometries and their relation to rigid motions distinguishes from Poncelet's the Klein-Poincaré's dictionaries. During a remarkable conflict which occurred in the second half of the XIXth century, two opposed schools originated from this incompatibility.[13]

There are first the empiricists, Helmholtz and Riemann. Helmholtz, who is the founder of psycho-physiology, tends to consider geometrical axioms as facts, if we understand by the word "fact" the particular rules of the code which is imposed on us in order that the

decoding of our impressions may give a coherent and "previsible" experience. As the founder of differential geometry, Riemann defines continuous multiplicities in a sufficiently general way, so as not to hinder *a priori* the modifications that the traditional representations of space and matter could call forth. He begins with the most undetermined expression of the distance between two points infinitely close together, and from this expression he infers the conditions for the free mobility of rigid figures. Helmholtz begins with the observed fact of this free mobility and from it he infers the distance expression. Now this change in the construction order involves a radical modification in the concepts. Geometry, for the two scientists, is a part of physics. But, according to Helmholtz, its experimental perfection isolates geometry and protects it from any threat of revision, whereas the place made by Riemann for the possible variability of space's curvature calls for such a revision and subordinates geometry to the whole of physics. On the one hand, dogmatic empiricism confronts isolated hypotheses with experience. On the other hand, according to Quine's view, open empiricism submits geometrical hypotheses to experience's collective verdict.

Klein and Poincaré are rationalists. They remove from all empirical genesis the exact concepts of mathematics. Both of them, however, refuse geometrical space the dignity of being a real substance. Since the geometrical objects are reduced to invariants relative to transformation groups, only the projective space, to which we should eventually adjoin an undetermined Absolute, could, really, be looked upon as the *a priori* form of exteriority. But any later precision, which alone will completely determine space, escapes experience. For Klein, besides the indecidability as to the connexion of global space, the contact of metrical determinations forbids anyone to demonstrate the reality of a Euclidean space which admits only one singular value for its curvature, *i.e.* zero, while perfected means of observation, which are wanting, would allow us to verify whether or not the geometries have positive or negative curvatures. Observational inexactitudes induce Popperian consequences. We would not know how to verify Euclideanism, but we would be able to invalidate it and thus to confirm one of the rival geometries. Poincaré, who is more radical, takes care to separate the concrete structure of a geometry from the choice of our measurement standards—a choice which is characteristic of an empirical geometry, in other words, of physics. Since our dictionaries translate into Euclidean language all the operations which such and such a particular group allows, choosing a geometry is as choosing a coordinate system. Such a choice is neither right nor wrong. It is more or less convenient. Since measurement standards require recourse to physics and experience—and therefore can only concern bodies, not space, it would be as absurd to pretend to compare the space form to the space content as to compare the propositional form to the real world.

Between local signs and logical operations we can make the analogy more precise. He who posits the Helmholtz-Lie problem (namely: how to generate space from retinal cutaneous or muscular unspatial impressions) has already answered that space only consists in the group law of rigid movements which provide for these impressions. The relativity of space then results from the existence of several of these groups. It remained for Poincaré to describe the psychological intuition of space in terms corresponding to this abstract structure. He did this by defining association by compensation. In short, and without entering here into an analysis of how passive and active impressions concur, we shall say that two impression sequences α and β are associated not because they are contiguous or resemblant but because they balance or cancel the same impression sequence γ. We shall call *position changes* those which such an association by compensation can cancel. *Position changes* will be distinguished from *state changes*, which we do not know how to compensate for. This opposition corresponds, for psychology, to the opposition between geometry and physics. The association by compensation also explains the analogy between geometrical and logical space.[14] For the duality principle simulates this association in the order of the signs. The negation and its association with the other connectors assures to the proposition its independence with regard to facts, that can only be positive. In the same way the rigid movements groups made position qualities independent from state qualities, which alone assume physical existence.

II

Internal kinematic translation systems

A theorem, the substance of which is due to Apollonius, establishes a kinematical equivalence between the three great astronomical hypotheses,[15] which, however, are incompatible, since the center of the world is identical with the center of the planetary motions for Ptolemy as well as for Copernicus, who respectively choose the Earth and the Sun, while they differ for Tycho, who puts the Earth at the center of the world and the Sun at the center of the planetary motions. It seems then that the three astronomical hypotheses have between themselves exactly the same relations as do the three geometries with constant curvature.

This however is not the case. The simple opposition of empiricism and conventionalism could exhaust the views of geometers about space. Motion raises a more complicated classification. Motion, like space, is said to be absolute or relative. But in contradistinction to space, motion can also be regarded as being real or apparent, at least, as soon as, according to heliocentrism, we suppose that our observer's position is movable. Then we have to imagine what movements an observer placed on the Sun should perceive. Those movements, which will remain for us directly unreachable for ever, will be regarded as real, whereas we shall regard as appearances the movements that we really observe, the appearance of which is vitiated because of the situation proper to the observer. The opposition between reality and appearance interferes and combines with the opposition between absoluteness and relativity to support three main points of view.

The two first viewpoints identify absolute and true motions, on the one hand, and relative and apparent motions, on the other. They differ by the importance they give to the equivalence theorem. Newton and with him nearly all the physicists of the whole XIXth century agree on the kinematic relativity which results from this theorem. But the fictive forces of dragging and of complementary inertia which must be added to the forces acting on a material point when the chosen coordinate system is not an inertial one inspired them to attempt to measure the absolute rotation motion of the Earth around its axis.[16] On the contrary, for a group to which not only Berkeley, but also Descartes, Huyghens, Mach and Duhem, as well as Einstein, belong, the complete kinematical relativity of motion prepares its complete dynamical relativity. Is the motion of water in Newton's bucket determinable when we remove all other bodies?[17] The notion of absolute motion is thus senseless.

By identifying absolute motion with real motion and relative motion with apparent motion, we have reproduced the simple opposition between experience and convention, and we have, at the same time, transferred the question of choice from kinematics to dynamics. But, although the equivalence theorem was known since Apollonius, neither Ptolemy, nor Tycho, nor Copernicus maintained the equivalence of the hypotheses, although all stayed, at least generally,[18] inside the limits of kinematics. Kepler, Kant, Cournot, Poincaré himself[19] directly or by implication dissociate real motion from absolute motion, and relative motion from apparent motion. The tangled curve that a planet as seen from the Earth describes on the celestial sphere is only an appearance bound to the movement of our observation point. The elliptical orbit which a satellite seems to describe around its planet, when abstraction is made of perturbations, is not a simple appearance, but a real motion or phenomenon. Still more real and still relative to the solar system, the satellite trajectory is a more composed curve, resulting from combining the elliptic motion of the satellite around the planet with the planet's elliptic motion around the Sun. Relative to the system of stars to which the Sun belongs, the real motion becomes more complicated, "and so on, without our being able to reach to absolute reality in the strict sense of the word".[20]

However if a relative motion is real without violating the equivalence theorem, it is because the Earth's particular motion carries a systematical allotment of appearances which submit them to an organic explanation incompatible with geocentric hypotheses. Kepler, in the first chapter of the *Mysterium Cosmographicum*, has by means of two plates put in parallel

the schemes of Ptolemy and Copernicus.[21] One immediately sees that the Copernican part contains for the same number of consequences a number of terms and principles quite inferior to the Ptolemaic part.

Above all, in both hypotheses a duality puts in correspondence the sentences bearing respectively on inferior and on superior planets. This duality which the Ancients considered wonderful, becomes a lawful consequence of the Copernican revolution. And it is that bond of consequence which permits us to choose, among the possible apparent movements, those movements which will be true while remaining relative. Confronted with several intertranslatable hypotheses, science will thus choose the hypothesis which organizes its consequences according to the principle of duality.

III

Approximated internal translation systems

The internal translations which are genuinely physical are distinguished by three characteristics. (1) They establish a partial equivalence between two languages, such that one and only one language can be completely translated into the other. (2) The domain for which the equivalence exists is limited by a domain where the more general language in which the unilateral translation is made gains a decisive advantage, otherwise relative to a definite scale of precision. (3) The translated language has the sense of an approximation of the translator language, and we have to fix the limiting conditions for which the partial equivalence is valid.

The precedent translation systems may have been of tremendous importance in the history of ideas. The best date that can be retained to mark the end of the Middle Ages is probably 1543, when the *De Revolutionibus* was brought out. But no improvement in the precision of measurements was directly consequent upon this revolution. On the contrary, the four systems of translation we shall now examine are strictly correlated with such improvements and, for that reason, they bring about changes which affect more deeply the ontology of science.

The first one concerns the relativity theories. It extends and illuminates, in a new way, the geometrical and kinematical translations. The three other examples of translation will be borrowed from optics, kinetic theory and quantum mechanics.

1. On the basis of XIXth century physics, it was easier and therefore, in Poincaré's sense, more true to isolate geometry from the choice of measurement standards. Should we conclude, as is often done, that by integrating, in the form of exteriority, the speed of light and gravitation, restricted and general relativity have chosen empiricism in geometry and complete relativism in kinematics?

As Reichenbach remarked, relativity doctrines have integrated in geometry or in chronogeometry the effects of the universal forces rather than subordinating geometry to physics. By invalidating therefore the limited conception which Poincaré had of the relativity of space these doctrines gave more extension to the association by compensation which he had placed at the root of the relativity principle. The group of rigid motions compensated for all that does not change length, considered as absolute. Consequently, it allowed us to assign a uniform absolute motion in a referential linked to ether. On the contrary, by cancelling all that does not alter the electro-magnetism laws, Lorentz's group sacrifices length invariance, so that length, with duration and mass, enters association by compensation. Finally, the analysis of the lift in free fall[22] shows how to eliminate the absoluteness of the Newtonian non-uniform motion by means of a gravitational field, which thus enters, at its turn, the association by compensation.

On the way, the association has ceased to separate, in the strict and biological sense that Poincaré gave them, qualities and changes of position from qualities and changes of state. But it goes on to remove from physical causality that part of the universe that recurs to a

structure relatively independent of events. By geometricizing universal forces, Einstein brought back to this structure a large number of phenomena that Newton, Kant and Poincaré had attributed to the physical becoming of the Universe.[23]

Newton's mechanics represents a good approximation of restricted relativity when the factor $^{v}/_{c}$ tends to zero, and the restricted relativity represents a good approximation of general relativity when the forces of gravitation are relatively weak. The new theories allow us to foresee, within approximation, conditions which are specific, phenomena entirely beyond the theories which approach them. Now the limiting conditions that are implied by partial translation equivalences make the translating theories subject to peculiar conservative constraints. Without such constraints general relativity, when it opposes field and matter while forbidding any conception of field as an *a priori* fixed or conventionally chosen structure, would have inevitably resulted in an empiricism of space. But if the coefficients of the fundamental quadratic form of space-time have to take at infinity the values that restricted relativity assigns them, then matter is no longer the single and total source of structure, contrary to Mach's principle and to any consequent empiricist conception of space.[24]

The equivalence between all the referentials denies any sense of the opposition between apparent and real motions.[25] However, the present opposition, more quantitative than qualitative,[26] between field and matter, because it is subject to the constraints of approximation, does not eliminate all the decisions which rule conventions and commodity and which still concern space-time as form of exteriority.

2. Both geometrical and physical Optics rest on an analogy. Indeed, because ordinary means of observation are insensible in relation to photon energy, the classical physicists were obliged to construct their optical hypothesis upon the pattern of two available theories: corpuscular mechanics and fluid mechanics. In both cases, the analogies limp. Light rays cross without being bent by one another. Waves move in an imponderable environment, namely ether, which is deprived of all the ordinary mechanical properties.[27] Once these singularities are accepted, one can establish for the phenomena of propagation, dispersion and refraction a dictionary translating the corpuscular theory into the wave theory.[28]

The translation however becomes unilateral with respect to the fixed precision scale, *i.e.* when the wave lengths are of the same order as the size of the instrument of observation.[29] The waves, in fact, introduce into physics negative quantities. The addition of two light waves that have opposite phases produces what no addition of two corpuscules of light would produce, namely obscurity.

Interference phenomena thus decide in favour of wave optics, which, at the fixed scale of approximation, prove to be real. Geometrical optics contains constructions relegated to an auxiliary language, whose use is convenient in particular circumstances. Besides the approximation condition that we have discussed, this ontological triumph of the continuum over the imagination of the discontinuum has for a counterpart the introduction of a medium with mysterious properties, namely ether. We measure and add the waves without knowing what carries them.

3. The relation of Thermodynamics to Statistical Mechanics is more one of a phenomenology to an explicative ontology than one of an ontology which would approximate another one. Once we admit that for two gases at the same temperature the mean kinetic energy is the same, then the kinetic energy, which depends on temperature and not on the nature of the gas, can be used to define temperature. A partial internal translation is thereby possible, owing to which thermological concepts may be reduced to mechanical concepts.[30]

Statistical Mechanics determines facts which completely escaped phenomenological Thermodynamics. For example, Maxwell's formula allows us to calculate all the interesting properties of a perfect gas, such as molecular free path, viscosity, thermic conductibility.[31]

Translating Thermodynamics into the terms of Statistical Mechanics is not without difficulties. The essential occurrence of probability concepts and of means in the translating language introduces into this language difficulties of their own; and it has been noted that the program of statistical reduction tends to substitute subjective interpretations for the

objective ones that were based on the deterministic hypotheses.[32] Especially, a real reduction of the concepts and principles of Thermodynamics to those of Statistical Mechanics would require our knowing how to transform, without remainder, the laws of Thermodynamics, regarded as mere phenomenological general facts, into the laws of Statistical Mechanics. The tendency toward the thermal death of an isolated system and the irreversibility which results from it are such general facts. The problem is therefore to know what happens to this macroscopic irreversibility law when it is "explained" by means of the microscopic phenomena which belong to a mechanical type and are therefore reversible. Now, for an isolated system, the entropy curve as a function of time is nearly always identical with a horizontal straight line of height S_M of maximal entropy. At each fluctuation, the curve is lowered on a short interval, without showing anisotropy. The irreversibility results from the fact that, if we consider an instant t_1 for which $S_{t1} < S_M$, a fluctuation in $t_2 > t_1$ such that $S_{t_2} < S_{t_1}$ is practically excluded because it represents an event much more unusual than the fluctuation in t_1. So "the irreversibility becomes a question of *initial conditions*. The macroscopic isolated systems present an irreversibility of fact which is not nomological and which does not obey a law".[33] Such is the price we have to pay when we translate phenomenological Thermodynamics into Statistical Mechanics. The translation depends on a supposition of fact.

4. The relation of Classical Mechanics to Quantum Mechanics offers an example of an approximation of a very different kind. The postulates of Quantum Mechanics allow us to calculate the evolution of the mean value of an observable. If, in the formula thus obtained, we take for observable the position and the momentum, and if, for more simplicity, we suppose a particle without spin to be plunged into a scalar and stationary potential $V(\vec{r})$, we determine the evolution of the mean value of the position and the momentum of that particle. We thus obtain Ehrenfest's equations, which affirm the validity of the Hamilton-Jacobi classical relations, one between momentum and speed, the other between acceleration and force (second law of Newton), these quantities arising, however, only by their averages.[34]

In Quantum Mechanics, the uncertainty relation puts a limit on the precision with which we can estimate simultaneously the position and the momentum for that microscopic limit which we shall call ε_q and which is much inferior to the limit of precision considered in Classical Mechanics ε_c; the deterministic law which, at the precision of ε_c, allowed us to cancel the commutator of the two conjugate variables is no more valid. The microscopic precision is incompatible with the existence of a law, in the classical sense, of which the classical law would be the approximation for the order of precision ε_c. The translation has changed equations between functions of variables into equations between functions of averages of variables. Knowing the value of a variable, we can only calculate the probability distribution, these distributions being given by an algorithm.

The operator coordinate, in Ehrenfest's equations, represents a number depending on time, and it figures the wave packet center at the instant t, the set of such points figuring the trajectory followed by this center. We can thus translate the quantum concepts in terms of mean images of classical phenomena. The translating theory allows us:

1) to derive the validity of the classical laws at the approximation level ε_c,

2) to generally falsify the classical laws at the approximation level ε_q, the mean value of a function being not generally equal to its value for the mean value of the variable,

3) to confirm the classical laws, in the particular case of the situations called "quasi-classical", when the wave packet is sufficiently localized.[35]

Conclusion

The preceding considerations have shown that internal translations, present everywhere in science, illuminate the relations between language and ontology.

When these translations are reciprocal and also natural, we look at them as an effect of the

language structure. An example thereof is logical duality. As proved by the intuitionist doubts, the acceptance of this duality entails some consequences which lend themselves to debate about whether they belong to the domains of linguistics or ontology.

When reciprocal translations are not equally convenient, as happens in pure geometry, they still concern only our conventions, not Nature. But conflicting conventions do not necessarily have the same value. When to differences of commodity we add differences of explicative fecundity, as is the case in astronomy of position, the appearances are opposed to phenomena. But let us not confuse appearance and illusion. The appearances are the phenomena observed from a particular point of view, and the appearance necessarily results from the choice of this point of view. The phenomena are invariant for all possible translations of an appearance system into another one. The history of relativity shows that these qualifications have no definitive value. We can agree that what was regarded as a phenomenon must be interpreted as an appearance, as soon as we perceive in it the intrusion of a particular coordinated system. We need not conclude that everything which falls into the domain of such internal translations has an artificial, linguistic or *a priori* character. By geometricizing physics, Descartes identified space with material substance. The Einsteinian field has no less reality than the *res extensa*.

With unilateral internal translations, however, Nature itself decides between the approximations which arise from our processes of knowledge and the objects of which these approximations give a representation. These different kinds of approximation tell us to give three kinds of translation of secondary qualities in terms of primary qualities. (1) Primary qualities may simply transpose secondary qualities on a scale of finer approximation, while the translating language gives to physical individuality and causality the same representation that was given to them in the translated language. (2) Primary qualities may also simulate secondary qualities by considering the averages of the mechanical values. Or (3) the algorithmic approximation may express an ontological abyss, and primary qualities reduce secondary qualities to macroscopic effects produced, in limiting situations, by the algorithms which govern the averages.

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NOTES

[1]

expressions in (or, no) base	p	∼q	pVq	p ⊂ q ≡∼pVq	p ⊂ q ≡pV∼q	p|q ≡∼pV∼q
duals in (and, no) base			∼p . ∼q	p . ∼q	∼p . q	
	∼p	q	≡p$\bar{V}$q	≡p ⊂ q	≡p ⊂ q	p . q

[2] For a systematic exposition, see Church, A., *Introduction to Mathematical Logic* I (Princeton 1956), pp. 106—109.

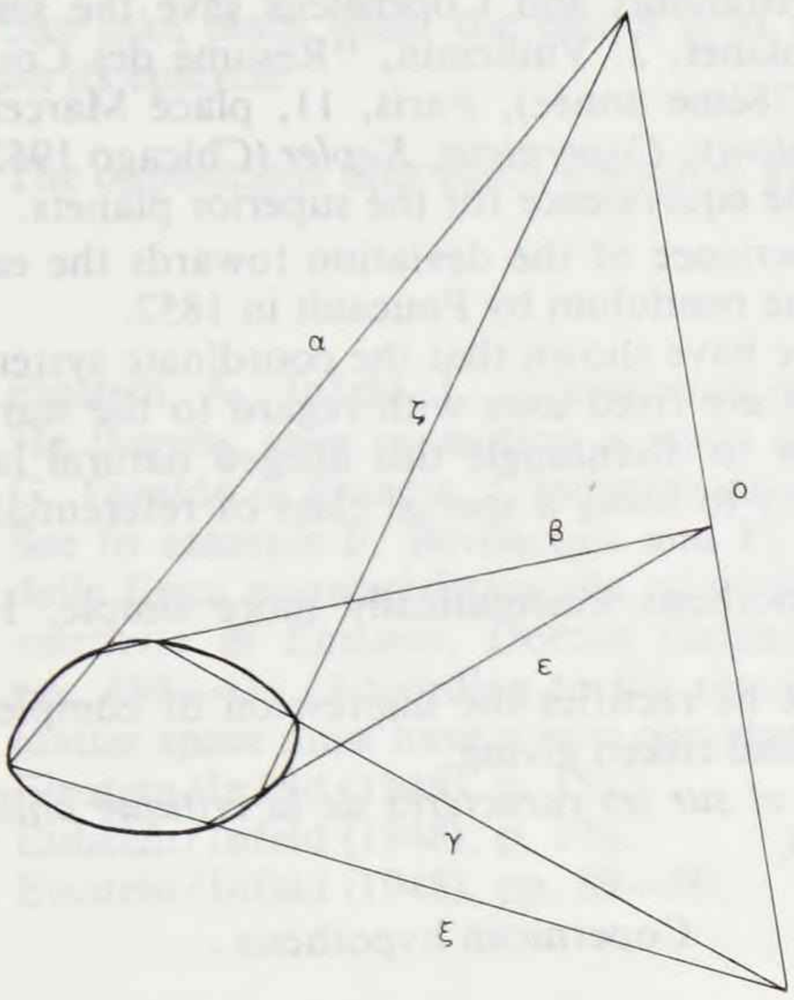
[3] Wittgenstein, L., *Tractatus logico-philosophicus* 2.171.

[4] *TLP* 5.4611 and more generally 5.4.

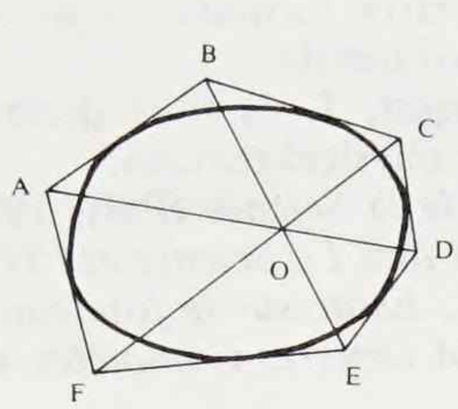
[5] *TLP* 4.061.

[6] In the equation of a straight line the projective coordinates make visible between points and straight lines in the plane (or between points and planes in the space) a symmetry that the Cartesian coordinates hide.

7 *Pascal*'s theorem on the hexagon *inscribed* in a conic section. In the hexagon formed by six *points* lying on a second *order* curve, the three *points* at which the six opposite sides intersect two by two lay on a *straight line.*



Brianchon's theorem on the hexagon *ex-inscribed* in a conic section. In the hexagon formed by six *straight lines* enveloping a second *class* curve, the three *straight lines* connecting two by two the six opposite angles intersect in a *point.*



We have underlined the dual concepts.
The other concepts identical between themselves are themselves dual.

8 Group theory allows the generalization of these internal translation methods. Two geometries will have to be considered as equivalent when a convenient choice of the elements productive of space renders their group similar. (Regarding §§ 2 and 3 and the references tied to these developments, see J. Vuillemin, "Conventionalisme géométrique et théorie des espaces à courbure constante", in *Science et Métaphysique*, Archives de l'Institut International de Sciences Théoriques, Office International de Librairie (Bruxelles 1976), pp. 65—105). The same axiomatic and conceptual structure is assigned to heterogeneous productive elements as if two kinds of being, reduced to the exclusive use of sight or touch, succeeded in communicating laws which such different sequences of impressions obey. Since the laws are identical and the difference between the productive elements depends only on the intuition, beings who would communicate in that way would represent to themselves again, in spite of the clash between the material elements, a same objective world.

9 To define the generalized distance between two points P and Q, we multiply by a convenient constant the logarithm of the anharmonic ratio that is determined by the four points P, Q, X, Y, where X and Y are the points of intersection of the straight line PQ with the absolute conic.

10 *hyperbolic concepts*	*Euclidean interpretation of these concepts*
point	point interior to Σ
straight line	Σ diameter or orthogonal circle arc interior to Σ
length of a PQ segment	C {log (PQXY)}, where X and Y are the intersection points of Σ by the *straight line* PQ
angle	angle Euclideanly measured (of which the sides are the *half-straight lines*)
congruent segments	*segments* of the same *length*
congruent angles	equal *angles*

We have underlined the words denoting hyperbolic concepts. It can be proved that (1) the intended interpretation agrees with our intuitive representation of *length*, (2) that the projectivities change a *straight* line into a *straight* line, *points* into *points* and a straight line that passes through a point into a *straight* line that passes through the transformed *point*, (3) that to a Euclidean movement progressing to the infinite in the plane there corresponds a Lobatschewskyian movement progressing indefinitely upon a straight line interior to Σ, the circumference of Σ remaining itself unreachable.

11 Poincaré, H., *La Science et l'hypothèse* (Paris 1968), p. 79; J. Vuillemin (1976), p. 79; E. Agazzi and D. Pallachino, *La Geometrie non-Euclidienne* (1978), pp. 207—220.

12 Vuillemin, J., (1976), pp. 76—77.

13 Vuillemin, J., "Poincaré's Philosophy of Space", in: *Synthèse*, Vol. 24 (1972). pp. 161—179.

14 For example, *TLP* 3.411.

15 The demonstration consists in showing that the epicyclic hypothesis of Ptolemy, the excentric hypothesis of Tycho-Brahé and the heliocentric hypothesis of Aristarchus and Copernicus save the same apparent distance between two points of the trajectory of a planet. J. Vuillemin, "Résumé des Cours et Travaux", *Annuaire du Collège de France*, 1977—1978, (78ème année), Paris, 11, place Marcelin Berthelot, pp. 427—442; "Note" of R. Catesby Taliafero in *Ptolemy, Copernicus, Kepler* (Chicago 1952), t. 16, pp. 391—393. The following scheme (p. 326) illustrates the equivalence for the superior planets.

16 Therefore through the force of complementary inertia the experience of the deviation towards the east in the case of free fall by Reich in 1831 and the experience of the pendulum by Foucault in 1852.

17 Or, in a more physical language, what have we proven when we have shown that the coordinate systems with regard to which the fundamental law of dynamic is valid are fixed axes with regard to the stars? Nothing else has been shown than that we did not know how to disentangle this alleged natural law from the too narrow formulation which subordinates its validity to using a special class of referentials, the referentials of inertia?

18 Ptolemy (*Almagest*, I, 7) thus declares the Aristarchian hypothesis kinematically more simple. He eliminates it for physical reasons.

19 See *La Valeur de la Science* (Paris 1970), pp. 185—186, where he rectifies the impression of complete conventionalism that *La Science et l'Hypothèse* (1968), p. 133, had risked giving.

20 Cournot, A. A., *Essai sur le fondement de nos connaissances et sur les caractères de la critique philosophique*, t. II of *Oeuvres Complètes*, ed. Pariente (1975), p. 10.

21

Ptolemaic hypothesis	Copernican hypothesis
I. Inferior planets = their orbit is enveloped in Sun's orbit	Inferior planets = their orbit is enveloped in Earth's orbit
Auxiliary principle = elongations limited	Consequence = elongations limited
deferent	Earth's motion
epicycle	Planet's motion
Auxiliary principle = Venus and Mercury deferents have equal revolutions	Consequence = they are Earth's motion
retrogradations	Consequence = illusion mady by the speed excess of the planet's motion over the Earth motion
Auxiliary principle = epicycle's ray decreases when deferent's ray increases	Consequence = the angles under which the orbits enveloped in Earth's orbit are seen from Earth decrease when we go away from Earth
Auxiliary principle = the conjunctions with the Sun take place when the planet is at the lowest on its epicycle	Consequence = illusion produced by the alignment of the planet between Earth and Sun
The oppositions take place when it is at the highest	Illusion made by the alignment of the Sun between Earth and planet
II. There is no retrogradation of the Sun	The Sun is immobile
III. Superior planets = their orbits envelop Sun's orbit	Superior planets = their orbits envelop Earth's orbit
Auxiliary principle = any elongations	Consequence = any elongations
deferent	planet in motion
epicycle	Earth in motion
retrogradations	Consequence = illusion produced by speed's excess of Earth's motion over planet's motion

Ptolemaic hypothesis	Copernican hypothesis
Auxiliary principle: epicycle's ray increases when deferent's ray decreases	Consequence = the terrestrial orbit parallaxes decrease when we go away of this orbit towards the orbits which envelop it
Auxiliary principle = the conjunctions with the Sun take place when the planet is at the highest on its epicycle	Consequence = illusion produced by Earth's alignment between Sun and planet
The oppositions take place when it is at the lowest	Illusion produced by Sun's alignment between the Earth and the planet

22 Einstein, A., Infeld, L., *L'évolution des idées en physique*, transl. Solovine (Paris 1948), pp. 160—162.
23 He thereby gave to motion a static image foreign to the category of causality: *Ibid.*, pp. 150—151; G. Toraldo di Francia, *L'indagine del mundo physico* (Torino 1976), p. 414.
24 See fo example F. Bevilacqua and P. Tucci, "Aspetti dello sviluppo dei concetti di spazio e di tempo della fisica prerelativistica alla relativita generale", in: *Sulla genesi storica e sul significato teorico della relativita di Einstein*, Domus Galilaeana, Quaderni di storia e critica della scienza, nº 5.4, 1973, pp. 430—431. According to the requirements of restricted relativity, at infinity and in the absence of matter space must have a zero curvature.
25 Einstein/Infeld (1948), p. 155.
26 Einstein/Infeld (1948), p. 176.
27 Einstein/Infeld (1948), pp. 89—90.

28

Corpuscular theory	*Wave theory*
Speed of light means a corpuscule carriage	Speed of light means an energy carriage
Light propagation in straight line	
in a vacuum	in ether
This propagation results from the motion of the corpuscules according to rays	This appearance arises because the wave length of light is very small compared to the bigness of both the obstacles and the openings which they meet
Newton's experiments on dispersion	
"The corpuscules belonging to different colors have the same speed in a vaccum, but different speeds in glass"	"The rays of wave lengths belonging to different colors have the same speed in ether, but different speeds in glass"
"White light is a composition of particles belonging to the different colors, whereas they are separated in the spectrum"	"White light is a composition of waves of all wave lengths, whereas they are separated in the spectrum" (a) (a) *Ibid.*, p. 85.
Refraction law	
$\frac{\text{Sin i}}{\text{Sin r}} = n$	$\frac{\text{Sin i}}{\text{Sin r}} = \frac{\lambda_i}{\lambda_r} = \frac{2\pi\, c/\omega}{2\pi\, v/\omega} = \frac{2\pi\, c}{2\pi\, v} = n$
(i = angle of incidence in a vacuum, r = angle of refraction in glass)	(n = refraction index of glass, λ_i = length of the incident wave in ether, λ_r = length of refracted wave in the glass, ω = angular frequency, $V = \frac{c}{r}$ = wave speed)

29 It is not the case when geometrical Optics is valid. Both geometrical and ondulatory Optics are valid only when the photon energies are negligible with respect to the sensibility of the instruments.
30 Let us restrict ourselves to showing this for some fundamental equations:

Thermodynamics	*Kinetic theory and Statistical Mechanics*
	Perfect gas equation
$PV = RT$	$PV = N(\frac{2}{3}) < \frac{mv^2}{2} >$ mean $\frac{3}{2}KT = < \frac{mv^2}{2} >$ mean $PV = NKT\ (K = \frac{R}{N})$
	First law of Thermodynamics
$dQ = dU + dW$ $= dU + PdV$ (for a gas) (Q = quantity of heat U = internal energy, W = work)	
	(For a gas and a closed cycle)
$dQ = PdV$	$Q = Nk\ T\ l_n \frac{dV}{V}$
	Second law of Thermodynamics
$\frac{Q_1}{T_1} = \frac{Q_2}{T_2}$	(a) $PV = NkT \rightarrow \frac{Q_1}{T_1} = \frac{Q_2}{T_2}$
	Entropy of a perfect gas in the state characterized by T and V
	$P_1 = \frac{1}{N} f(v_x, v_y, v_z)\, dx\, dy\, dz\, dv_x\, dv_y\, dv_z$ (Probability that a molecule be in the volume dx dy dz; f, Boltzmann's distribution function, does not depend on x, y, z),
	$f(v_x, v_y, v_z) = \frac{N}{V}(\frac{m}{2\pi kT})^{2/3} e^{-\frac{mv^2}{2kT}}$ (Maxwell's formula, in the most probable state the speeds are not all equal, but have an exponential distribution)
$S = Mc_v\, l_n T + Rl_n V + C$ (c_v = specific heat with constant volume, M = molecular weight)	$H = -\int_{-\infty}^{+\infty} f \ln f\, dx\, dy\, dz\, dv_x\, dv_y\, dv_z$ (Boltzmann's H theorem, where we changed the sign)
By substituting the value: $c_v = \frac{3}{2}\frac{R}{M}$ $S = R(\frac{3}{2}\ln T + \ln V + C)$	With the f value obtained by Maxwell: $H = N(\frac{3}{2}\ln T + \ln V + C)$ $S = KH.$

(a) In a Carnot cycle, during the isothermal expansion, the quantity of heat Q_1, taken from the reservoir, flows into the gas at temperature T_1 from point a (pressure = p_a, volume = V_a, temperature = T_1) to point b (pressure = p_b, volume = V_b, temperature = T_1). In a perfect gas, the energy of each molecule depends only on temperature. The temperature and the number of molecules are the same in a and in b, the internal energy is the same. The work done by the gas,

$$W = \int_a^b p\, d\, V$$

is equal to Q_1. But, during the expansion,

$p\,V = NKT_1$
(N = number of the atoms) and:

(1) $Q_1 = \int_a^b p\,d\,V = \int_a^b NKT_1 \frac{dV}{V} = NKT_1 \ln \frac{Vb}{Va}$

In the same way, during the compression at T_2 going from point c to point d:

(2) $Q_2 = NKT_2 \ln \frac{Vc}{Vd}$

In an adiabatic expansion : $PV\gamma = c$. But the expansion from b to c answers these conditions.

$pV\gamma = c = (pV)\,V\gamma-1 = NkTV\gamma-1$

So

$TV\gamma-1 = c$

But

$T_1 V_b\gamma-1 = T_2 V_c\gamma-1$

As the expansion goes from d to a is also adiabatic:

$T_1 V_a\gamma-1 = T_2 V_d\gamma-1$

So

$$\frac{V_b}{V_a} = \frac{V_c}{V_d}$$

So the logarithms in (1) and (2) are equal. Thus

$$\frac{Q_1}{T_1} = \frac{Q_2}{T_2},$$

relation valid for all reversible systems (Feynmann-Leighton-Sands, *The Feynmann Lectures on Physics*, Addison-Wesley Publ., 1963, I, 44.4).

31 *The Feynmann Lectures*, I, 40.4; Toraldo di Francia (1976), pp. 293—294.

32 Krüger, L., "Reduction as a Problem", in: Hintikka, Gruender and Agazzi (eds.), *Probabilistic Thinking, Thermodynamics and the Interaction of the History and the Philosophy of Science* (Dordrecht 1981), t, II, P. 167. On the question whether the probability in Statistical Mechanics is always a quantity derived from deterministic laws, see M. Bunge and A. Kalnay, "Quelles sont les particularités de la physique quantique par rapport à la physique classique?", in: *Fundamenta Scientiae* (Strasbourg 1976), p. 6.

33 di Francia, Toraldo (1976), p. 302. The author continues: "We very often find the isolated systems in isolated conditions of maximum entropy S_M; and in such conditions we are practically sure that the entropy should not change. In a very limited number N_1 of cases (practically null), the entropy starting from the value S_M will decrease. But in a number N_2 of cases, we shall initially find an entropy *smaller* than S_M and we are practically sure that the entropy will increase. Now the condition *of fact* is that N_2 is tremendously greater than N_1, as far as in the world there really exist systems with $S < S_M$.
"Thus, if we choose a system at random, we are certain to find it either in equilibrium or moving towards equilibrium. But there is no *law* which prescribes the irreversibility".

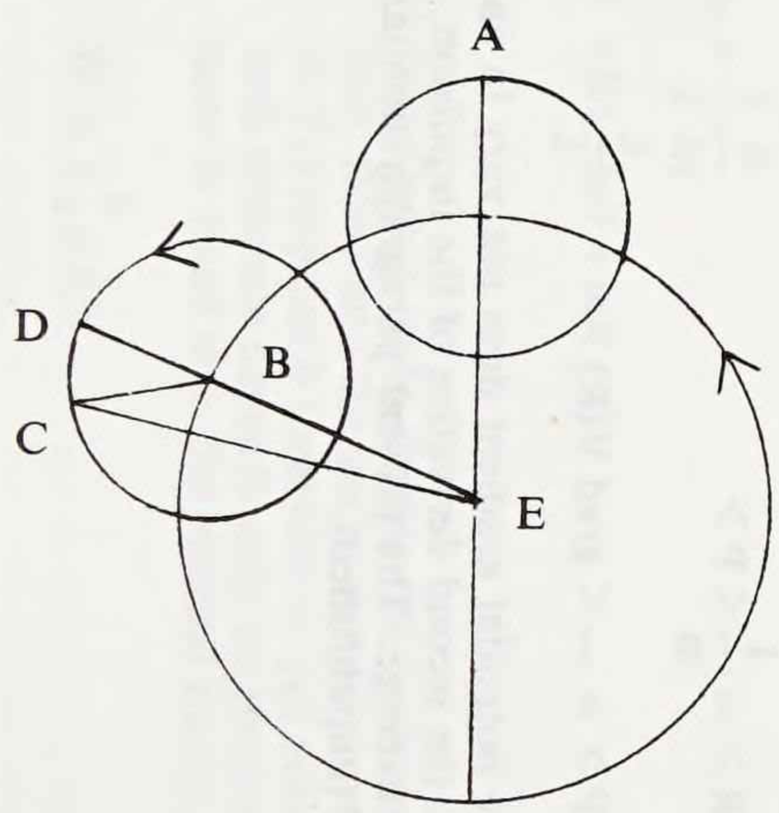
34

Classical Mechanics	*Quantum Mechanics*
$\frac{d}{dt}\vec{r} = \frac{1}{m}\vec{p}$	$\frac{d}{dt} < R > = \frac{1}{m} < P >$
$\frac{d}{dt}\vec{p} = -\,\text{grad}\,V(\vec{r}) = m\frac{\vec{d^2r}}{dt^2}$	$\frac{d}{dt} < P > = - < \text{grad}\,V(R) >$

35 In this domain centered around the average value of $\vec{r}$, the potential gradient does not vary in an appreciable way and the average of the potential gradient, i.e. the second derivative of the impulsion, may be identified with the second derivative of the momentum average. The present paragraph summarizes J. Vuillemin, *Vérité partielle ou approximation de la vérité?* (unpublished).

Equivalent dictionary hypothesis for superior planets

Epicycle hypothesis of Ptolemy



The Earth is immobile in E.
The deferent ray EB = R moves uniformly from west to east
The epicycle ray BD = r carries the planet and moves uniformly from west to east
The planet is first in A, then in C
The $A\hat{E}B$ angle is the angle of longitude, and the $D\hat{B}C$ angle, of which the summit is on the deferent, is the angle of anomaly

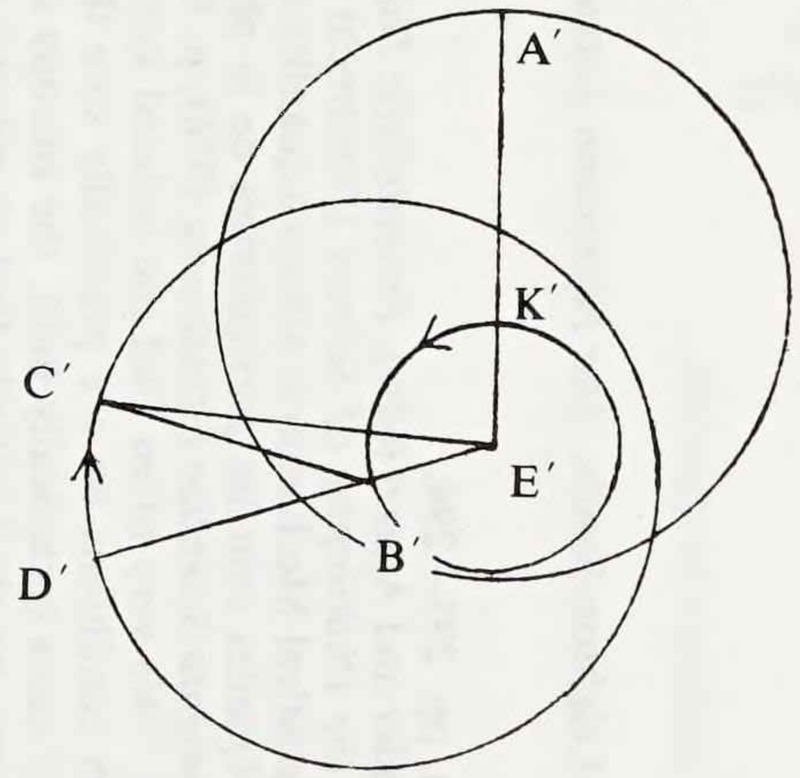
(1) $A\hat{E}C = A\hat{E}D + B\hat{E}C$

(2) $C\hat{B}D = B\hat{C}E + B\hat{E}C$

(3) $A\hat{E}C = A\hat{E}B - C\hat{B}D + B\hat{C}E$

Excentric hypothesis of Tycho-Brahé

($K'E' = BD$, $K'A' = EB$)



The Earth is immobile in E′
The mean Sun moves uniformly on the little circle (ray: $E'K' = r$) from west to east
The excentric of ray $K'A' = R$ carries the planet and moves uniformly from east to west at the same speed as the ptolemaic epicycle
The planet is first in A′, then in C′. The $A'\hat{E}'C'$ angle is the angle of apparent distance between two positions of the planet

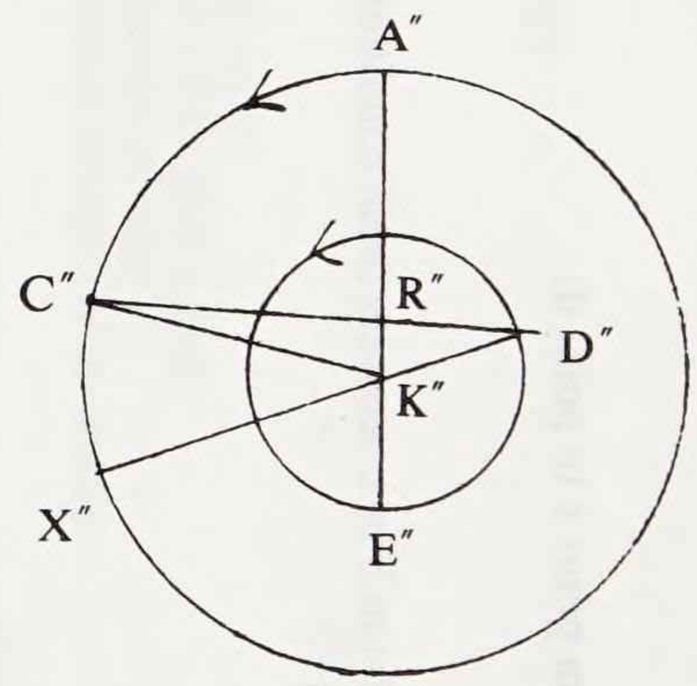
(1′) $A'\hat{E}'C' = A'\hat{E}'D' - B'\hat{E}'C'$

(2′) The angle of longitude λ = angle of motion of the mean Sun—angle of anomaly (time equation) $\lambda' = A'\hat{E}'D' - C'\hat{B}'D'$

(3′) $A'\hat{E}'C' = \lambda' + C'\hat{B}'D' - C'\hat{E}'B'$

Heliocentric hypothesis of Copernicus

($K''D'' = K'E'$, $K''A'' = K'A'$)



The sun is immobile in K″
The Earth moves uniformly on a circle of ray $K''D'' = r$ from west to east at the same speed as the mean Sun
The planet moves uniformly on a circle of ray $K''C'' = R$ from west to east (longitudinal speed of the planet)
The planet is first in A″, then in C″
The $A''\hat{R}''C''$ angle is the apparent distance between two positions of the planet (the two successive lines of sight E″A″ and D″C″ make the $A''\hat{R}''C''$ angle)

(1″) $A''\hat{K}''C'' = A''\hat{K}''X'' - X''\hat{K}''C''$

(2″) Angle of longitude λ'' = angle of motion of the mean Sun—angle of anomaly (time equation)
Therefore the $X''\hat{K}''C''$ is the angle of anomaly

(3″) (a) $A''\hat{R}''C'' = A''\hat{K}''C'' + C''\hat{K}''X'' - C''\hat{D}''K''$

(a) $D''\hat{R}''K'' + A''\hat{K}''D'' + C''\hat{D}''K'' = 2\,dr$
$C''\hat{K}''X'' + A''\hat{K}''C'' + A''\hat{K}''D'' = 2\,dr$
$A''\hat{R}''C'' = D''\hat{R}''K''$

T—THEORETIZITÄT UND HOLISMUS

Ulrich Gähde*

Die von Joseph D. Sneed vorgeschlagene Unterscheidung zwischen bezüglich einer Theorie T theoretischen und nichttheoretischen Funktionen besitzt gegenüber der Zweistufenkonzeption der Wissenschaftssprache zwei wesentliche Vorteile: Zum einen ist sie nicht mehr mit den Vagheiten des Beobachtbarkeitsbegriffs belastet, an denen die Zweistufentheorie krankt. Zum anderen werden durch diese Unterscheidung theoretische Terme in positiver Weise charakterisiert; es wird in präziser Form angegeben, wodurch sich diese Terme auszeichnen und welche Rolle sie im Rahmen der logischen Struktur einer empirischen Theorie spielen. Ungeachtet dieser grundsätzlichen Überlegenheit gegenüber der Zweistufentheorie ist das Sneedsche Konzept jedoch noch mit einigen Mängeln behaftet. Die folgenden Überlegungen haben die Aufgabe, einen derartigen Mangel aufzuzeigen und zugleich einen konstruktiven Beitrag zu seiner Bewältigung zu liefern.

Das strukturalistische Kriterium für T-Theoretizität stellt eine Explikation der Begriffe „T-theoretisch" bzw. „T-nichttheoretisch" dar und ist als solche selbstverständlich weder wahr noch falsch. Man kann bestenfalls von einer Adäquatheit oder Indadäquatheit bezüglich intuitiver Vorstellungen von Theoretizität sprechen. Wird dagegen die Behauptung aufgestellt, eine Funktion f sei im Sinne dieses Kriteriums theoretisch bezüglich einer vorgegebenen Theorie T, so ist mit dieser Aussage eine konkrete Behauptung über die Theorienabhängigkeit beliebiger Messverfahren für f verbunden; eine solche Behauptung kann durch Analyse von Meßverfahren eindeutig überprüft werden. Wie bei einer derartigen Analyse vorzugehen ist, wird am Beispiel von Meßverfahren für die — nach Sneed bezüglich der klassischen Partikelmechanik KPM theoretische—Massenfunktion vorgeführt.

Zunächst eine grundsätzliche Überlegung zur Auswahl der untersuchten Meßvorgänge: Selbstverständlich können in trivialer Weise Massenmeßverfahren entwickelt werden, wenn bereits andere Massen- oder Kraftmeßverfahren zur Verfügung stehen. Dahinter verbirgt sich jedoch das Problem, daß man „irgendwo anfangen muß", d.h. ein „erstes" Massenmeßverfahren entwickeln muß, das nicht bereits auf der Vorhandenheit anderer Massen- oder Kraftmeßverfahren aufbaut. Die theoretischen Voraussetzungen eines solchen „ersten" Massenmeßverfahrens werden im folgenden betrachtet. Untersucht werden dabei ausschließlich solche Meßverfahren, bei denen einer endlichen Anzahl von Objekten auf Grund ihrer durch Orts- und Zeitmessungen bestimmten Bahnkurven Massenquotienten zugeordnet werden. Nach Voraussetzung sollen dazu Orts- und Zeitmeßgeräte, dagegen noch keine Massen- oder Kraftmeßgeräte zur Verfügung stehen.

Formal kann diese Problemstellung als die Aufgabe beschrieben werden, Modelle des von Sneed angegebenen kinematischen Grundprädikates PK in eindeutiger Weise zu Modellen des Theorienprädikates KPM[1] zu ergänzen. Für die folgenden Überlegungen ist es zweckmäßig, eine Restriktionsfunktion r und eine Ergänzungsfunktion e durch explizite Definition einzuführen:

Def. 1: Sei r eine Funktion

$$r : KPM \rightarrow PK, \text{ so daß}$$

$$\wedge x\,(x \in KPM \wedge x = \langle P, T, s, m, f \rangle \rightarrow r(x) := \langle P, T, s \rangle).$$

Def. 2: Sei e eine Funktion

$$e : PK \rightarrow Pot(KPM), \text{ so daß}$$

$$\wedge z\,(z \in PK \rightarrow e(z) := \{x \mid x \in KPM \wedge r(x) = z\}).$$

(Für die Einzelheiten der Notation verweisen wir auf Stegmüller (1973).[1])
Anschaulich formuliert wird durch die Restriktionsfunktion r jedem Modell des Theorienprädikates KPM genau ein Modell des kinematischen Grundprädikates PK zugeordnet, während die Ergänzungsfunktion e jedem kinematischen System, d.h. jedem Modell des — extensional interpretierten — Prädikates PK eindeutig eine Klasse dynamischer Systeme, d.h. eine Klasse von Modellen von KPM, zuordnet.

Es kann in trivialer Weise gezeigt werden, daß für beliebige $z \in PK$ die Kardinalität der Ergänzungsmenge e(z) ungleich 1 ist. Es gibt stets überabzählbar viele Massen- und Kraftfunktionen, die zur Ergänzungsbildung geeignet sind, wobei keineswegs sämtliche Massen- bzw. Kraftfunktionen durch Eichtransformationen ineinander überführt werden können. Ein entsprechendes Resultat erhält man bei Betrachtung der Kardinalität von Ergänzungsmengen beliebiger endlicher Klassen kinematischer Systeme. Hier tritt ein zusätzliches Problem auf: Es ist keineswegs zulässig, jedes Modell einer solchen Klasse isoliert, ohne Rücksichtnahme auf die anderen Modelle, zu einem Modell von KPM zu ergänzen. Vielmehr ist die Ergänzungsbildung so vorzunehmen, daß dabei bestimmte Querverbindungen, die bei Sneed „Constraints" heißen, zwischen den so gebildeten Modellen von KPM bestehen. Zwei dieser Constraints sind unmittelbar mit der intuitiven Vorstellung von der Bedeutung des Begriffs „träge Masse" verbunden und müssen berücksichtigt werden: der $< \approx, = >$-Constraint $C_m^{<\approx, =>}$ und der Extensivitätsconstraint $C_m^{<o, +>}.C_m^{<\approx, =>}$ fordert: Tritt ein- und dasselbe Objekt in den Individuenbereichen mehrerer Anwendungen der Theorie auf, so ist ihm jeweils die gleiche Masse zuzuordnen. $C_m^{<\approx, =>}$ kann extensional als diejenige Teilmenge der Potenzmenge von KPM definiert werden, für die gilt:

$$C_m^{<\approx, =>} := \{X \mid X \in Pot(KPM) \wedge \wedge x, y \in X \wedge p\,(p \in P_x \cap P_y \rightarrow m_x(p) = m_y(p))\}.$$

$C_m^{<o, +>}$ fordert: Seien p und q zwei verschiedene Objekte und poq dasjenige Objekt, das durch Konkatenation aus p und q gebildet wird. Dann soll die Masse des konkatenierten Objektes gleich der Summe der Massen der beiden nicht-konkatenierten Objekte sein, aus denen es gebildet wurde. Extensional formuliert:

$$C_m^{<o,+>} := \{X \mid X \in Pot(KPM) \wedge \wedge x, y, z \in X \wedge p, q, r$$

$$(p \in P_x \wedge q \in P_y \wedge r \in P_z \wedge r = poq \rightarrow m_z(r) = m_x(p) + m_y(q))\}.$$

Diese beiden Nebenbedingungen schränken die Klasse der zur Ergänzungsbildung zugelassenen Massen- und Kraftfunktionen wesentlich ein. Es läßt sich jedoch durch eine recht aufwendige formale Analyse zeigen, daß man auch bei Rückgriff auf beliebige endliche Klassen kinematischer Systeme, sowie bei Berücksichtigung der beiden Constraints, stets Ergänzungsmengen mit einer Kardinalität ungleich 1 erhält.

Diese Aussage über die Kardinalität von Ergänzungsmengen beliebiger einzelner kinematischer Systeme sowie beliebiger endlicher Klassen kinematischer Systeme ist von entscheidender Bedeutung für die Theorienabhängigkeit von Massen- und Kraftmeßverfahren: Massen- und Kraftfunktion sind durch das Grundaxiom von KPM (a), die beiden genannten Constraints (b), sowie durch beliebig detaillierte Beschreibungen kinematischer Systeme (c) unterbestimmt. Dies hat zur Folge: Unter diesen Voraussetzungen allein kann kein „erstes" Massen- oder Kraftmeßverfahren konstruiert werden. Um dies bewerkstelligen zu können, muß eine zusätzliche Annahme getroffen werden, die aus den zunächst überabzählbaren

Ergänzungsmengen einzelner kinematischer Systeme oder Klassen derartiger Systeme eine einelementige Teilmenge aussondert (bei Vernachlässigung von Eichtransformationen). Um welche zusätzliche Annahmen kann es sich dabei handeln? Sämtliche mit den vorhandenen Meßgeräten überprüfbaren Aussagen wurden bereits ausgeschöpft: Es wurde vorausgesetzt, daß beliebig detaillierte Informationen über die Kinematik der Systeme zur Verfügung stehen. Es kann sich demnach nur um solche Voraussetzungen handeln, die mit den verfügbaren Meßgeräten empirisch eben nicht überprüft werden können, d.h. um zusätzliche „theoretische" Voraussetzungen, in denen die Funktionen, deren Funktionswerte bestimmt werden sollen, wesentlich vorkommen. Diese zusätzlichen theoretischen Annahmen können sehr verschiedenartige Gestalt annehmen. So kann die Gültigkeit eines Spezialgesetzes für die Kraftfunktion, für die Massenfunktion oder für beide angenommen werden. Auch wesentlich andersartige Kriterien, teilweise von umfassender Allgemeinheit und Plausibilität, können verwendet werden, so etwa ein Kriterium für das Vorliegen von Massengleichheit bei zwei Partikeln. Wissenschaftsphilosophisch interessant ist nicht die Tatsache, welche speziellen zusätzlichen theoretischen Annahmen getroffen werden, sondern allein der Sachverhalt, daß derartige Annahmen oder Postulate überhaupt erforderlich sind. Eine wesentliche und notwendige Modifikation des Sneedschen Kriteriums besteht demnach darin zu berücksichtigen, daß — zumindest im Fall von KPM — Meßverfahren für theoretische Funktionen keineswegs allein in dem Sinne theorienabhängig sind, daß bei ihnen das oder die Grundaxiome der Theorie als gültig vorausgesetzt werden, sondern zusätzlich im Sinne der Voraussetzung eines oder mehrerer Spezialgesetze, in denen diese Funktionen wesentlich vorkommen.

Welche Auswirkungen hat eine solche Modifikation des Sneedschen Kriteriums für die holistische Sichtweise physikalischer Theorien? Seien PK^i und PK^j zwei (verschiedene) Verschärfungen des kinematischen Grundprädikates PK, die aus PK durch Aufnahme zusätzlicher Forderungen an die Ortsfunktionen gebildet werden. (Zur Veranschaulichung werde ein Beispiel angeführt: Bei den Modellen von PK^i handle es sich in der physikalischen Interpretation um harmonische Schwingungen, bei den Modellen von PK^j um inelastische Stoßprozesse.) Sei weiterhin KPM^i eine Verschärfung des Theorienprädikates KPM, die aus KPM durch Hinzunahme eines Spezialgesetzes für die Massen- oder Kraftfunktion (im Beispiel etwa des Hookeschen Gesetzes) entsteht. Es werde nun postuliert, daß jedes Modell $z \in PK^i$ so zu ergänzen ist, daß zusätzlich zu den bereits in KPM enthaltenen Forderungen auch das genannte Spezialgesetz erfüllt ist, d.h. zu einem Modell von KPM^i. Bei geeigneter Wahl des Spezialgesetzes hat ein solches Postulat zunächst zur Folge, daß die zur Ergänzungsbildung bei Modellen $z \in PK^i$ zugelassenen Massen- und Kraftfunktionen (bis auf Eichtransformationen) eindeutig bestimmt sind. Zudem versieht uns dieses Postulat mit der Möglichkeit, Aussagen über die zur Ergänzungsbildung zugelassenen Massen- und Kraftfunktionen bei andersartigen kinematischen Systemen, etwa bei Modellen $z' \in PK^j$, zu formulieren, sofern die folgende Bedingung erfüllt ist: Bei den Objekten aus P_z handelt es sich entweder um Partikel aus P_z oder um solche Objekte, die durch ein- oder mehrfache Konkatenation aus Partikeln aus P_z gebildet werden können. Denn durch die Forderung nach Gültigkeit von $C_m^{<\approx, =>}$ und $C_m^{<o, +>}$ sind — unter der genannten Voraussetzung — die Massen der Partikel aus $P_{z'}$ eindeutig bestimmt und es kann ermittelt werden, welchem Spezialgesetz die auf sie wirkende Kraft genügt, d.h. zu welcher Prädikatverschärfung KPM^j von KPM z' zu ergänzen ist. Das „Transportmittel", das die Informationen von System z zum System z' überträgt, bilden die beiden genannten Constraints für die Massenfunktion.

Diese Überlegung legt zugleich die Gestalt nahe, in welcher der empirische Gehalt einer Theorie zu formulieren ist. Um uns dies zu verdeutlichen, wollen wir von der fiktiven Annahme ausgehen, der Anwendungsbereich der klassischen Partikelmechanik bestünde nur aus zwei Klassen von Systemen, nämlich harmonischen Schwingungen (d.h. Modellen von PK^i) einerseits und inelastischen Stoßprozessen (Modellen von PK^j) andererseits. Dann ist der empirische Gehalt dieser — künstlich in ihrem Anwendungsbereich beschnittenen — Theorie keineswegs in Aussagen der Form zum Ausdruck zu bringen, die Massen- oder Kraftfunktion habe etwa bei harmonischen Schwingungen diese oder jene Gestalt. Denn eine solche Aussage beruht —

für sich allein genommen — ganz wesentlich auf einer Setzung und kann nicht empirisch überprüft werden. Eindeutig überprüft werden kann dagegen die Gültigkeit der folgenden, hier etwas verkürzt formulierten Aussage: Es gibt Funktionen m und f derart, so daß gilt: Durch Anfügung von m und f kann jedes Modell von PK^i so zu einem Modell von KPM^i und jedes Modell von PK^j so zu einem Modell von KPM^j ergänzt werden, daß $C_m^{<\approx, =>}$ und $C_m^{<o, +>}$ erfüllt sind. Gerade die Betrachtung der Rolle, die Spezialgesetze bei der Festlegung der Bedeutung der Begriffe „Masse" und „Kraft" spielen, hat uns demnach in ganz natürlicher Weise dazu geführt, den empirischen Gehalt einer Theorie in Form eines Ramsey-Satzes zu formulieren und damit den Übergang vom statement-view zum non-statement-view zu vollziehen.

Die Formulierung des empirischen Gehaltes von Theorien bleibt demnach auch und gerade bei Berücksichtigung der Rolle, die Spezialgesetzen zukommt, mit den ontologischen Voraussetzungen des Ramsey-Satzes belastet. Der Wertebereich der durch die Existenzquantoren gebundenen Variablen erstreckt sich nicht über Klassen beobachtbarer Objekte, sondern über Funktionsklassen. Die Schwierigkeiten, die sich daraus insbesondere für einen nominalistischen Standpunkt ergeben, bilden aber ein eigenes, schwieriges Problem und sollen hier nicht zur Sprache kommen.

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1 Siehe J. D. Sneed, The Logical Structure of Mathematical Physics (Dordrecht 1971), S. 114 ff.

2 Siehe W. Stegmüller, Theorie und Erfahrung, 2. Halbband (Berlin/Heidelberg/New York 1973), S. 66, 110, 126 ff.

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ERZWINGT DIE QUANTENMECHANIK DIE ANNAHME HOLISTISCHER EFFEKTE?

Manfred Stöckler

In einer Arbeit über die philosophischen Konsequenzen der modernen Physik hat Max Jammer[1] auf das Verhältnis von Physik und Philosophie eine Metapher aus der Volkswirtschaft angewandt: Den Einfluß der Philosophie auf die Physik bezeichnet Jammer als philosophischen *Import*, entsprechend betrachtet er die Rückwirkung der Physik auf die Philosophie als philosophischen *Export*. Ich möchte im folgenden ein vieldiskutiertes Problem der Quantenmechanik untersuchen, und für diesen speziellen Fall eine Strategie empfehlen, die außenhandelspolitisch eine Dummheit darstellt: Die Stärkung des philosophischen Imports bei gleichzeitiger Verringerung des Exports.

In der Fallstudie geht es um die Frage, ob die Welt in separierbare Teilsysteme aufgespalten werden kann, die einen autonomen ontologischen Status haben und so voneinander getrennt werden können, daß sie sich nicht mehr gegenseitig beeinflussen. In der Quantenmechanik scheint nun diese Separierbarkeit in Frage gestellt. Um dies zu verstehen, betrachten wir ein einfaches Modell. Die Quantenmechanik beschreibt den Zustand eines Systems, etwa die Orientierung des Spins eines Elektrons, durch einen Vektor u im Hilbertraum. Der charakteristische Unterschied zur klassischen Physik ist nun, daß mögliche Meßergebnisse nicht durch beliebige Vektoren, sondern nur durch Basisvektoren a_i repräsentiert werden können. Die Wahrscheinlichkeit für jeden Meßwert ist durch die Projektion des vor der Messung vorliegenden Zustandsvektors auf den entsprechenden Basisvektor gegeben. Ein System aus 2 Komponenten wird in der Quantenmechanik als Vektor im Tensorprodukt $H_1 \otimes H_2$ der Zustandsräume der Komponenten beschrieben. Im Produkthilbertraum bilden die Produkte von Basisvektoren $a_i b_k$ ($a_i \in H_1$, $b_k \in H_2$) wieder ein Basissystem. Im Produktraum liegen nun aber nicht nur die Zustände, die sich als Produkt schreiben lassen (wie etwa $u_+(1)\, u_-(2)$), sondern auch solche Zustände, bei denen dies nicht möglich ist. Das berühmteste Beispiel für eine nicht als Produkt separierbare Wellenfunktion findet sich in der Formulierung, die David Bohm 1951 dem sog. EPR-Paradoxon gegeben hat.[2] Man denke an ein Molekül mit Gesamtspin 0, das zerfällt und dessen Bestandteile mit entgegengesetztem Spin auseinanderfliegen. Danach wird das System durch folgende Wellenfunktion beschrieben: $\psi(1, 2) = (1/\sqrt{2})\, [u_+(1)\, u_-(2) - u_-(1)\, u_+(2)]$. Bemerkenswert an solchen „verschränkten" Systemen ist, daß den Bestandteilen kein Zustand im Spinraum mehr zugeordnet wird, daß man also nicht mehr sagen kann, welche Vektoren im Hilbertraum das Einzelsystem repräsentieren. Wenn 2 Systeme in der Vergangenheit so wechselgewirkt haben, daß sie durch $\Psi(1, 2)$ beschrieben werden, dann ist es nicht mehr möglich, diesen Systemen jeweils einen definitiven Zustand in gleicher Weise zuzuordnen, wie das bei freien Teilchen möglich ist. *Nach* einer Messung liegt das System jedoch wieder in einem Produktzustand vor. Die Messung ergibt entweder (a) $u_+(1)\, u_-(2)$ oder (b) $u_-(1)\, u_+(2)$. Anschaulich bedeutet dies, daß im Fall (a) am Meßgerät I „spin up" und am Meßgerät II „spin down" gemessen wird und im Fall (b) Gerät I „spin down" und Gerät II „spin up" anzeigt. Bei jedem quantenmechanischen Meßprozeß geht der Zustandsvektor in einen Basisvektor über. Bei verschränkten Systemen bewirkt die Messung zusätzlich, daß die Einzelsysteme einen wohldefinierten Zustandsvektor erhalten. Man kann zeigen, daß diese Merkwürdigkeit nicht dadurch zu vermeiden ist, daß $\Psi(1, 2)$ als ungenaue Beschreibung eines *Ensembles* von gekoppelten Systemen aufgefaßt wird, die zumindest im Prinzip durch eine Produktform gekennzeichnet werden können: Es ist nicht möglich, $\Psi(1, 2)$ so durch ein Gemisch von

Produktfunktionen zu ersetzen, daß die Vorhersagen für alle denkbaren Experimente übereinstimmen.

Die Diskussion über die geschilderten „verschränkten" Systeme wurde neu belebt durch ein Theorem, das J. S. Bell 1964 bewies. Bell stellte nicht die Frage, welchen Spinzustand die Einzelteilchen haben, sondern konzentrierte sich auf die Meßausgänge „spin up" und „spin down", wobei dies bezogen ist auf Vorzugsrichtungen $\vec{a}$ und $\vec{b}$, die an den beiden Meßgeräten jeweils beliebig wählbar sind. Die zentrale Aussage des Bellschen Beweises ist nun, daß *keine* Theorie, welche die im folgenden genannten Voraussetzungen macht, die von der Quantenmechanik für verschränkte Systeme vorausgesagten Korrelationen reproduzieren kann. D.h. jede Theorie, die 1) die Existenz eines verborgenen Parameters annimmt, der den Ausgang jeder Einzelmessung im klassischen Sinn determiniert, und die 2) annimmt, daß der Meßausgang am Meßgerät I unabhängig ist von der Wahl der Vorzugsrichtung am Meßgerät II, weicht in ihren Voraussagen über die Korrelationen der Meßergebnisse von der Quantenmechanik ab. In diesem Zusammenhang sei angemerkt, daß die bisher durchgeführten Korrelationsexperimente die Vorhersagen der Quantenmechanik bestätigen. Die Aussage des Bellschen Beweises konnte noch verschärft werden, als J. F. Clauser und M. Horne 1974 zeigten,[3] daß auf die Derminismusvoraussetzung verzichtet werden kann. Sie untersuchten Theorien, bei denen man die Wahrscheinlichkeit $P_{12}(\vec{a}, \vec{b})$ für eine bestimmte Kombination von Meßausgängen am Gerät I und II aus den Wahrscheinlichkeiten für die Ereignisse an den einzelnen Apparaten, also aus $P_I(\vec{a}) = \int d\lambda\, \varrho(\lambda)\, P_I^E(\lambda, \vec{a})$ und $P_{II}(\vec{b}) = \int d\lambda\, \varrho(\lambda)\, P_{II}^E(\lambda, \vec{b})$, in folgender Weise berechnen kann: $P_{12}(\vec{a}, \vec{b}) = \int d\lambda \varrho(\lambda)\, P_I^E(\lambda, \vec{a})\, P_2^E(\lambda, \vec{b})$ (λ kennzeichnet die u.U. unterschiedlichen Präparationen bei jedem Versuch). Es gelang nun Clauser und Horne in einem dem Bellschen Beweis ähnlichen Verfahren zu zeigen, daß keine dieser Theorien, bei denen in jedem Einzelfall $P_{12}^E(\lambda, \vec{a}, \vec{b})$ als Produkt von $P_I^E(\lambda, \vec{a})$ und $P_2^E(\lambda, \vec{b})$ beschrieben werden kann, die Vorhersagen der Quantenmechanik reproduzieren kann. Hieraus folgt, daß es unmöglich ist, sich die Korrelationen zwischen den Meßausgängen dadurch zu erklären, daß die Systeme 1 und 2 zwar über ihre Entstehung gekoppelt sind, die Meßausgänge aber nicht mehr davon abhängen, was nach der Trennung am anderen Meßgerät vorgeht.

Dies stellt einen *holistischen Effekt* in dem Sinne dar, daß räumlich weit getrennte Systeme Abhängigkeiten zeigen, die weder aus der gemeinsamen Vergangenheit noch durch Austausch physikalischer Wechselwirkungen verstehbar sind (und zwar auch Korrelationen raumartig liegender Ereignisse!). Diese Korrelationen sind jedoch aus der Wellenfunktion $\Psi(1, 2)$ ableitbar. Die Wellenfunktion $\Psi(1, 2)$ hat nun die bemerkenswerte Eigenschaft, daß sie den Einzelsystemen keinen Zustand im Spinraum zuordnet. Dadurch wird eine *Separabilitätsforderung* verletzt:[4] Die physikalische Wirklichkeit läßt sich nicht mehr in theoretisch unterscheidbare Bestandteile auflösen, so daß jeder Bestandteil einen selbständigen ontologischen Status hat und erschöpfend durch ein bestimmtes System physikalischer Eigenschaften beschreibbar ist. Ein zusammengesetztes System ist nicht mehr anhand der Eigenschaften seiner Bestandteile analysierbar. H. Primas und W. Gans akzeptieren diese holistischen Effekte mit der pointierten Formulierung „Die Idee, daß die Welt durch Kompartimentalisierung beschrieben werden kann, muß revidiert werden. Das einzige, im Sinne der Quantenmechanik absolut existierende Objekt ist das ganze Universum, eine einzige und unteilbare Einheit".[5]

Es gab und gibt jedoch Stimmen, die aus philosophischen Gründen die Separierbarkeit nicht aufgeben wollen und deshalb die Korrektheit der quantenmechanischen Beschreibung verschränkter Systeme anzweifeln. Dabei wird deutlich, daß formale Konsistenz und Übereinstimmung mit dem Experiment nicht die einzigen Kriterien zur Bewertung physikalischer Theorien darstellen. So haben etwa A. Einstein und P. A. M. Dirac Zweifel erhoben, ob der Vielteilchenformalismus der Quantenmechanik sich in einem befriedigenden Zustand befindet. Die Quantenmechanik konnte einen Großteil ihrer Erfolge bei solchen Anwendungen erringen, bei denen *ein* Teilchen in einem Potential betrachtet wird. Daraus folgt jedoch noch nichts über die Korrektheit des Vielteilchenformalismus. Die geschilderten holistischen Effekte treten nur bei Vielteilchen-Problemen auf, und nur dann, wenn eine Wellenfunktion von

der Art ψ (1, 2) das System beschreibt. Strenggenommen kann man also nicht sagen, daß es nach der Quantenmechanik keine isolierten Systeme mehr geben kann, sondern nur, daß nicht in allen Fällen, in denen man das intuitiv erwartet, getrennte Untersysteme existieren.

Da sich die Argumente für die Existenz holistischer Effekte auf die in der Quantenmechanik übliche Meßtheorie bei Vielteilchensystemen stützen, bietet sich für den Holismuskritiker die Strategie an, die Schwächen und Probleme dieser Meßtheorie aufzuweisen, ihre Revision zu fordern und so die Möglichkeit zu eröffnen, daß die revidierte Fassung ohne holistische Effekte auskommt. So erscheint es z.B. unangemessen, daß ein Photon, das vor Milliarden von Jahren in einer fernen Galaxis mit einem anderen (mittlerweile u.U. von einem Schwarzen Loch absorbierten!) Photon zusammen als Teil eines verschränkten Systems entstanden ist, nicht als isoliertes, unabhängiges Teilchen angesehen werden darf. Weiter kann die Quantenmechanik die Frage nicht beantworten, wann und wie zwei Teilchen, die sich zu einem Gesamtsystem vereinigen, ihre Individualität aufgeben. Merkwürdig erscheint außerdem, daß die Verletzung der Separabilität nicht in den Grundgleichungen deutlich wird (die Schrödinger-Gleichung gehorcht einem Nahewirkungsprinzip), sondern nur bei der kontingent erscheinenden Wahl einer bestimmten Wellenfunktion. In der Physik gab und gibt es Fernwirkungstheorien. Problematisch bei den betrachteten holistischen Effekten ist nun, daß sie nur beim Beobachtungsprozeß auftauchen und man keine physikalischen Träger der Wechselwirkungen dingfest machen kann. Will man solche „telepathischen" Wirkungen, die nicht zu den vier bekannten Wechselwirkungen zu rechnen sind, zulassen und damit eine bisher bewährte *Einheitlichkeit* in der Naturbeschreibung aufgeben?

Holistische Effekte treten nur beim Meßprozeß auf. Eine zweite Gruppe von holismuskritischen Argumenten hat deshalb ihren Ursprung in der Grundlagenforschung der Quantenmechanik. Man muß sich klarmachen, daß eine Veränderung der Vorzugsrichtung am Gerät II die *Wahrscheinlichkeiten* für einen bestimmten Meßausgang bei I *nicht* ändert. Der Einfluß von Gerät II gilt nur für den *Einzelfall*, so daß man den Meßausgang am Gerät I u.U. sicher vorhersagen kann, wenn am Gerät II schon ein bestimmter Zustand vorliegt. Der Meßprozeß bei verschränkten Systemen gibt zu den Schwierigkeiten der Messung an einem einzelnen Teilchen noch weitere Rätsel auf: Wie bewirkt der Meßprozeß, daß nach der Messung zwei getrennte Systeme vorliegen? Welcher physikalische Prozeß erzwingt die Separierung? Die Wellenfunktion des Gesamtsystems der Quantenmechanik legt außerdem nicht fest, in welchen Zustand das System 2 übergeht, wenn nur am Apparat I gemessen wird und nicht an II. Andererseits steht fest, daß an I $u_+(1)$ („spin up") gemessen wird, wenn in II $u_-(2)$ („spin down") vorliegt. Wenn man dies auf eine Wirkung der Messung an II zurückführt, so stellt sich die Frage, wie weit die Wirkung der Messung an II reicht und wie schnell sie sich ausbreitet (denn vor der Messung an II steht nicht fest, ob dort „spin up" oder „spin down" vorliegt. Dennoch liegt gleichzeitig bei I (von II raumartig getrennt!) jeweils entsprechend „spin down" oder „spin up" vor.). Sieht man den Übergang in einen Produktzustand als durch die Messung verursacht an, so erscheint die Reihenfolge der Meßereignisse bezugssystemabhängig: Ein Teil der Beobachter betrachtet die Messung „spin up" bei I als Ursache für „spin down" bei II, während ein anderer Teil das Ergebnis „spin down" bei II für die Ursache von „spin up" bei I halten wird. Zumindest bei dieser Interpretation kommt es zu einem Konflikt mit der Relativitätstheorie.

Da der Zusammenbruch des Wellenpaketes für beide Teilchen koordiniert vor sich geht, erscheint er als physikalischer Vorgang bei verschränkten Systemen noch rätselhafter als sonst. Von diesen Problemen kann man sich befreien, wenn man System und Meßgerät als ein untrennbares Ganzes auffaßt, den Meßprozeß selbst aus der physikalischen Beschreibung herausnimmt und die Frage nach dem Zustand eines physikalischen Systems unabhängig von der Messung als sinnlos ansieht. Wer nicht bereit ist, diese „Bohrsche Beruhigungsphilosophie" mitzumachen, kann wohl mit einigem Recht an der Meßtheorie bei Vielteilchenproblemen Zweifel erheben, zumal die verschränkten Systeme bei allen Rätseln der Quantenmechanik auftauchen (bei der Meßtheorie von Einzelteilchen, bei Wigners Freund und

Schrödingers Katze, in der „Many-World-Interpretation“).[6] Diese Zweifel stellen dann auch die ontologische Schlußfolgerung, die Annahme des Holismus, in Frage.

So hat die Analyse unseres Fallbeispiels ergeben, daß selbst da, wo eine philosophische Konsequenz der Quantenmechanik auf der Hand zu liegen scheint, die Argumente nicht zwingend sind. Ich möchte daraus natürlich nicht den Schluß ziehen, daß die Physik überhaupt keine philosophischen Konsequenzen hat. Gezeigt werden sollte nur, daß die Handelsbeziehungen zwischen Physik und Philosophie nicht durch einfache Gesetze geregelt sind. Die Entscheidung zu einem Exportgeschäft muß in jedem Einzelfall und von jedem Forscher immer wieder neu getroffen werden. In der Wirtschaft und in der Wissenschaft kann man dabei gute Ratschläge geben. Regeln, die eine Erfolgsgarantie gewähren, hat hier wie dort noch niemand formulieren können.

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ANMERKUNGEN

1 Jammer, M., Zu den philosophischen Konsequenzen der neuen Physik, in: G. Radnitzky und G. Andersson (Hrsg.), Voraussetzungen und Grenzen der Wissenschaft (Tübingen 1981), S. 129—154.

2 Literaturangaben zum EPR-Paradoxon und zur Separierbarkeit finden sich in M. Jammer, The Philosophy of Quantum Mechanics (New York 1974), und in B. d'Espagnat, Conceptual Foundations of Quantum Mechanics (Reading, Mass., ²1976).

3 Clauser, J. F., and Horne, M. A., Experimental Consequences of Objective Local Theories, in: Phys. Rev. D 10 (1974), S. 526—535.

4 In der Formulierung von M. Jammer (1981).

5 Primas, H., und Gans, W., Quantenmechanik, Biologie und Theorienkonstruktion, in: B. Kanitscheider (Hrsg.), Materie-Leben-Geist: Zum Problem der Reduktion der Wissenschaften (Berlin 1979), S. 23. Dieser Aspekt der Quantenmechanik hat bisher bei Philosophen wenig Beachtung gefunden, eine Ausnahme ist etwa W. Leinfellner, Grundtypen der Ontologie, in: R. Haller und W. Grassl (Hrsg.), Sprache, Logik und Philosophie (Wien 1980), S. 124—131.

6 Ordnet man den Einzelsystemen keinen Zustandsvektor zu, sondern nur einen statistischen Operator, so handelt man sich mit der Uneindeutigkeit der Zerlegung weitere Probleme ein, auf die hier ebensowenig eingegangen werden kann wie auf die neue Untersuchung von H. Primas, Chemistry, Quantum Mechanics and Reductionism (Berlin 1981).

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ONTOLOGIE UND SEMANTIK: VON WHEELER ZU GÖDEL

Rainer Born

0. Ein Versuch — über den Bäumen, die in den Himmel wachsen — den Wald nicht aus den Augen zu verlieren. — Absicht der folgenden Bemerkungen ist der aus Platzmangel hauptsächlich programmatische Hinweis auf die Möglichkeit eines gezielten, kreativen Einflusses von wissenschaftstheoretischen, dennoch aber inhaltlichen Analysen von theoretischen Konzepten, welche der Durchführung bestimmter einzelwissenschaftlicher Programme zugrunde zu liegen scheinen. Dazu als Hintergrundinformation die folgende Zusammenfassung der kreativen (Beweis-)Idee, wobei es wichtig ist zu betonen, daß an den Knoten oder Schaltstellen der Argumentation inhaltliche Analysen bestimmter theoretischer Begriffe und Vorstellungen — man denke an die *genaugenommen wissenschaftstheoretische* Analyse des Gleichzeitigkeitsbegriffes durch A. Einstein — eine zentrale Rolle spielen. Erst durch ein präzises Umdenken, und damit durch eine Darstellung und Identifikation eines gegebenen Problems in einem neuen Rahmen, kann letzterer dazu benutzt werden, Lösungen zu konstruieren und als solche für das ursprüngliche Problem erkennbar zu machen. (Cf. als Beispiel die Rolle der theoretischen Analyse des Entropiebegriffes in Zusammenhang mit M. Plancks Formel für die schwarze Hohlraumstrahlung.)

1. *Programmatische Zusammenfassung* — oder: Abstract within an abstract. Die GMD (kurz für Geometrodynamik), das Programm einer ,,vollständigen'' Geometrisierung der Physik (eine Generalisierung des Programmes der Allgemeinen Relativitätstheorie, cf. J. A. Wheeler (1955)), wird als Versuch einer EinheitsSPRACHE aufgefaßt, welche (more geometrico!) ein einheitliches Begründungs- und Erklärungsmodell enthält. — Auf dem Weg über Ansätze zu einer ,,physikalischen Semantik'' (E. Beth) und deren Ausarbeitungen (B. v. Fraassen) kann man eine Parallele zum Vollständigkeitsproblem formaler Systeme konstruieren. Letzteres in Hinblick auf die (mathematische) Modelltheorie, wenn (cf. die Linie: F. Henkin — A. Robinson) letztlich aus der Struktur einer (formalen) Sprache (die zur *Rechtfertigung* von Argumenten *benutzt* wird) — im Rahmen von Vollständigkeitsnachweisen — *Modelle* für die in der formalen Sprache formulierten Systeme (insbesondere von Theorien) konstruiert werden, auf die man sich *beruft*, wenn man von der Konsistenz (von Theorien) spricht. Dabei werden *Rechtfertigungsstrukturen* (cf. formale Ableitbarkeit) *unmittelbar* zur *Herstellung* von Standardmodellen benutzt, also letztlich ,,ontologisiert''. Dies ist die Brücke, die von der ,,ontologischen Unvollständigkeit'' der GMD zur ,,semantischen Unvollständigkeit'' formaler Systeme (die dem der ,,Principia Mathematica'' verwandt sind; K. Gödel (1931)) führt, bzw. auf die prinzipiellen Grenzen ,,unitärer (monistischer) Forschungsprogramme'' (— soferne man letzteren das Mißverständnis unterstellen darf, die formalen Mittel zur Entscheidung (der *Existenz* der Lösung) eines Problems mit einem universellen Algorithmus zur Entdeckung (bzw. Herstellung) der Lösung dieses Problems gleichzusetzen! —).

2. L'homme c'est le style même chose. — Es ist sicherlich ein alter Hut zu sagen, daß die Mathematik die Sprache der Physik sei. Dennoch ist es nicht unsinnig die Frage danach zu stellen, welche Vorstellungen man mit dieser Behauptung konkret verbindet, d.h. die zugrundeliegende, wirkende *Analogie*vorstellung aufzudecken und zu überprüfen, inwieferne es gerechtfertigt ist, in diesem Zusammenhang von einer Sprache zu reden, wenn man damit etwa die präzisen Begriffsbildungen der analytischen Sprachphilosophie, bzw. der formalen Logik und Semantik vergleicht. — Es geht dabei um die Korrektur eines verschwommenen, klischeehaften Vorverständnisses über das Zustandekommen der Bedeutung eines Ausdruckes.

Behauptet man nämlich, daß man die GMD als Einheitssprache auffassen kann, in der ein einheitliches Erklärungs- bzw. Begründungsmodell der Physik verschlüsselt ist, so hängt die BEDEUTUNG dieser Behauptung vor allem davon ab, was man unter einer Sprache und deren Realisierungen versteht und was unter einer Erklärung, einer Rechtfertigung und insbesondere einer Begründung. Aber statt GMD könnte man genausogut X schreiben. Denn die *Bedeutung* (oder der Sinn) obiger Behauptungen hängt gar nicht so sehr davon ab, was man sich unter GMD vorstellt, bzw. *was* die GMD genaugenommen *ist*. Letzteres ist erst für die *Wahrheit* einer Behauptung relevant.

3. Zur Durchführung — oder: Wie *konkret* kann man ,,in abstracto'' werden? — Ich benötige zwei Blöcke von ,,konstruktiven'' Grundlagendiskussionen; deren Ergebnisse, wenn auch nur programmatisch und skizzenhaft, müssen, auf ,,unitäre (monistische) Forschungsprogramme'' angewandt, die von mit intendierte Einsicht in die formalen Grenzen solcher einheitlicher Sprachsysteme liefern, insbesondere der GMD (oder in ähnlicher Weise für das Programm alle Einzelwissenschaften zu ,,sneedifizieren'').

(i) Der klassische Ansatz ist ja bekanntlich der, daß man eine Theorie in eine Formalsprache übersetzt und dort, gewissermaßen im wissenschaftstheoretischen Labor, isoliert und zu Studienzwecken als Menge von wahren Sätzen identifiziert. Dabei wird dann ein formales (syntaktisches) System IL über einer relationalen (mathematischen) Struktur $A := < (R_i)_{i \in I}, (f_j)_{j \in J}, (c_k)_{k \in K} >$ für den Aufbau einer formalen Semantik struktural interpretiert (R_i = Relationen, f_j = Funktionen, c_k = Konstante). Die Funktionsweise eines solchen syntaktischen Systems aber ist, wie man sich am besten beim Erfassen des semantischen Folgerungsbegriffes durch den syntaktischen Ableitungsbegriff klar machen kann — theoretisch-explanativ gesprochen — genaugenommen die, daß die Elemente von A auf die Elemente eines Zeichensystems IL so abgebildet werden, daß — grob gesprochen — diejenige Zeichenreihe, die einem bestimmten Element von A entspricht nach festen Regeln (Algorithmus!) aus denjenigen Zeichenreihen in IL HERGESTELLT (abgeleitet) werden muß, die bestimmten, als Prämissen akzeptierten Ausdrücken in A entsprechen. Die Betonung liegt auf ,,in kontrolliert reproduzierbarer Weise'' herstellbar! D.h. genaugenommen wird in IL ein entsprechender Mechanismus (Syntax) derart konstruiert, daß das Zustandekommen einer bestimmten *Eigenschaft* eines Elementes a von A in Abhängigkeit von anderen Elementen von A dadurch *erklärt* werden kann. Z.B. wird die semantische *Eigenschaft*, daß a aus einer Menge P von Elementen von A logisch *folgt*, im Sinne eines Zutreffens und damit als GÜLTIGKEIT auf diese Weise durch die syntaktische Eigenschaft der *Ableitbarkeit* ,,vollständig'' erfaßt. Nun bezieht sich aber die ganze Konstruktion auf die Relationalstruktur A und nicht auf die sogenannte Wirklichkeit. Der Bezug auf letztere wird dadurch gewissermaßen simuliert. Daraus ergibt sich auch der, von einem ,,prima facie''-Verständnis ausgehende, Vorwurf, daß dadurch die Funktionsweise physikalischer Theorien nicht *beschrieben* werde, der auf dem Mißverständnis beruht, daß die ganze Konstruktion (unmittelbar) deskriptiv (intendiert) sei. Die ,,physikalische Semantik'' (B. v. Fraassen auf E. Beth aufbauend und hier erweitert) ist eine Reaktion auf dieses Mißverständnis! Dabei wird genaugenommen die Semantik von IL auf dem Umweg über ein operatives Modell IM, von dem aus es eine Abbildung in die Struktur A gibt, definiert. Man interpretiert das syntaktische, bezüglich der tatsächlichen Herstellbarkeit (Generierung) von Eigenschaften der Elemente von A keineswegs deskriptive System IL, auf dem Weg über eine Einbettung von IM in A und erklärt dadurch eine Semantik, die dem Vorwurf, daß A nichts mit der Wirklichkeit zu tun habe, entgeht. Das ,,deskriptive'' Mißverständnis von oben wirkt sich hier nicht mehr so stark aus. Die Praxis (Pragmatik!) der ,,community of scientists'' wird berücksichtigt! Bezeichnet $h : IL \mapsto A;\ \alpha \mapsto h(\alpha)$ die durch eine Denotationsfunktion in üblicher Weise aufgebaut gedachte Interpretationsfunktion von IL in A und ferner $f : IL \to IM$ bzw. $g : IM \to A$ die entsprechenden anderen Abbildungen, so kann man grob gesprochen sagen, daß IL genau dann in A *erfüllt* ist, wenn man auf dem Umweg über IM zu demselben Element in A gelangt: g nach $f(\alpha) = h(\alpha)$. Es ist klar, daß dadurch — prima facie — unsere in der

Praxis des Umganges mit Modellen aufgebautes tatsächliches, physikalisches Verständnis in viel stärkerem Maße Berücksichtigung finden kann. Eine weitere Konsequenz dieses Theorienverständnisses ist, daß man — rein technisch gesprochen — *A* GLOBAL als eine Mannigfaltigkeit mit Riemann-Geometrie auffassen kann, in bezug auf welche die Einbettung des jeweiligen Modells IM in *A* LOKAL die Rolle des *Tangentenraumes* bei der Definition der „Metrik" (Maßbestimmung) im Fall der Riemann-Geometrie spielt, d.h. die für den Aufbau einer Tarski-Semantik erforderliche Denotation wird *lokal* definiert. Durch eine derartige „ortsabhängige" Semantik — wobei, technisch gesprochen, die formalen Ideen der für die Formulierung der AR so erfolgreichen Differentialgeometrie sinnvoll abzuwandeln bzw. zu übertragen sind — kann man die Semantik von IL, bildlich gesprochen, *lokal anreichern*, d.h. den lokalen *Ausdrucksreichtum* von IL (durch iterative Rückkopplung) lokal erhöhen, ohne *global* im Sinne von Antinomien in Schwierigkeiten geraten zu müssen. Ferner bekommt man durch diese Methode die Möglichkeit Analogien präzise fassen zu können. Man benutzt das strukturale „Auflösungsvermögen" von Modellen als lokales Ausdrucksmittel — Einbettung in *A* — wodurch man imstande ist, tatsächliche physikalische Argumentationen, z.B. im Rahmen der Durchsetzung von Theorien, besser nachzeichnen und in strenger Weise benutzen zu können.

Als letztes Ergebnis müßte aufgrund der obigen Analyse der tatsächlichen Konstruktion einer formalen Semantik die Einsicht möglich sein, daß man eine Riemann-Geometrie als Syntax einer formalen Sprache benutzen kann. Das setzt voraus, daß die Idee der Tarski-Semantik als Konstruktions-ANLEITUNG verstanden wird und daß man sich von dem ursprünglichen Modell (Realisation) für die Syntax löst und in einem neuen System etwas als *Aussagen* interpretieren (und identifizieren) kann, was mit den entsprechenden Elementen des ursprünglichen Modells — oberflächlich gesehen — nichts gemeinsam hat.

(Beispiel: Ist eine *Prädikaten*-Quantenlogik sinnvoll?)

(ij) Wenn man die bisherige, im wesentlichen begriffsklärerische Umdeutungsarbeit akzeptieren kann, die Technik kann ich hier nicht vorführen, braucht man nur noch einmal zur Idee der Syntax als allgemeinem Prinzip zur Erkenntnisrechtfertigung (nicht Gewinnung!) zurückgehen und das semantische Vollständigkeitsproblem — was durch die physikalische Semantik besonders leicht gemacht wird — ontologisch umzudeuten. Beim Vollständigkeitsproblem geht es ursprünglich bekanntlich darum, ob der semantische Begriff der „logischen Folgerung" bezüglich einer als Prämissen ausgezeichneten Menge P von Elementen von *A* und einem a aus *A* (formal: P $\models$ a) durch den syntaktischen Begriff der „Ableitbarkeit" (formal: „P" $\vdash$ „a") *vollständig* erfaßt werden kann. Indem nun *A* als Kodifikat einer physikalischen Theorie aufgefaßt werden kann und IM zwischen IL und *A* eingeschoben wird, erhält man die ontologische Umdeutung (*kausale* Interpretation in IM). Da man aber s.o. weiß, in welchem eingeschränkten Ausmaße die operationalen Übergänge „$\vdash$" bzw. „$\models$" *deskriptiv* zu verstehen sind, wird man Vollständigkeit nun von vorneherein nur lokal und nur bezüglich bestimmter Klassifikationsaspekte (s.o. Gültigkeit) betrachten. Indem man nun noch die buchstäbliche (technische!) Parallele zwischen der negativen Lösung des 10. Hilbertschen Problems (Angabe eines Algorithmus zur Entscheidung der Existenz einer ganzzahligen Lösung bestimmter Polynomgleichungen) und dem ersten Unvollständigkeitssatz von Gödel (wonach es wahre, aber formal unentscheidbare Sätze im „syntaktischen" System der Principia Mathematica geben kann) aufgrund obiger Analyse mit der Tatsache in Zusammenhang bringen kann, daß alle unitären (monistischen) Programme i.w. darauf hinauslaufen, einen syntaktischen Algorithmus zur Entscheidung der „Existenz" der Lösung eines Problems *global* mit einem Algorithmus zur (Herstellung der) Lösung desselben gleichzusetzen (also im obigen Sinne *global* als unmittelbar deskriptiv, d.h. die Kausalstruktur beschreibend, zu verstehen), ergibt sich, daß solche *ontologisch* verstandenen Programme — global gesehen — notwendig *unvollständig* sein müssen. (Es gibt Probleme, die nicht innerhalb des Systems — mit den vorgegebenen formalen Mitteln — entschieden werden können:

cf. *ontologische Unvollständigkeit* der GMD.) Lokal — und darin zeigt sich die Stärke der oben skizzierten erweiterten physikalischen Semantik — ist Vollständigkeit, auch im Sinne einer deskriptiven Benutzung theoretisch-explanativer Strukturen, durchaus möglich. Auch eine falsche Philosophie kann sich lokal bewähren!

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LITERATUR

Misner, W., Thorne, K. S. und Wheeler, J. A., Gravitation (San Francisco 1973).
van Fraassen, B. C., On the Extension of Beth's Semantics of Physical Theories, in: Philosophy of Science, Vol. 37 (1970).
van Fraassen, B. C., A Topological Proof of the Löwenheim-Skolem, Compacteness, and Strong Completeness Theorems for Free Logic, in: Zeitschrift für mathematische Logik und Grundlagen der Mathematik, Vol. 14 (1968).

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DIE KONVENTIONALITÄT DER GLEICHZEITIGKEIT UND DIE ONTOLOGISCHEN GRUNDLAGEN DER SPEZIELLEN RELATIVITÄTSTHEORIE

Felix Mühlhölzer

Mein Vortrag handelt von der seit dem Jahre 1905 vieldiskutierten Frage, was es heißt und wie wir es rechtfertigen, wenn wir sagen, zwei an verschiedenen Orten stattfindende Ereignisse seien *gleichzeitig*. Speziell geht es mir um die folgenden drei Punkte: (a) Welche *ontologischen Gegebenheiten* spielen bei der Beantwortung dieser Frage eine Rolle? (b) Welche *Bedingungen* sind vernünftigerweise an den Gleichzeitigkeitsbegriff zu stellen? (c) Legen jene Bedingungen die Gleichzeitigkeitsrelation *eindeutig* fest? Das Wort ,,ontologisch'' gebrauche ich hier so, daß ich nicht nur — wie Quine — die Frage nach dem Individuenbereich einer Theorie, sondern auch die Frage nach den objektiven Strukturen, die die Theorie mittels bestimmter Prädikate auf jenem Bereich auszeichnet, als eine Frage der Ontologie auffasse. Die Theorie, um die es hier hauptsächlich geht, ist die Spezielle Relativitätstheorie — genauer: deren kinematischer Teil —, und der zugehörige Individuenbereich sei, wie üblich, die Menge aller Ereignisse oder Raum-Zeit-Punkte (,,Ereignis'' und ,,Raum-Zeit-Punkt'' gebrauche ich synonym), die ich mit dem Buchstaben ,,E'' bezeichne.

Betrachten wir zunächst den klassischen Fall. Dort ist die Gleichzeitigkeitsrelation eindeutig durch die *Kausal*struktur bestimmt. Die Kausalstruktur sei hierbei repräsentiert durch ein zweistelliges Prädikat γ, das wie folgt zu interpretieren ist: Für Ereignisse $e, e' \varepsilon E$ gilt $e \gamma e'$ genau dann, wenn $e \neq e'$ ist und wenn e und e' kausal verbindbar sind, d.h. wenn es ein Signal gibt, das von e nach e' oder von e' nach e führt. (Es seien dabei nur Signale mit endlicher Fortpflanzungsgeschwindigkeit zugelassen!) Man kann nun die zu γ komplementäre Relation σ betrachten — $e \sigma e'$ genau dann, wenn $\neg e \gamma e'$ —, und im klassischen Fall ist dieses σ gerade die absolute Gleichzeitigkeitsrelation: Zu einem Ereignis e sind außer e selbst genau diejenigen Ereignisse gleichzeitig, die mit e *nicht* kausal verbindbar sind. Diesen klassischen Verhältnissen entspricht Reichenbachs Ausspruch: ,,Gleichzeitigkeit heißt Ausgeschaltetheit des Wirkungszusammenhangs''.[1]

Halten wir fest: Wir haben eine *erste ontologische Gegebenheit*: die *Kausalstruktur*, und eine entsprechende *erste Bedingung an die Gleichzeitigkeit* (die gerade die Relation σ bestimmt), nämlich: *Ausgeschaltetheit des Wirkungszusammenhangs*. Beides wird in die Spezielle Relativitätstheorie übernommen. Während es sich jedoch beim klassischen σ um eine schöne Äquivalenzrelation handelt, ist dies beim relativistischen σ nicht mehr der Fall. Man will jedoch, daß die Relation der Gleichzeitigkeit eine Relation der Zeit-*Gleichheit* ist, die z.B. durch die Zeitangaben von Uhren repräsentiert werden kann, und diese Forderung impliziert, daß es sich um eine Äquivalenzrelation handeln soll. Wir haben damit eine *zweite Bedingung an die Gleichzeitigkeitsrelation*: Sie soll eine *Äquivalenzrelation* sein.

Es ist nun charakteristisch für die Spezielle Relativitätstheorie (von der ab jetzt ausschließlich die Rede sein wird), daß die Gleichzeitigkeitsrelation hier durch die erste und zweite Bedingung nicht eindeutig bestimmt ist und auch durch Hinzufügen weiterer Bedingungen, die *nicht* von neuen ontologischen Hilfsmitteln Gebrauch machen, nicht eindeutig gemacht werden kann. Um Eindeutigkeit zu erzielen, muß man deshalb neue Hilfsmittel benutzen. Der gängige Weg ist der, den Gleichzeitigkeitsbegriff als einen *relativen* Begriff in folgendem Sinn aufzufassen: Nicht mehr von Gleichzeitigkeit schlechthin darf die Rede sein, sondern nur noch von Gleichzeitigkeit-*relativ-zu-einem-Inertialsystem-I*. Ein Inertialsystem ist dabei durch eine bestimmte *Trägheitsbahn* (d.h. durch die Weltlinie eines Teilchens, auf das keine Kräfte einwirken) gegeben. Wir werden damit auf eine *zweite ontologische Gegebenheit*

verwiesen, nämlich die *Trägheitsstruktur*, und bezüglich der relativen Gleichzeitigkeit muß zusätzlich jeweils ein ganz bestimmter *Teil* jener Struktur spezifizierbar sein, nämlich jeweils ein bestimmtes *Inertialsystem* I. Die übliche Methode, eine Gleichzeitigkeitsrelation σ_I relativ zu I eindeutig festzulegen, sieht nun so aus, daß man die Uhren in I mit dem *Einsteinschen Verfahren*[2] synchronisiert. An dieser Stelle hakt jedoch ein Konventionalist wie Reichenbach ein und bemerkt:[3] ‚Diese Methode ist zwar üblich und schön, jedoch *erkenntnistheoretisch* gegenüber anderen Methoden nicht ausgezeichnet. Auch die Gleichzeitigkeit-relativ-zu-I ist nicht eindeutig bestimmt; *alle* raumartigen Hyperebenen des Minkowski-Raums kommen in Frage; es ist reine Konvention, welche wir wählen.' — Diese Aussage nenne ich „*Reichenbachs These*".

Zunächst fällt auf, daß in Reichenbachs These von Hyper*ebenen* die Rede ist, während — wie man leicht sieht — die Bedingungen 1 und 2 auch gekrümmte Hyperflächen zulassen. Um dem gerecht zu werden, nehme ich an — obwohl Reichenbach dies nicht explizit getan hat — es sei noch eine Bedingung 3 formuliert, welche Gleichzeitigkeits-Hyperebenen erzwingt. — Wie sieht nun Reichenbachs Argument für seine These aus?

Begeben wir uns in ein Inertialsystem I. Die Uhren in I seien so eingestellt, daß die Relation der *Gleichheit ihrer Anzeigen* unsere drei Bedingungen erfüllt. Im Rahmen jener Bedingungen bleibt jedoch immer noch ein großer Spielraum für die Einstellung, und Reichenbach fragt nun: Wie kann man weiterhin erkennen, ob die Uhren auch *wirklich* richtig synchronisiert sind? Er fragt dies insbesondere im Falle von zwei Uhren U_A und U_B, die sich an den Stellen A und B von I befinden. Reichenbachs Antwort lautet: Man kann es *gar nicht* erkennen, denn es gäbe dazu im Prinzip nur eine Methode: man schickt ein Signal von A nach B und berechnet mittels der von U_A angegebenen Abgangszeit des Signals, des Abstands $\overline{AB}$ und der Signalgeschwindigkeit die Ankunftszeit des Signals in B; wenn diese Zeit mit der Anzeige von U_B übereinstimmt, sind die Uhren synchron, im andern Fall nicht synchron. Diese Methode — so Reichenbach — ist jedoch zirkulär, da man bei der Bestimmung der Signal*geschwindigkeit* schon voraussetzen muß, daß Uhren richtig synchronisiert waren; und aus dem Auftreten dieses Zirkels schließt Reichenbach, daß man die Gleichzeitigkeit nicht *erkennen* kann, sondern per Konvention *festlegen* muß. Den Spielraum für diese Festlegung erkennen wir, wenn wir ein maximal schnelles Signal — z.B. das Licht — von A nach B schicken, wo es momentan reflektiert und wieder nach A zurückgeworfen wird. Sind t_1 und t_3 die Abgangs- und Ankunftszeit des Lichts in A (gemessen mit U_A), so dürfen wir für die Ankunftszeit des Lichts in B und die entsprechende Einstellung von U_B *jeden* Wert t_2 wählen, der *zwischen* t_1 und t_3 liegt. Anstatt $t_1 < t_2 < t_3$ kann man auch schreiben: $t_2 = t_1 + \varepsilon(t_3 - t_1)$ mit $0 < \varepsilon < 1$. Daß ε zwischen 0 und 1 liegen muß, wird durch die Bedingung 1, „Ausgeschaltetheit des Wirkungszusammenhangs", erzwungen; dies ist jedoch auch alles, was unsere bisherigen Bedingungen erzwingen. *Also*, sagt Reichenbach, sind alle ε's zwischen 0 und 1 gleichwertig, und insbesondere ist die übliche Wahl, nämlich $\varepsilon = 1/2$ (die gerade dem Einsteinschen σ_I entspricht!), *reine Konvention.*

Zu diesem lehrreichen Argument wäre sehr viel zu sagen. Ich beschränke mich darauf, zwei mögliche Erwiderungen zu schildern. Sie stützen sich auf die Beobachtung, daß sich die Wahl von $\varepsilon = 1/2$ doch immerhin dadurch auszeichnet, daß nur bei ihr das Licht beim Hin- und Zurücklaufen jeweils die gleiche Geschwindigkeit hat (wobei die Geschwindigkeit mit Hilfe der mit dem betreffenden ε synchronisierten Uhren bestimmt wird).

Erste Erwiderung: Man stellt die Frage, ob es denn nicht vielleicht andere, allgemeine und natürliche Bedingungen gibt, die $\varepsilon = 1/2$ erzwingen. Reichenbachs Bedingungen nehmen in keiner Weise Bezug auf das Inertialsystem I; man sollte jedoch erwarten, daß zur Gleichzeitigkeit-relativ-zu-I auch eine Bedingung gehört, in der I wesentlich vorkommt. — Es bietet sich hier in der Tat eine Bedingung an, und zwar eine *Objektivitätsbedingung.*[4] Welches sind die objektiven ontologischen Gegebenheiten in der Reichenbachschen Synchronisations-Situation? Es ist erstens die Kausalstruktur γ und zweitens das Inertialsystem I. (Der Gang der Uhren und die räumliche Geometrie von I lassen sich durch γ und I definieren.[5]) Nicht objektiv dagegen wäre z.B. die Auszeichnung einer bestimmten Raumrichtung in I. Von

dieser Intuition ist es nur ein kleiner Schritt zu folgendem natürlichen Objektivitätskriterium für Gleichzeitigkeitsaussagen: Eine Gleichzeitigkeitsaussage relativ zu I ist genau dann objektiv, wenn ihr Wahrheitswert *nur* von γ und I abhängt.

Dieses Kriterium läßt sich formal leicht präzisieren. Ich repräsentiere zu diesem Zweck das Inertialsystem I durch die zweistellige Relation ω_I der *Gleichortigkeit relativ zu I*; $e\omega_I e'$ bedeute also das gleiche wie: e und e′ finden am selben Ort von I statt. Weiterhin brauche ich die folgenden beiden Definitionen:

Definition 1: Ein *γ-I-Automorphismus* ist eine bijektive Abbildung $\phi : E \to E$ mit: $e\gamma e' \iff (\phi e)\,\gamma(\phi e')$ und $e\omega_I e' \iff (\phi e)\,\omega_I(\phi e')$ für alle $e, e' \varepsilon E$.

Definition 2: Eine zweistellige Relation R auf E heiße „*γ-I-objektiv*" genau dann, wenn sie invariant ist bzgl. jedes γ-I-Automorphismus, d.h. wenn bzgl. jedes γ-I-Automorphismus ϕ gilt: $eRe' \iff (\phi e)R(\phi e')$ für alle $e, e' \varepsilon E$.

Die angekündigte *Objektivitätsbedingung* lautet dann: *Die Relation der Gleichzeitigkeit-relativ-zu-I sei γ-I-objektiv.*

Man überlegt sich leicht, daß es genau die γ-I-objektiven Gleichzeitigkeitsrelationen sind, die zu objektiven Gleichzeitigkeitsaussagen in obigem Sinn führen, und man kann zeigen, daß diese Objektivitätsbedingung tatsächlich die gewünschte Konsequenz hat: *Nur* die ($\varepsilon = 1/2$)-Gleichzeitigkeit-relativ-zu-I ist γ-I-objektiv, alle anderen ε-Gleichzeitigkeiten nicht! Intuitiv ist völlig klar, wieso es die anderen ε-Gleichzeitigkeiten nicht sind: Jedes $\varepsilon \neq 1/2$ zeichnet eine bestimmte Raumrichtung aus, z.B. diejenige, in der sich das Licht am schnellsten ausbreitet, und diese Auszeichnung widerspricht unserer Intuition von Objektivität. Anders für $\varepsilon = 1/2$: Man kann zeigen,[6] daß die ($\varepsilon = 1/2$)-Gleichzeitigkeit-relativ-zu-I durch γ und ω_I explizit definierbar ist, und zwar durch eine Definition der ersten Stufe, und aus dieser Definierbarkeit folgt dann (durch einfache Anwendung des Satzes von Padoa) die γ-I-Objektivität.

Soweit zur ersten Erwiderung. Wer die Gleichzeitigkeit-relativ-zu-I betrachtet, muß auch auf I Bezug nehmen; die γ-I-Objektivitätsbedingung ist die natürlichste Art und Weise, dies zu tun.[7] Sie hat jedoch zur Folge, daß Reichenbachs These falsch wird.

Zweite Erwiderung: Man ignoriert völlig die Kausalstruktur, versucht statt dessen, die Spezielle Relativitätstheorie über allgemeine *Symmetrieprinzipien* zu verstehen, und faßt die Isotropieaussage „Das Licht hat in allen Raumrichtungen die gleiche Geschwindigkeit" als Teil solch eines Symmetrieprinzips auf. — Die Tatsache, daß diese Erwiderung möglich ist, spricht meines Erachtens besonders deutlich gegen die Reichenbachsche Auffassung von Gleichzeitigkeit.

Das allgemeine Isotropieprinzip lautet: *In einem Inertialsystem sind alle Raumrichtungen gleichberechtigt.* — Dieses Prinzip ist empirisch so gut bestätigt, wie man es sich nur wünschen kann. Und es legt unzählige Verfahren zur Bestimmung der Gleichzeitigkeit räumlich entfernter Ereignisse nahe. In der Reichenbachschen Synchronisations-Situation schieße man zum Beispiel vom Mittelpunkt der Strecke $\overline{AB}$ mit zwei identischen Kanonen zwei identische Geschosse zum gleichen Zeitpunkt in entgegengesetzte Richtungen: Die Ereignisse ihres Ankommens in A und B sind dann gleichzeitig. Wer will, kann anstatt Kanonen und Geschossen natürlich auch Lampen und Lichtstrahlen benutzen. Die hierbei verwendete Gleichzeitigkeitskonzeption, die natürlich nur mit $\varepsilon = 1/2$ verträglich ist, stützt sich *nur* auf jenes allgemeine Isotropieprinzip; von der Ausgeschaltetheit des Wirkungszusammenhangs ist nicht die Rede.

Daß diese zweite Erwiderung *möglich* ist, soll heißen, daß man tatsächlich ohne Bezugnahme auf die Kausalstruktur die *ganze* Kinematik der Speziellen Relativitätstheorie axiomatisch auf solchen Symmetrieprinzipien (und einer Stetigkeits- und einer Beschränktheitsaussage) aufbauen kann. *Ein* Axiomensystem dieser Art ist das folgende (wobei ich mich aus Platzgründen auf ganz grobe Andeutungen beschränken muß):[8] Als Grundentitäten hat man eine nichtleere Menge E (die Ereignismenge) und eine nichtleere Menge Ko, deren Elemente bijektive Abbildungen von E auf R^4 sind. Die Elemente von Ko sollen raumzeitliche *Koordinatisierungen* von Inertialsystemen repräsentieren, mit der vierten Koordinate als

Zeitkoordinate. Man kann dann auch gleich die Menge P aller Koordinaten*transformationen* definieren: $P := \{\bar{\varkappa} o \varkappa^{-1} | \varkappa, \bar{\varkappa} \varepsilon \mathrm{Ko}\}$. Mit diesem Begriffsinventar lassen sich fünf Axiome formulieren: Axiom I drückt in sehr allgemeiner Form das *Relativitätsprinzip* aus. Es hat zur Folge, daß P eine Gruppe ist. Axiom II drückt die raumzeitliche *Homogenität* aus, und Axiom III postuliert die *Stetigkeit* der Koordinatentransformationen. Aus alledem folgt, daß die Elemente aus P affine Transformationen sind. Axiom IV fordert, daß die Gruppe der *linearen Ruhetransformationen* (d.h. der linearen Transformationen, die das Bezugssystem nicht ändern) mit der Gruppe der *Drehungen des euklidischen Raumes* identisch ist; in diesem Axiom steckt insbesondere das Isotropieprinzip. Das fünfte und letzte Axiom schließlich postuliert, daß die Menge der Relativgeschwindigkeiten aller Bezugssysteme ein positives, endliches Supremum c besitzt. — Aus diesen fünf Axiomen folgt,[9] daß die Gruppe P der Koordinatentransformationen gleich der *Poincaré-Gruppe* (d.h. gleich der aus der Lorentz-Gruppe und der Gruppe aller Translationen des R^4 erzeugten Gruppe) ist, und das bedeutet, daß es sich hier tatsächlich um eine adäquate Axiomatisierung der speziell-relativistischen Raum-Zeit-Struktur handelt.

Soweit zur zweiten Erwiderung, die eine radikale Alternative zur Reichenbach-Auffassung formuliert und bei der ein Problem der Konventionalität der Gleichzeitigkeit von vornherein gar nicht auftreten kann.

Es hat sich gezeigt, daß man zwei Alternativen hat, die Spezielle Relativitätstheorie aufzubauen: Über die Kausalstruktur, oder über Symmetrieprinzipien. Ich glaube, es wäre unvernünftig, zwischen ihnen Partei zu ergreifen. Aber hier nicht Partei zu ergreifen heißt, *gegen* Reichenbachs Konventionalismus Partei zu ergreifen, und das habe ich in diesem Vortrag getan.

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ANMERKUNGEN

1 Reichenbach, H., Philosophie der Raum-Zeit-Lehre (Berlin/Leipzig 1928), S. 171.
2 Siehe A. Einstein, Zur Elektrodynamik bewegter Körper, in: H. A. Lorentz, A. Einstein und H. Minkowski, Das Relativitätsprinzip (Darmstadt ^{6}1958), S. 28.
3 Zum folgenden siehe Reichenbach (1928), § 19.
4 Zur im folgenden skizzierten Konzeption von Objektivität siehe H. Weyl, Philosophie der Mathematik und Naturwissenschaft (München/Wien 1966), § 13.
5 Dies wird z.B. gezeigt in J. A. Winnie, The Causal Theory of Space-Time, in: Minnesota Studies in the Philosophy of Science VIII (1977).
6 Siehe D. Malament, Causal Theories of Time and the Conventionality of Simultaneity, in: Noûs 11 (1977).
7 Diese Behauptung wird in meiner Doktorarbeit (München 1982) ausführlich begründet.
8 Eine ausführliche und formal präzise Darstellung jenes Axiomensystems und seiner Konsequenzen findet sich in meiner Doktorarbeit.
9 Die wichtigsten Teile des entsprechenden Beweises stützen sich auf Arbeiten von V. Gorini; siehe vor allem: V. Gorini, Derivation of the Lorentz and Galilei Groups from Rotational Invariance, in: A. O. Barut (Hrsg.), Studies in Mathematical Physics (Dordrecht 1973).

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DIE ROLLE DER PHYSIK IN WITTGENSTEINS PHILOSOPHISCHEN BEMÜHUNGEN

Friedrich Wallner

Auf den ersten Blick scheint in den bisher publizierten Werken Wittgensteins (einschließlich des Traktats) die Physik nur eine bescheidene Rolle zu spielen. Sie scheint sich auf die Funktion, Beispiele zu liefern, oder auf Erörterungen, die zu keinem intellektuell befriedigenden Ergebnis kommen, zu beschränken. Dieser Eindruck ändert sich aber, wenn wir den Abbau der „Notwendigkeit" in den Naturgesetzen bedenken, wie sie der Traktat proklamiert, d.h. den Rückzug des Notwendigkeitsbegriffes in die Logik. Damit wird der Wissenschaftscharakter der Physik gegenüber dem von Physikern vielfach akzeptierten Konzept Kants grundlegend verändert. Der Anspruch auf durchgängige Bestimmtheit der Natur — wie ihn Einstein (inspiriert durch Kant) gegenüber den Quantenphysikern gestellt hat — ist aus dieser Perspektive unbegründet.

Der Verzicht auf außerlogische Notwendigkeit ergibt sich aus der Ersetzung der transzendentalen Synthesis durch die Bildtheorie der Sprache: Da über die Logik der Sprache nicht mehr gesprochen werden kann, kann auch über die Art der „Netzwerke", welche zur Naturbeschreibung herangezogen werden, keine Vorentscheidung getroffen werden. Da die Wahl des jeweiligen „Netzwerkes" frei ist, sagt die begriffliche Struktur von diesem nichts über die Welt aus; ihre logische Struktur kann nicht entdeckt werden. „Netzwerke" können nicht an der Wirklichkeit gerechtfertigt werden; sie sind nur einer indirekten Bestätigung zugänglich: durch das eine „Netz" läßt sich die Welt einfacher beschreiben als durch das andere.[1] So wird die Alternative „objektive Geltung von Naturgesetzen" oder „reiner Empirismus" (in dessen Horizont die Möglichkeit von Naturwissenschaft unverstanden bleibt) vermieden. Man erkennt hier die Struktur der Beziehung Wittgensteins zur Transzendentalphilosophie: Beibehaltung des transzendentalphilosophischen Anspruches auf Begründung der Möglichkeit (in unserem Kontext: der Möglichkeit von Naturwissenschaft) bei gleichzeitiger Vermeidung der transzendentalphilosophischen Aporien, die sich aus der „Erkenntnis vor der Erkenntnis" ergeben.

Die Anregung zu dieser Auseinandersetzung mag Wittgenstein aus Machs Behauptung, daß ein Großteil der anerkannten Wissenschaft auf Konventionen und Zufall beruhe,[2] erhalten haben.

Eine Abgrenzung gegenüber Mach, der bekanntlich die Wissenschafts*geschichte* zur Wissenschaftskritik heranzog — also ein sehr modernes Konzept von Wissenschaftstheorie — scheint die Tagebuchstelle vom 2. Sept. 1916 zu bieten:

> . . . Was geht mich die Geschichte an? Meine Welt ist die erste und einzige!
> Ich will berichten, wie *ich* die Welt vorfand.
> Was andere mir auf der Welt über die Welt sagten, ist ein ganz kleiner und nebensächlicher Teil meiner Welt-Erfahrung . . .

Wittgenstein scheint hier auf den eigenartigen Widerspruch, in dem Machs wissenschaftstheoretische Methode zu seinem ontologischen Konzept steht — er lehnte bekanntlich das Ich als nutzlose Hypothese ab[3] — anzuspielen. Lernen aus der Geschichte ist aber nur unter der Annahme von je spezifischer Subjektivität möglich. Eine solche ist auch Wittgensteins Konzept fremd. Die Ich-Problematik sucht er zwei Schritte über Mach hinausgehend zu lösen: In der reinen Erfahrung — d.h. in einem fiktiven Zustand von ihr, in dem sie noch unter keinerlei Ordnung von seiten des erfahrenen Subjekts gestellt ist — fallen Solipsismus und Realismus zusammen. Damit will Wittgenstein die Befürchtung Machs, mit der

Annahme eines „Ich" beginne der Weg in die Metaphysik, entkräften, ohne die Einheit der Erfahrung im Subjekt übersehen zu müssen. Der zweite Schritt ist die Abhebung des Subjekts vom Erfahrungsgegenstand; dies kann freilich nicht in sinnvoller Sprache, sondern nur in negativer Redeweise geschehen: „Das Subjekt gehört nicht zur Welt, sondern es ist eine Grenze der Welt." (TLP 5.632)

Man könnte nun freilich sagen: Dies expliziere nur Machs Empfehlung, auf die Annahme eines Ich zu verzichten. Doch können wir darin — paradigmatisch — den grundlegenden Unterschied in den intellektuellen Bemühungen der beiden Denker erkennen: Mach will die Naturwissenschaft vor Irrwegen bewahren und ist deshalb metaphysikfeindlich; Wittgenstein will die wissenschaftsanaloge Behandlung philosophischer Probleme als irreführende Illusion erweisen, um der Wissenschaft Grenzen zu setzen. D.h., Wittgenstein steht insofern in der Tradition der europäischen Philosophie, als er die Einsicht, daß Philosophie eine Sonderstellung gegenüber den Wissenschaften haben müsse, zu radikaler Klarheit brachte oder bringen wollte.

Von welcher Tragweite diese Einsicht ist und welche Konsequenzen ihr Fehlen nach sich zieht, läßt sich an Mach sehr schön zeigen. So zieht er in seinem Buch „Analyse der Empfindungen" das folgende Resümee:

> Es gibt keine Kluft zwischen Psychischem und Physischem . . .
> Es gibt nur *einerlei Elemente*, aus welchen sich das vermeintliche Drinnen und Draußen zusammensetzt, die eben nur, je nach der temporären Betrachtung, drinnen oder draußen sind.[4]

Dies ist zweifellos eine metaphysische Aussage. Solche sich als Wissenschaft mißverstehende Metaphysik ist gefährlich, da sie die Vorgangsweise der Wissenschaften und die Beurteilung ihrer Ergebnisse mit scheinbarer rationaler Legitimation bestimmt. — Bereits Max Planck ist aufgefallen, daß Machs Erkenntnistheorie genauso metaphysisch ist wie die von ihm angegriffenen Ansätze.[5]

Dem sei ein Beispiel aus dem Traktat (TLP 5.541 ff.) gegenübergestellt: In einer Analyse der Sätze über seelische Vorgänge (z.B.: „A glaubt, daß p", „A denkt p") zeigt er, wie schlechte Metaphysik — nämlich die Verwendung des Begriffes „Seele" in der Psychologie — aus dem Mißverstehen der Struktur der Sprache entstehen kann. Interessant in unserem Zusammenhang ist aber die Folgerung, die er zieht:

> Dies zeigt auch, daß die Seele — das Subjekt etc. — wie sie in der heutigen oberflächlichen Psychologie aufgefaßt wird, ein Unding ist.
> Eine zusammengesetzte Seele wäre nämlich keine Seele mehr. (TLP 5.5421)

Man könnte den letzten Satz fortführend sagen: da sie wissenschaftlich beschrieben werden könnte. Der Unterschied zu Mach ist evident: In Wittgensteins Verständnis kann die Philosophie keine Grundlagen für bestimmte Forschungsstrategien liefern, sondern lediglich metaphysische Mißgeburten als solche erkennbar machen. Ihr Beitrag kann also lediglich ein therapeutischer (allerdings auch im Sinne einer Präventivtherapie) sein. Dies ist gegenüber der philosophischen Tradition des Abendlandes nicht so revolutionär anders, wie oft behauptet wird. Viele Bemühungen der großen Philosophen — nicht nur jener, die in der Kritik ihr hauptsächliches Metier sahen, sondern auch der großen Systemkonstrukteure — können *auch* als Versuche aufgefaßt werden, die philosophischen Fragestellungen als solche zu markieren und damit die Fragestellungen, die wissenschaftlicher Bearbeitung zugänglich sind, auszusondern.

Aus der Fülle von Textstellen bei Wittgenstein, die an Mach erinnern, sollen nur noch zwei ausgewählt werden, um die Struktur der intellektuellen Beziehung zwischen Wittgenstein und Mach sichtbar zu machen:

„Der ganzen modernen Weltanschauung liegt die Täuschung zugrunde, daß die sogenannten Naturgesetze die Erklärungen der Naturerscheinungen seien."[6] Dies erinnert an Machs These: „Alle Wissenschaft hat Erfahrungen zu ersetzen oder zu *ersparen* durch Nachbildung

und Vorbildung von Thatsachen in Gedanken . . .“.[7] Doch der argumentative Kontext dieser beiden Thesen ist ein ganz verschiedener. Mach beurteilte Wissenschaft gemäß seiner biologistischen und pragmatistischen Erkenntnistheorie vom Wert ihrer Aussagen für die Lebensfristung des Menschen aus. Danach ist eine *Erklärung* der Natur deshalb nicht möglich, da sich der Mensch in physischer Abhängigkeit von der Natur befindet; sie wird wegen ihres vorwiegend bloß theoretischen und didaktischen Interesses auch nicht erwünscht.[8] Wittgenstein hingegen hält dies deshalb für unmöglich, da wir zu diesem Zwecke erkennen müßten, *wie*[9] die Sprache die Welt beschreibt. Der intellektuelle und der emotionale Hintergrund dieses Gedankens zeigt uns geradezu eine Umkehrung der Machschen Position: die transzendentalphilosophische Trennung von Ding-an-sich und Ding-für-uns bzw. die Bewahrung des Mystischen vor Scheinrationalität. Deshalb preist er in der darauffolgenden Traktatstelle (TLP 6.372) die ,,Alten“, da sie Wissen und Glauben klar trennten.

In seinen ,,Populär-wissenschaftlichen Vorlesungen“ entwarf Mach ein der philosophischen Tradition seit Platon und Aristoteles konträres Bild von der Wissenschaft:[10] *Erklärung* sei nicht das Ziel der Wissenschaft, sondern bloß ein heuristisches oder didaktisches Hilfsmittel für die wissenschaftliche Beschreibung. Das Ziel des wissenschaftlichen Erklärungsstrebens sei ,,die Konstatierung von Tatsachen und ihres Zusammenhanges“.[11]

Aus den besprochenen Beispielen läßt sich ersehen, daß Abhängigkeit von und Eigenständigkeit gegenüber der Tradition einander nicht ausschließen. Die intellektuelle Beziehung zu Mach ist auch paradigmatisch für die Rolle der Physik bei Wittgenstein.

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ANMERKUNGEN

1 Vgl. TLP 6.342.
2 Vgl. E. Mach, Die Mechanik in ihrer Entwicklung, historisch-kritisch dargestellt (Leipzig ^{5}1904), S. 278 f.
3 Vgl. E. Mach, Die Analyse der Empfindungen und das Verhältnis des Physischen zum Psychischen (Jena ^{6}1911), S. 18 ff.
4 Mach (1911), S. 253 (Hervorhebungen vom Autor).
5 Planck, M., The Unity of the Scientific World Picture (Vortrag aus dem Jahre 1908), in: S. E. Toulmin (Hrsg.), Physical Reality (New York 1970), S. 1 ff.
6 TLP 6.371.
7 Mach, E., Die Mechanik in ihrer Entwicklung historisch-kritisch dargestellt (Leipzig ^{4}1901), S. 510 (Hervorhebung vom Autor).
8 Vgl. E. Mach, Populär-wissenschaftliche Vorlesungen (Leipzig ^{4}1910), S. 422 ff.
9 Vgl. TLP 3.221 und TLP 4.12 f.
10 Vgl. Mach (1910), S. 411 ff.
11 Mach (1910), S. 423 f.

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ON THE LOGIC OF BEING

Adolf Hübner

On the Reason and the Method of this Work

An aprioristic logic contains nothing more than the *evidence* of logic. Thus, an aprioristic logic cannot tell us any undoubtable truths about the quite concrete logic which is realized in the existing being. After having thrown hasty glances at this world, present-day philosophers quickly turn to attempts to explain the world in the fashion of their historical predecessors — who were strongly handicapped by the lack of scientific knowledge — without considering that it is completely impossible to find out the very specific way in which logic is applied to the world without looking at facts of the world very precisely. As far as science is exact and correct, it tries to *describe* the facts of being correctly. However, an empiristic description can only describe facts and connections between facts; it cannot show the specific way in which logic underlies facts and their connections.

To make a step forward in understanding the concrete logic of the world, *it is necessary to show in which way the laws of nature are logical laws.* If, for example, two things merge in this world and make a third thing, it is *logically necessary* that the former two things which resulted in the third thing amount to the third thing. Concerning the concrete logic of being, we are not allowed to expect that this *concrete* logic shows itself "*aprioristically*" like 5 + 2 equals 7. Being is a self-playing game, it is "left alone" by its creator. To be a self-playing game means not only that existing rules must be followed autonomously; it also means that such a game must contain the *power* (the dynamics) to perform the events which signify "obeying rules" in reality. The dynamics of a self-playing game interferes with its aprioristic logic and this is the reason, why the logic of being cannot be seen *at once*. The way to find out the logic of being necessarily must be a heuristic one, *guided by* the data which are available with respect to a *concrete fact*. The possibility to find out the logic of being rests solely on the logic which being and human language have in common, while the *proof* that a logic which has been found is the right one rests on the *criteria of correctness* which are put at our disposal by arithmetical equations. The logic of the fusion of two states of energy to a third one can be understood by the way of a correct equation, which expresses that the new state of energy is the sum of the two former ones. Since being can have only *one kind of regularity* (otherwise it would be many beings), the values which appear in an equation which describes a certain physical event logically correct, must appear in peculiar ways in equations which describe other physical events in their pecularities—*thus establishing the whole variety of being.*

We have come to an end with general aprioristic talks on being for a long time. The logic of being can be shown only by a *network* of correct equations, since a concrete logic must have the form of a network and we can come to a view of this network solely by means of a conceptual analysis of physical facts. And, since what can be grasped by equations basically must be "graphic", Einstein, Wette et. al. are right in their demand that all physics must rest on geometry. And, since further, the being in which we live has the *property* "movement" (Bewegtheit), all being must consist of *moving geometrical elements*; it cannot consist of elements which stick to each other "mystically". If it can be shown, that being obeys logic, correctness in the evolution of being—including the evolution of life—is a logical necessity. Since only a defined being can obey rules, an undefined being is logically impossible. (It is not allowed to conclude from states of disorder of *concrete* things—which necessarily obey rules—the possibility of the existence of a complete chaos. A complete chaos is logically impossible.) And since—in an aprioristic logic—it cannot be said that the *fundamental* particle and its antiparticle (the electron and the positron) must have the size which they have,

and yet must have a definite size, a transcendental principle which defines the size of particles with the aid of a concrete logic *must be acknowledged.* A self-playing game which has the property of movement moves and progresses by itself whithout a cause being added to it steadily from "outside" the game. Being cannot be explained. *Any* "explaining theory" is a mere *creative imagination*. Describing 'theories' may be incomplete, like Newton's 'theory' of gravity, but they *cannot*—as descriptions which they really are—be wrong. When Popper wrote[1] "Darwin's theory is not as deep as Newton's" he did not see that he compared a description of being with an explaining imagination! Any explaining theory can—for logical reasons—be *completely* wrong, and as far as such a theory tries to recreate "*aprioristically*" the creation of another creator it necessarily must be wrong. Logic *cannot* be guided by mechanisms like selection, it takes the right way because it is logic.

To recreate creation "theoretically" can only mean to find out the special way in which logic was applied to creation. And that means to analyse the specificity of specific physical facts. Although the infallible conceptual logic of language, as the language of being, tells us, what must be the case in being, we do not trust it. The reason is that we are able to use language to talk nonsense. And yet the logic of language is the most perfect logic we can have: *it cannot go beyond being*. It is the logic of language which tells us that it is impossible to perform a process $3g \times 3g = 9g^2$, since, as *concrete* being, the logic of language cannot go beyond being, as a rule-guided *aprioristic* mathematical logic can do.

The Essence of Being as Physical Reality

It is precisely the logic of language which tells us that being as a reality must have a concrete essence. The essence of being must be everywhere, where a concrete being is: its energy. The fundamental form of energy is that to which all states of energy are reducible. All states of material being are reducible to electromagnetic vibrations which move at the speed of light. Since an essence is not a mixture it can become something else only by the way of polarizing. The simplest material thing in the world must be *two* polarized things. Reality shows to us that this is the electron and its antiparticle, the positron. Since all being is energy there must exist a universal measure. If we take the mass of the electron, the elementary mass m_e, for the universal measure, then, in principle, we must be able to say: the mass-energy of the electron is related to its spin-energy like 1 : a. If being is so gentle to appear in states of energy which are altogether mass-energy, then these states in their logical structure must contain "somehow" the fundamental relation of mass-energy and spin-energy because they originate from the fundamental material state "electron". By conceptual, but nevertheless heuristic, considerations, which I am unable to expose in this paper, [2, 3, 4] I became convinced that the fundamental relation should be 1 : 53. But what I am able to show here to the readers, may they be physicists or not, is, how surprisingly this *transcendental fixation* can work in a logic of being, if one takes it for true and constant.

The Elementary Energy Quantum (EEQ)

If we say 53 m_e equals the state of charge of elementary particles, then any charge must have this size. The charge of particles which exhibit spin must be 53 and if we take spinless instable particles which show charge—like the mesons—as transformations of spin-energy, then in their structure must appear "somehow" a mass-unity of the size of 53 m_e. The total energy of an electron consists of its energy of charge and its energy of mass, so that the elementary energy quantum (EEQ) amounts to 54 m_e. We may assume that neutral mesons are multitudes of EEQs, while mesons, which show charge, lack 1 m_e per one EEQ "somehow". The charged K-Meson shows a mass-deficit of 7,72988 m_e with regard to its neutral partner-particle. Charged K-mesons (kaons) decay in many cases by producing 3 charged pions. Therefore

we assume that in kaons 3 charges do exist, each combined with a mass-deficit of 2,5766266 m_e. Thus we get the important mass-constant of mesons (MMK). If we divide the mass of the neutral kaon by the MMK, we get very precisely 7 EEQs: 974,14091 : 2,5766266 = 378,06832 : : 54 = 7. Thus our assumption is confirmed. The charged kaon then consists of 4 complete EEQs and 3 EEQs, each lacking 1 m_e. A pion which shows a negative charge is able to transform a proton which is part of a nucleus into a neutron, whereby it vanishes. If we say a proton needs one charge for its binding to the nucleus while it shows another charge as free charge, then two charges are needed to transform it. If we divide the mass of a pion by the MMK we get precisely 2 charges: 273,14066 : 2,5766266 = 106,0070. Thus we were able to show how the pion is able to follow the *logical demand* to be the difference between a neutron and a proton! Accordingly the mass of the pion is two times the mass-difference between a neutron and a proton: $2{,}5313 \times 54 \times 2 = 273{,}38$.

If we say the EEQ must be undivisible, then any stable mass must be connected with 53 m_e. If these masses do not appear then they must be hidden in the structure of a particle, constituting its *essence*. If we further say only the electron and its antiparticle can be elementary for logical reasons, then all other "elementary particles" must be constituted by the elementary particles. A proton then consists of $1836{,}1089 \times 54\ m_e$, which is 99149,88 m_e. This amount divided by the mass of the pion gives exactly 363 pions: 99149,88 : 273,14066 = = 362,99934. If one of my critics (J. Giesecke) says that this is impossible, since according to $E = mc^2$ the energy of a proton corresponds to 1836 m_e, then he forgets that the energy which forms a structure (an essence) *cannot* appear as energy for logical reasons. When we burn a wooden house, we will not get back the energy which was necessary to make a house out of the wood. And when, in physics, a particle decays into several other particles, these particles must possess structural energy to form their quite specific ways of being—their essences—as it was the case with the mother-particle.

Planck's Action Quantum as the Cause of the Dynamics of Being

If we say the movement of being can only be the consequence of an action, then we are led promptly to the sole thing in this world which has the function and dimension of an elementary action: Planck's Constant. The *first* thing in this being must have the form of an action and since it is the first thing it can only act upon itself. Since we can say that the structure upon which an action acts cannot have a dimension, the dimension of h^2 can only be the dimension of an action, that is gcm^2/sec. We must suppose that the action quantum "produces" being, especially mass. If we take it as given that mass transforms into electric energy then it may very well be possible that in this process the action quantum is set free again after one of its actions to produce new mass, thus establishing the perpetuum mobile of being. We have reason to believe that $E = m_e c^2 = h\nu_e = h^2 f^2$ is correct. *If* this is correct then we can get the frequency of h (f) out of $m_e c^2 = h^2 f^2$. f then is $1{,}3655419 \times 10^{23}/sec$. The elementary mass as a product of h should be a part of h while the rest of h is 7,273894 cm^2/sec, whatever this means. ($h = 6{,}626196 \times 10^{-27}$, the energy of the electron $E_e = 8{,}1872608 \times \times 10^{-7}\ gcm^2/sec^2$). The relation of h to m_e is 7,2738938 and this is nearly $\sqrt{53}$. Since we have said, the electric charge is 53 times as large as m_e we get $h\sqrt{53}$ for the charge. The product of m_e and charge then is $h/\sqrt{53} \times h\sqrt{53} = h^2$ in full correspondence to our assumption. Since hf must be the structure upon which hf acts, the electron produces $9{,}109558 \times 10^{-28}g \times \times 1{,}3655419 \times 10^{23} = 1{,}2439483 \times 10^{-4}g$ per second, while h as a whole produces $6{,}626196 \times 10^{-27} \times 1{,}3655419 \times 10^{23} = 9{,}0483482 \times 10^{-4}\ gcm^2/sec^2$. Besides the produced mass the electron produces $9{,}0483482 \times 10^{-4} : 1{,}2439483 = 10^{-4} = 7{,}273894\ cm^2/sec$. If we now turn to a spatial static view and say that m_e corresponds to the surface of a globe with $r_e = 2{,}81786333 \times 10^{-13}$ cm, then we get the spatial value of m_e with $0{,}099781775 \times \times 10^{-23}\ cm^2$ as a "mass-energetic" globe-surface. A "nonmass-energetic" globe-surface is given by $7{,}273894 \times 10^{0} cm^2/sec : 1{,}3655419 \times 10^{23}\ sec^{-1} = 5{,}3267453 \times 10^{-23}\ cm^2$. If we

call the interior globe-surface "nucleus" of the electron and the exterior surface „cover" of the electron we get a relation of "cover to nucleus" of 5,3267453 × 10^{-23} : 0, 09978118 × × 10^{-23} = *53,38399* which corresponds to the relation e : m_e with a small deviation of which we take notice. Since we do not take anything as given, we say that we have got a clue that e equals a globe-surface and does not reach "to infinity". Astonishingly the relation c_e : n_e equals the relation h : 4 $r_e^2 \pi$. f . m_e. Thus, as it can be expected within a perpetuum mobile, *both parts show the dimension of an action.* We come close to the *Pythagorean view* that the (logical) essence of being is shown by numbers.

In our realistic view, the mass of the electron remains constant, because it is produced at the same speed as it becomes electric energy. Something what was a moving mass changes to a movement, which has "nomass" quality. Mass is not a permanent thing. If it is not produced steadily, there is no mass. "Annihilation" of mass now appears as a stop in the production of mass. The mass of the electron is produced within the time of the phase of the electron, which is 1/f = 7,3231 × 10^{-24} sec. The production of the elementary mass within the time of the phase of the electron is the most fundamental complete material event in being and the phase is the smallest natural measure of time. It is evident that, what is the *smallest natural "completeness of an event"* can be used best in a correct description of being. Its use will give us the greatest possible clearness about being. We have to speak of "time-mass", that is of "*gram-seconds*" which convert to "square-centimeter-seconds". The gram-second of the state of energy "electron" is given by 9,109558 × 10^{-28} g × 7,3231 × × 10^{-24} sec = 6,6710204 × 10^{-51} gsec. It converts to 5,3267453 × 10^{-23} cm^2 ×7,3231 × × 10^{-24} sec = 3,9008288 × 10^{-46} cm^2 sec. The "*conversion-rate*" therefore is 5,8474244 × × 10^4 cm^2/g (=U). To h the gram-second is related by the squarevelocity ε : 6,626196 × × 10^{-27} : 6,6710204 × 10^{-51} = 9,932807 × 10^{23} cm^2/sec^2. The relation of ε to the square of the speed of light is given by the factor 1,105174 (ϰ), which will appear to be very important in the logic of the electron. The relation between the energetically acting hf and the charge of the electron is given by the equation: 4,80325 × $10^{-10}\sqrt{ergcm}$: 9,0483482 × $10^{-4}\sqrt{erg}$ = = 5,3084273 × $10^{-7}\sqrt{cm}$ and this value is identical with the root out of the radius of the electron. We will call it coupling-factor and attribute the sign K to it.

It must be possible to describe the formation of the elementary electric charge as a square-phasic event, in which mass acts on the conversion-product of mass by the aid of the coupling-factor. The charge must be given by the equation: $m_e \times (m_e \times U) \times K \times f^2 = e$. In numbers: $(9{,}109558 \times 10^{-28})^2 \times 5{,}8474244 \times 10^4 \times 5{,}3084273 \times 10^{-7} \times (1{,}3655419 \times 10^{23})^2 =$ = *4,8032492* × 10^{-10} $gcm^2\sqrt{cm/sec^2}$. I turns out, that e in a realistic description has the dimension erg$\sqrt{cm}$. Since a mathematical logic cannot be false it becomes evident that *semantic points of view attach dimensions to the chiffres of being*, following quite define rules.

Being as Denotor of Itself: The Transformation of Dimensions as Semantical Process

If h acts upon itself the result can be described in the way that besides the square of the elementary mass a constant is given of the size 52,909533 × 10^0 with the dimension cm^4/sec^2. If we multiply this constant with the constant ϰ, which has no dimension, then we get the conversion-rate U: 52,909533 × 10^0 cm^4/sec^2 × 1,105174 × 10^3 = 5,8474244 × 10^4 cm^2/g. *What can change its dimension with the aid of a constant which has no dimension must be changeable dimensionally.* How this can happen in our special case is explained by the fact that ϰ is not only ε/c^2 but also 1/hf and thus has the *dimension of an "antienergy"*: 1 : 9,0483482 × 10^{-4} gcm^2/sec^2 = 1,105174 × 10^3 sec^2/gcm^2. *The existence of antienergy in being must be accepted as proven.* The constant ϰ must be taken as the expression of the structural energy of the electron which cannot appear as energy. *Energy is consumed within the electron to form its structure.* Thus the conversion-rate is reduced from 5,8474244 × 10^4 to 5,9095333 × 10^1 cm^2/g (U_r) and the total energy of the electron reduces to a measur-

able energy according to the equation $(9{,}109558 \times 10^{-28})^2 \times (1{,}3655419) \times 10^{23})^2 \times \times 5{,}909533 \times 10^1 = 8{,}1872608 \times 10^{-7}\ gcm^2/sec^2$. And in the same way as the conversion-rate of an electron is reduced, the frequency of a photon, which corresponds to an electron with respect to its energy, is reduced by $\varkappa$ to the frequency which it shows: $1{,}3655419 \times 10^{23} : : 1{,}105174 \times 10^3 = 1{,}235591 \times 10^{20}\ sec^{-1}$. The equation $h = U \times m_e^2 \times f$ shows that h is set free in an event, in which mass acts upon its conversion-product with the frequency f. *h is autoreproductive.* The actor of being is h.

Being denotes itself. Since we can get the square-velocity ε by the multiplication $\varkappa \times c^2$ it can have the dimension of an *antimatter* and thus can transform the mass which is produced by the electron per second to the frequency of a photon corresponding to an electron, for example. In the same way hf can be transformed to c^2 by ε. If a square-velocity equals an antimatter, then a "*resting mass*" consequently can have the dimension of an *anti-square-velocity*. And that this *is the case in reality* I will show in a short study on the logical structure of the *charged pion* later on. The dimension of c^2 can be constituted by $m_e \times f^2 \times U_r$. h can be transformed *antienergetically* to 1/f by $\varkappa$. Out of $hf = \sqrt{m_e} \times c$ follows that the root out of the elementary mass corresponds to an *impulse* and consequently m_e must be a *square-impulse*, which keeps being going! Mass cannot "permanent" since it has the logical structure of a square-impulse. The velocity v_3 of the electron which is given by $\varkappa c$ shows that it is an *antiimpulse* (sec/gcm) also. And out of $m_e \times c/f \times \sqrt{m_e} = h$ follows that even h can have the dimension of time, given by its measure second, if we understand $\sqrt{m_e}$ as an impulse! Being denotes its concrete chiffres in a large variety following the rules of the logic of language! Physics by its method could only show the existence of antimatter, while the application of the logic of language shows the whole logical concept of being.

Concluding this chapter I will show how the "second" dimension of the electric charge can be derived antienergetically. We divide e by the gramsecond and get $72{,}00172 \times 10^{40}$. Then we multiply this size with the equivalent of the gramsecond, that is $39{,}008288 \times \times 10^{-47}\ cm^2/sec$. Then we get the chiffre $2{,}8086638 \times 10^{-5}$ with the dimension $cm^4\sqrt{cm}/sec^2$, which I will call ψ. We arrive at ψ as well, if we divide U by $\varkappa$ and multiply with the coupling-factor K: Now we get ψ with the dimension $cm^2\sqrt{cm}/g$. But we get ψ also by multiplying e with U. We are able to establish the equation $U : (\varkappa \times K) = e \times U$. Out of $\psi : U = e$ the dimension of e follows with $\sqrt{cm}$: $2{,}8086642 \times 10^{-5}\ cm^2\sqrt{cm}/g : 5{,}8474244 \times 10^4\ cm^2/g = = 4{,}80325\ 10^{-10}\sqrt{cm}$. By shortening we arrive at the simple relation $e = K/\varkappa$. It was an error to believe that the dimension of e^2 *must* be given by $\sqrt{ergcm} \times \sqrt{ergcm}$. If the electron and the positron are not merely opponents but also *do behave differently* then their different behaviour must have a reason. This reason could be given by a difference in their dimensions. (I would like to assume that the dimension of the positive charge is $\sqrt{cm}$ while the dimension of the negative charge is $erg\sqrt{cm}$.)

A Realistic Description of the Formation and Transformation of the Elementary Mass

If we take it for given that the electron is in possession of a massenergetic globesurface then we arrive at a rotation-rate $v_1 = 2{,}417779 \times 10^{11}\ cm/sec$ according to $2r_e\pi f$. This is 8,064841-times the speed of light. The division of the squarevelocity of the electron (ε) by v_1 gives a velocity v_2 of the size $4{,}1082361 \times 10^{12}\ cm/sec$ and that is $1{,}37036 \times 10^2$-times the speed of light. Since *Sommerfeld's Finestructureconstant* has exactly this size we have got an indirect *Pythagorean proof* that our *ontological theory* is in accordance with today's scientific knowledge. The relation ω of v_2 to v_1 is 16,99178. We can assume that the two velocity vectors act on a point, leading it spirally from the north pole to the south pole and back, thus forming and transforming mass. Since at the end of the phase only 16,99178 rotations are performed a momentum arises, which can be taken as a geometricodynamical explanation of the magnetic momentum which exists in all particles which exhibit spin. We

arrive at an overall equation of the state of energy "electron" which is as close to a geometrical description of reality as this seems to be possible:

$$2r_e\pi \times \sqrt{m_e} \times 8{,}064841 \times c \times \sqrt{m_e} \times 1{,}37036 \times c \times 1/W = e/c$$

"W" is a constant given by $2\sqrt{r_e}\pi c = 0{,}99992275 \times 10^5\ \text{cm}\sqrt{\text{cm}}/\text{sec}$.

The Finestructureconstant α and the Wittgensteinconstant W as Constants of the Electron

In physics the dimensionless finestructureconstant α is known for quite a long time. Its size is $7{,}297351 \times 10^{-3}$. If we say in a description of the electron $\sqrt{g} \times \sqrt{cm} : \text{sec}$ "means" $\sqrt{m_e} \times \sqrt{r_e} \times f$" then we get the value $2{,}1878599 \times 10^3$. The constant αc gives a chiffre which is nearly 1×10^5-times larger. The factor which connects the two values can be developed out of the ontological theory of the electron as a constant and is given by $2\pi\sqrt{r_e} \,.\, c = 0{,}99992275 \times \times 10^5\ \text{cm}\sqrt{\text{cm}}/\text{sec}$. In honour of Wittgenstein I have called this fundamental constant *Wittgensteinconstant*. We can write $\sqrt{m_e} \times \sqrt{r_e} \times f \times 2\pi \times \sqrt{r_e} \times c = \alpha c$ and arrive at $\alpha = 2r_e\pi\sqrt{m_e} \,.\, f = 7{,}297351 \times 10^{-3}\sqrt{g} \,.\, \text{cm}/\text{sec}$. We have shown that in a realistic description of the electron α appears with the dimension $\sqrt{\text{erg}}$. Thus we have shown that dimensionless constants are no "exceptions".

The Constant C and the Constant C′

It turns out that in an ontological view fundamental constants become nearly integers—*despite of the arbitrariness of the GCS-System.* We arrive at another fundamental constant by the equation $m_e \times c : f = h \times \sqrt{m_e} = C$. $9{,}109558 \times 10^{-28} \times 2{,}997925 \times 10^{10} : : 1{,}3655419 \times 10^{23} = 1{,}9999218 \times 10^{-40}\ \text{gcm}$. C' is given by $c : (m_e \times f) = 2{,}4100077 \times \times 10^{14}\ \text{cm}/\text{g}$.

The constant W is "*mass-less*", while the constants C and C' appear "*time-less*".

The Logical Consequences of the Elimination of Time in the View of Physical Reality

It is a demand of logics that, if two matters have only one property in common, then their correspondence—or their corresponding truth—must be shown by the way of the common property. If two matters have only numbers in common, then their common truth can only be shown by the numbers which they have in common!

If we have looked at a certain state of energy in a static view and have got certain numbers which showed us that this state of energy can be understood as a descendant of another more fundamental state of energy, then this truth must be confirmed if we take into consideration the temporal events which are essential to the two states of being. We have looked at the charged *pion* without considering its life-time and we came to the conclusion that it is a descendant of the electron as far as it possesses two times the elementary electric charge. If we now include the temporal events which, in our view, must be parts of the logical structure of both states, then we must get numbers which, by the way of correspondence, can confirm the correctness of the numbers at which we arrived in a static view. This possibility of logical comparison offers to us *new criteria of correctness in science, whose validity cannot be doubted.*

If there *is* a logic of being and if, what we know already, is correct, for example, that the electron forms its mass one time within the time of its phase (τ), then, for example, we may assume that this time of the elementary event *must be meaningful* to the pion and *its* life-time. By the aid of τ it must be possible to *eliminate* the influence of the life-time of the

pion on its logical structure, which is static. And this really is the case: If we multiply the mass of the pion with its life-time and divide by the mass of the electron and its life-time and by c^2 as well (which is necessary according to $E = mc^2$ since we want to come to "mass") then we get a very characteristic result: $(2{,}4881906 \times 10^{-25}\,g \times 2{,}6024 \times 10^{-8}\,sec) : (9{,}109558 \times 10^{-28}\,g \times 7{,}3231 \times 10^{-24}\,sec \times 8{,}98755 \times 10^{20}\,cm^2/sec) = 1{,}0800007 \times 10^{-3}\,sec^2/cm^2$.

We were able to show that the pion equals 2 EEQs which, since the pion is a "resting mass", must exhibit the dimension of an anti-square-velocity according to the logical demands which I have shown previously. One may ask, why didn't we get 106 since, indeed, it was claimed that the pion is the carrier of a double-charge? The reason is, that an EEQ must be indivisible. The 1 m_e which the electric charge lacks in respect to an EEQ can only be "pushed aside" into the structural energy of the particle in whose existence physicists do not believe, since it cannot be measured. On page 93 of my essay "Die Logik als Eigengesetzlichkeit des Sein" I have claimed the existence of an unperceptible energy of opposite spin-momenta in the pion in the size of 326 m_e. The relation of this attributed energy to the mass-energy of the pion is 326 : 273,14066 = 1,1935424. And the existence of this energy, which corresponds to 6 EEQ + 2 m_e, can be proven by another constant *of the electron*, its antienergetical constant $\varkappa$. 326 : 273,14066 : 1,105174 = 1,0799423 $\times 10^{-3}$. Or, otherwise, by the equation $EQ_\pi \times \varepsilon : c^2 = EQ_\pi \times \varkappa = 1{,}1935886 \times 10^0$. ($EQ_\pi$ is $1{,}08 \times 10^{-3}$). There cannot be any doubt that there is a logical connection between the structures of the electron and the pion. The logic of being "shows itself", as Wittgenstein would have said.

Sinde $c^2\tau$ corresponds to h^2f/m_e according to our postulate $m_ec^2 = h^2f^2$, we are able to arrive at the classical semantics of the constant $hc/2\pi e$, which can be found in every collection of formulae of nuclear physics, by the aid of our ontological Wittgensteinconstant: $c^2\tau \times \times 1/W = h^2f/m_e \times 1/W = h/2\pi\sqrt{r_e}\sqrt{m_e} = 6{,}5821825 \times 10^{-8} = hc/2\pi e$, since it is valid $\sqrt{r_e}\sqrt{m_e} = e/c$.

The equations which I have presented above give evidence that, if we are in the possession of a (the) natural universal measure on the one hand and are able to remove time from dynamic processes on the other hand, we arrive at a numeric correspondence which is able to prove the correctness of results of logically different descriptions of nature. The arbitrariness of the GCS-system cannot affect logical correspondence and the speed of light even is involved in producing numeric correspondence as it is involved in producing integrity of fundamental constants. The GCS-system shows its power only in its influence on exponents. The speed of light must be held responsible for the compensation of the influence of the arbitrariness of the GCS-system. I do not see another possibility! The speed of light is according to $E = mc^2$ part of the essence of being.

From the Geometry to the Logic of the Electron

ψ seems to be everything what happens in the electron productively. If we divide the electric charge by the gram-second and then multiply with the equivalent of the gram-second, the squarecentimeter-second, then we gain the amount of squarecentimeters per gram and the electric charge as a product, as it is also shown by $e \times U = \psi$. We cannot expect to get more than $4{,}80325 \times 10^{-10}\,gcm^2\sqrt{cm}/sec^2 \times 5{,}8474244 \times 10^4\,cm^2/g = 2{,}8086642 \times \times 10^{-5}\,cm^4\sqrt{cm}/sec^2$ (or $cm^2\sqrt{cm}/g$).

Since the electron is a perpetuum mobile (as being as a whole) the liquidation or disintegration of mass must lead to a surplus of energy. This process essentially must have the form of a disintegration of geometrical structures also. So we may have the expectation that in a correct description of the *disintegration of the geometrical structures* of the electron the energetical element of structure, antienergy, should appear as an enlarging factor, while π should appear as an independently decreasing value in equations.

In the electron the velocity v_3 is given and defined by $\varkappa c$ or ε/c or $1/\sqrt{m_e}$ or h/C. Its

size is $3{,}3132275 \times 10^{13}$ cm/sec and that is $1{,}37036 \times 10^{2}$-times v_1 or 8,06484-times v_2. Since v_1 and v_2 are involved in the constitution of the mass-energetic surface of the nucleus, I have assumed that v_3 is the speed of rotation of the nonmassenergetic cover of the electron. Though the cover is a non-mass it must be seen as structure with an underlying structural (anti-)energy. This means, however, that is does exist squared according to $h^2 f^2$. The frequency of the cover is given by $v_3/2r_c\pi$ with $2{,}5612114 \times 10^{24}\ \text{sec}^{-1}$. In a static view the size of the cover is $5{,}3267453 \times 10^{-23}$ cm. We perform $(5{,}3267453 \times 10^{-23})^2 \times (2{,}5612114 \times 10^{24})^2 = 1{,}8612911 \times 10^4\ \text{cm}^4/\text{sec}^2$. The conversion-rate U is $h/m_e^2 f$ and if we divide by π we arrive exactly at the value we have just got: $5{,}8474244 \times 10^4 : \pi = 1{,}8612911 \times 10^4$. U is reduced by π to U/π! On the other hand h^2/m_e^2 gives $5{,}2909533 \times 10^1\ \text{cm}^4/\text{sec}^2$ and this value can be described as "everything which is created in the electron besides m_e^2". It becomes evident that U/π is $\varkappa$-times h^2/m_e^2 divided by π. U/π can in fact be seen as the result of the liquidation of a structure and this becomes even clearer if we look at it as $U/\pi = 4r_c^2/m_e = h/m_e^2 \pi f$.

ψ' as the Logical Main-Constant of the Elementary State of Energy "Electron"

As a consequence of the liquidation of the geometrical structure of a state of being, its logic should become more evident. If U_π signifies the result of the liquidation of the geometry of the electron then h should be released to act again as the author of being. Everything what is left to it is the "logic" which will again lead it to U/π. What leads h again to U/π is $1/m_e^2 \pi f$.

$$1/m_e^2 \pi f = 53^2 \times 10^{27}\ \text{sec/g}^2 = \psi'.$$

We have reason to acknowledge that 53 is a number which is distinguished by the concrete logic of being.

ψ is transformed to ψ' by the two fundamental constants W and C: $\psi' = 2\psi/\text{CW}$. The elementary charge is given by $e = \psi'\ \text{CW}/2\text{U}$. And since $\psi' = U/h\pi$ is valid, it is also valid $e = \text{CW}/2h\pi$ and $eh\pi = 0{,}999883 \times 10^{-35}$. The size of the elementar mass can be described as $m_e = 1/5{,}3 \times 10^{14} \times \sqrt{f\pi} \times \sqrt{10}$. At the very end we come to see that we cannot speak of the "irregularity" of π any longer. As a part of the logic of being it leads to the integrity of fundamental constants.

In concluding this essay I may ask the reader to see, what Ludwig Wittgenstein has written on the "method of philosophy" in proposition 6.53 of his *Tractatus logico-philosophicus.* In language the automatic creative working of being *overlaps* with the autonomous creative working of human reason. Being *reveals* its logic by means of the logic of language.

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NOTES

1 Popper, K. R., *Objective Knowledge* (Oxford 1975), p. 267.
2 Hübner, A., Die Logik als Eigengesetzlichkeit des Seins (Kirchberg/Wechsel 1979), p. 37 ff.
3 Hübner, A., Der logische Code des fundamentalen Seins und seine Dechiffrierung, in: R. Haller and W. Grassl (eds.), *Sprache, Logik und Philosophie: Akten des 4. Internationalen Wittgenstein-Symposiums* (Wien 1980), p. 585 ff.
4 Hübner, A., "On Decoding the Logical Structure of Physical Being", in: R. Trappl et al. (eds.), *Progress in Cybernetics and System Research*, Vol. XI (Washington 1982), p. 459 ff.

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A DEMARCATION IN THE ONTOLOGY OF THE NATURALISTIC WORLD-VIEW

Mladen Pavičić

Within the realm of a naturalistic world, we are used to thinking that our ontology is given after completing an over-all conceptual scheme into which disordered fragments of raw experience can be fitted and arranged. However, this is valid only on the assumption that concluding on parts of a conceptual scheme does not differ in kind from the considerations which determine a reasonable construction of the whole. If it does differ we have to broaden our scope and move from the theories themselves to some wider point of view. Such an attempt was undertaken by Kuhn, Popper, Feyerabend, and other representatives of the so-called Weltanschauungen (W) approach when they started to treat science, its objects, and its environment as a whole. Nevertheless, the opinion was recently expressed, e.g. by Suppe,[1] that the W analysis is ceasing to be accepted as an adequate understanding of science. The W view is now being attacked, often vigorously, and ultimately, in Feyerabend's exposition, accused of rejecting or accepting a global theory on a fundamentally irrational basis, and of denying that a legitimate aim of science is to find out how the world *is*. Altogether, "this view is bizarre, implausible and unattractive";[1] must be rejected for the sake of "a demarcation of scientific progress from intellectual degeneration";[2] and we should instead, following Lakatos, be concerned with science as actually practised and as giving correspondence between theories and reality. On the other hand, strangely enough, the proponents of the W approach continue to develop their theories which are still very much discussed. Clearly there is something wrong here. One cannot first find something to be very significant and influential which would later be invalid, if nothing has changed in the meantime. Science has not changed.

So what has? To say that it is the technological and economical situation which has changed, would seem, at first, to be a completely misplaced statement. But let us proceed more gradually. What we should stress above all is that the opposing approaches only apparently contradict each other. In fact they are just speaking about different things. Kuhn is right in claiming that a "normal" science consists of unique theories and that in a "normal" science there are no rival schools—but only if we judge it according to the standard textbook, university lectures, popular books, etc. Popper is right in holding that the constant and simultaneous proliferation of a variety of theories, subjected to falsifiability by crucial experiments, is responsible for the growth of scientific knowledge—but only if we add that not only falsified theories are rejected. Feyerabend is right in maintaining that there is, historically, no connection between the truth and acceptance of observation sentences (the latter being always analytically true within a particular theory) and in maintaining that the ground for the acceptance or rejection of a theory is a fundamentally "irrational" procedure —but only if we understand scientific objects as not existing-in-themselves but being defined by a particular theory and if we understand "irrational" procedure as that which is simply indefinable within a particular theory, i.e. determined by external factors. And, finally, Lakatos is right in disapproving of the W approach—but only if he does it from within a particular chosen theory (which can be one of many equally possible theories of the same phenomena) of a particular science, taking only empirically confirmed parts of its theoretical structure as relevant.

What, then, connects the preceding approaches and why do they appear to contradict each other. Looking more closely we can resolve each of the numbered disfavoured models into two parts: a "regular" one and a "painful" one. On the other hand the official model also

consists of two parts: a "regular" one and a "suggestive" one. "Regular" parts of all models coincide. Namely, when we restrict various models to the common level of elaboration and application, then empirically equivalent syntactical and semantical parts fuse together into a "regular" one. In the aforementioned models it is a part which elaborates the development of each particular scientific theory while paying attention only to the formal structure and empirical confirmation of the theories. The "painful" part of disfavoured models is their integral and proper part, but unutterable from within the "regular" one or unprovable on the basis of bare empirical data. An example of this is a non-scientific fact responsible for the acceptance of a theory (Feyerabend) which is, on the other hand, considered unimportant for the application of the theory—or a simultaneous existence of two different theories reproducing the same data. This part is disturbing and painful for both supporters of an official model: financiers and scientists. A scientist must not wander around. Technology demands the monolithism of sciences. A financier demands the economy of scientific researches. How can one on top of this accept a casual or at least polyvalent structure of sciences? Is it not "bizarre, implausible, unattractive", and distracting? But to be sure, the representatives of official models have also added an *ad hoc* and external "suggestive" part, often rendered as 'progress', which is rather different for each particular case and will be exampled later on.

The above elaboration so far has been based on a specific scientific field: the philosophy of science—a kind of meta-theory. But it is also valid for the basic sciences themselves. So, we will give two more concrete examples of the elaboration on both levels. The first one is an extremely bare form of the philosophy of science as presented by Wittgenstein in his *Tractatus*. The second example is the official quantum mechanical world-view in contradistinction to other existing ones.

The *TLP* offers a model of that part of our world to which natural sciences are applicable ("T-world").[3] Constituents of the T-world are those formal concepts of natural sciences which satisfy some definite conditions imposed by particular scientific theories.[4] Consequently all the corresponding elementary propositions are true,[5] and the corresponding logic is a tool for manipulations with elementary propositions in an empirical domain.[6] On the other hand, within such a formal language of a natural science, the sense of the very same science is unutterable, or, which is the same, the sense of the world—the T-world—has to lie outside of it.[7] Now, the "regular" part of the *TLP*, within which Neopositivists tried to cast the complete work at the time, was the elaboration of the statement that "only connections that are subject to law are thinkable" (*TLP* 6.361). Further, Neopositivists added a "suggestive" part: the progressive antimetaphysical dictum: "*TLP* 7", in hope of annulling the "painful" part: "even when all scientific questions have been answered the problem of life remains untouched" (*TLP* 6.52).

In quantum mechanics (QM) there are—contrary to the usual belief, even by physicists—a lot of existent, elaborated, and consistent theoretical formulations (f.), which are mutually irreducible one to another and which have completely different interpretations, but all of which reproduce the same standard observable values. The main groups are: Copenhagen f. (the one presented in most textbooks, university lectures, laboratory work, popular books etc.), statistical f.,[8] hidden variables (HV) f.,[9] QM on fuzzy phase space,[10] QM in phase space with negative and complex quasi-probabilities,[11] and stochastical QM.[12] But if there are so many varieties of valid theories why is only one of them officially accepted? Because for every possible, now conceivable application (A-bomb, medicine, power plants etc.) the statistical features of quantum phenomena are all we need. Well, but why, then, is not the statistical interpretation the leading one? Statistical interpretation inclines to the conclusion that there is something we still do not know and cannot register by means of current experimental procedures, and in any case claims that the standard formal f. of QM do not adequately describe an individual quantum object. And then? Then scientists would search further on a quite general level, reexamine the theoretical structure etc., and this is not economically viable.

But who can control all this? That is the point. The scientists themselves. In the following way: They adopt the Copenhagen interpretation which has put forward a "suggestive" but unprovable golden rule: let a statistical description be considered a complete and exhaustive description of individual quantum objects. In the light of this they "disprove" all other formulations as follows: 1. statistical f. has no sense for there is nothing beyond statistic-like laws and consequently they are not proper statistical laws—but they do not mention that this is an *ad hoc* conclusion; 2. stochastical theories have to be rejected because they suppose some kind of underlying vacuum structure but can offer no empirical confirmation for it—but Copenhagenists do not mention that they also cannot offer an empirical confirmation for their additional hypotheses; 3. f. in phase space has to be rejected because it does not use positives definite probabilities—but they do not mention that this f. is wider than standard QM f. and, restricted to the standard domain, has not only positive definite probabilities, but also reproduces all the results identically;[13] 4. HV should be dismissed because HV are theoretically and experimentally "disproved"—but they do not mention that the so-called "disproofs" do not refer, at all, to the HV theories as formulated by the advocates of these theories.[14] And finally we should mention that, so far, none of the numerous proposed experiments, which would decide between the theories, has been financed and performed.

So we have come back to the old ontological question: "On what there is". Namely, basic physical concepts which determine the quantum object as, e.g., state, transition, trajectory, causality etc., are quite differently defined in one theory than in another (or even completely absent in some, as, e.g., trajectory and causality in Copenhagen f.). The consequence of such a situation is that with adopting a particular theory we also change the very object under consideration. Apparently there would be a lot of ontologies determined by what an old phenomenalist would have called "the one and same set of objects", i.e. theories would multiply the objects if we stayed in Lakatos's naturalistic world. However, applying our model, we can easily recognise the formal part of standard f. of QM (to which all the other f. are reduced if limited to orthodox measurements) as a "regular" part of the quantum theory. The above mentioned further differences between formulations, which cannot be reduced one to another, then "painfully" reveal—not that there are a lot of ontologies—but that there are still none; i.e. that we still do not know the proper object of QM and that only by taking all these alternatives and doubts into account can we get a better insight into QM. Being aware of this fact would greatly help us to correct a highly distorted naturalistic world-view (a situation similar to the one in QM is recognizable also in other theories, e.g., in the theory of relativity), and dispense with one-dimensional paradigms and prejudices which obstruct the further development of science and reduce it to technology.

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NOTES

[1] Suppe, F., "Afterword—1977", in F. Suppe (ed.), *The Structure of Scientific Theories* (Chicago-London ²1977), pp. 636—49.

[2] Lakatos, I., "Science and Pseudoscience", in: I. Lakatos, *The Methodology of Scientific Research Programmes*, Vol. 1 (Cambridge 1978), p. 4.

[3] Pavićić, M., "A Mapping of Wittgenstein's *Tractatus* into the Vienna Circle's Models", in: H. Berghel, A. Hübner, and E. Köhler (eds.), *Wittgenstein, the Vienna Circle, and Critical Rationalism* (Dordrecht 1979), pp. 203—6.

4 *TLP* 4.11, 4.1272, 5.557, 6.34, 6.342, 6.343, 6.3432.
5 *TLP* 4.1, 4.11, 4.2, 4.3, 4.4, 5, 6.343; *PT* p. 3; *NB* sept., oct. 1914; letter to Russell from 19. 08. 1919.
6 *TLP* 5.4732, 5.557, 5.61, 6.124, 6.126, 6.13, 6.34, 6.341, 6.3431, 6.361.
7 *TLP* 6.41, 6.361, 6.52, 7.
8 Ballantine, L. E., "The Statistical Interpretation of Quantum Mechanics", *Rev. Mod. Phys.*, Vol. 42 (1970), pp. 358—81; A. A. Ross-Bonney, "Does God Play Dice? A Discussion of Some Interpretations of Quantum Mechanics", *Nuovo Cimento*, Vol. 30 B (1975), pp. 55—79; L. S. Mayants, "On Probability Theory and Probabilistic Physics—Axiomatics and Methodology", *Found. Phys.*, Vol. 3 (1973), pp.413—33.
9 Gudder, S. P., "On Hidden-Variable Theories", *J. Math. Phys.*, Vol. 11 (1970), pp. 431—6; J. Bub, "What is a Hidden Variable Theory of Quantum Phenomena?", *Int. J. Theor. Phys.*, Vol. 2 (1969), pp. 101—23; J. Bub, "Hidden Variables and the Copenhagen Interpretation", *Brit. J. Phil. Sci.*, Vol. 19 (1968); G. F. Cerofolini, "Quantum and Subquantum Mechanics", *Nuovo Cimento*, Vol. 58 B (1980), pp. 286—99; S. P. Gudder, "Proposed Test for a Hidden Variables Theory", *Int. J. Theor. Phys.*, Vol. 19 (1980), pp. 163—8.
10 Prugovećki, E., "Measurements in Quantum Mechanics as a Stochastic Process on Spaces of Fuzzy Events", *Found. Phys.*, Vol. 5 (1975), pp. 557—71; S. Twareque Ali and E. Prugovećki, "Systems of Imprimitivity and Representations of Quantum Mechanics on Fuzzy Phase Spaces", *J. Math. Phys.*, Vol. 18 (1977), pp. 219—28.
11 Agarwal, G. S. and E. Wolf, "Calculus for Functions of Noncommuting Operators and General Phase-Space Methods of Quantum Mechanics", *Phys. Rev.*, Vol. D2 (1970), pp. 2161—225.
12 Yasue, K.,"Stochastic Quantization: A Review", *Int. J. Theor. Phys.*, Vol. 18 (1979), pp. 861—913; V. J. Lee, "Physical Foundations of Quantum Theory: Stochastic Formulation and Proposed Experimental Test", *Found. Phys.*, Vol. 10 (1980), pp. 77—107.
13 Twareque Ali and Prugovećki (1977); S. Twareque Ali and H. D. Doebner, "On the Equivalence of Nonrelativistic QM Based upon Sharp & Fuzzy Measure". *J. Math. Phys.*, Vol. 17 (1976), p. 1105—1111.
14 Bub (1968), Bub (1969), Gudder (1970).

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METHODOLOGY AND ONTOLOGY OF KANT'S CONCEPTION OF SCIENTIFIC PROGRESS

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In the Mathematical Antinomies of CPR, both Antinomies each have thesis and antithesis propositions. In the first Antinomy, the thesis states: The world has a beginning in time, and is also limited as regards space (A 426/B 454). The antithesis states: The world has no beginning, and no limits in space; it is infinite as regards both time and space (A 427/B 455). In the second Antinomy, the thesis states: Every composite substance in the world is made up of simple parts, and nothing anywhere exists save the simple or what is composed of the simple (A 434/B 462). The antithesis states: No composite thing in the world is made up of simple parts, and there nowhere exists in the world anything simple (A 435/B 463). To give a brief account of the structure of the Antinomies, the thesis and the antithesis both can be supported by what Kant characterizes as "equally clear, evident and irresistible proofs" (*Prol.* § 52). In the thesis, the argument is based on a principle which is "universally admitted" (*Prol.* § 52b) and arrives at a conclusion. The logic involved here seems impeccable. The same is true of the antithesis (cf. *Prol.* § 52b). "I pledge myself as to the correctness of all these proofs" (*Prol.* § 52).

If nothing is wrong with the logical procedures, how do we account for the antinomial character of the thesis and the antithesis? In order to explain the logical origin of the Antinomies, Kant thinks that we should find some self-contradictory concept which is presupposed as coherent by both parties to the dispute (cf. *Prol.* § 52b). The concept in question is that of "an absolutely existing world of sense" (*Prol.* § 52b). That is "the supposition that appearances . . . are things in themselves" (A 507/B 535). Why is it self-contradictory to assume that appearances are a thing(s) in itself (themselves)? "Appearances" (in one sense of the term) can be taken to mean objects of objective experience, namely, objects known and knowable to us in terms of a suitable cognitive apparatus. And the concept of a thing in itself (at least in one sense of the term) is the very concept of the ultimate reality (cf. A 576/B 604). Since in Kant's view, the ultimate reality is not knowable to us, to assume that appearances are a thing(s) in itself (themselves) is to entail the manifest contradiction that knowable objects are unknowable objects, and conversely. To obviate the possibility of confusing appearances with a thing(s) in itself (themselves), what is needed is suitable deployment of external negation. And Kant suggests the move in the square circle example (cf. *Prol.* § 52b), though he does not fully discuss the logical point. Take the first Antinomy. We can reconstruct the thesis of the Antinomy in Russellean terms as follows: The world has a beginning in time, and is also limited as regards space if and only if there is a world (the ultimate reality) which is an object of experience and the world is finite in time and space. But the first conjunct of the analysans is self-contradictory because the world which is unknowable is supposed to be knowable. Hence it is analytically false and *a fortiori* false. *Ergo*, the entire conjunction is false. Naturally, what I have in mind here is the logical structure of the PMese conception of the theory of definite descriptions, as applied to this case. Similarly, the antithesis can be reconstructed as follows: The world has no beginning and no limits in space if and only if there is a world which is an object of experience and the world is infinite in time and space. Again, the first conjunct is false. Therefore, the entire conjunction is false. *Mutatis mutandis*, the same logical point can be made of the logical structure of the second Antinomy. For each of the Mathematical Antinomies, Kant suggests a third possibility. For the first, the suggestion is that the world is indefinitely extensible in space and time (A 518/B 546: A 521/B 549). For the second, it is suggested that the world is "infinitely

divisible'' (A 524/B 552). But the third possibility that Kant suggests for resolution of each of the Antinomies (cf. A 518/B 546; A 526/B 554), which contains the notion of empirical regress, as it is tied with indefinite temporal and spatial regression in the first Antinomy and as it is tied with infinite divisibility of matter in the second Antinomy, along with the assumption, granted by both parties to the disputes, that space and time are infinite (as the term was understood, say, by Newton and Leibniz), is not a satisfactory solution. For the empirical regress which is to be sought within the given, fixed theoretical frames does not do justice to the core idea of the dynamics of reason, which is a call for a new theory (or theories) to overcome inner tensions, paradoxes, explanatory inadequacies and other limiting and limited features of given theories. The third possibility that Kant is suggesting is related to the view that the Antinomies are fossilized in the fixed apparatus of Eternal Reason. And this conservative view is not in keeping with his own forward-looking conception of the dynamics of reason.

In Kant, there are two different senses of regression and the condition/conditioned distinction. The first sense (cf. A 417/B 445), which is, in turn, unpacked into two different senses reflecting the evidently Newtonian and Leibnizian views respectively, is built into particular cosmological systems. But when the same expressions are fitted out with the mechanism of prosyllogism, the stress is placed on the ''logical'' meaning of the expressions. Here Kant shows a process for discovering a ''new major premiss'' (cf. A 331/B 388) in an ''ascending'' chain of syllogisms, and this mechanism can be put to use for illustrating a pattern, however crude, involved in discovery of a new and more comprehensive theory and suggests a real possibility of theoretical change. There is a conflict between the two pulls in Kant.

In the Architectonic of Pure Reason chapter, Kant compares the growth pattern of particular systems of knowledge and the system of knowledge taken as a whole which comprises them to ''organisms'' (cf. A 833/B 861) and ''an animal body'' (A 833/B 861). There are particular systems and the system of human knowledge taken as a whole. Though Kant's conception of the systematic unity of knowledge is relevant to both levels, it is clearly the latter that stands out. Though ''there is, . . . no real antithetic of pure reason'' (A 743/B 771), since ''the unity of reason is the unity of system'' (A 680/B 708) and ''in actual fact, reason has only one interest, and the conflict of its maxims is only a difference in, and a mutual limitation of, the methods whereby this endeavors to obtain satisfaction'' (A 666/B 694), the actual process of growth of knowledge, if conceived in the context of the dynamics of reason, undergoes endless cycles of antinomial tensions and subsequent unifications in different stages of scientific change leaving past systems in a ''field of ruins'' (A 835/B 863). Antinomial tensions, if resolved, point to the ''first glimpse of (this) new path'' (B xi). That is, antinomies are not the Antinomies, fitted out with the artificial structure of the (abstract) categories (cf. A 415/B 442). Particular systems, cast in the role of ''dialectically opposed judgments'' (cf. A 504/B 532), are best conceived as ''subjective maxims'' or ''hypotheses'' which express ''different interests of reason'' or ''differing modes of thought'' (A 666/B 694). Here each idea of reason in its regulative capacity may be said to be ''posited as being the point of view'' (A 681/B 709). Thus, each idea plays a ''proliferative'' function in the process of search for a new unified theory.

Kant's conception of the systematic unity of knowledge and the ideal of pure reason is a ''search for the unity of the grounds of explanation'' (A 612/B 640), which is not given but set as a task (cf. A 508/B 536) which we ''ought to'' (A 509/B 537) pursue. ''Reason . . . does not here beg but command'' (A 635/B 681). The task of reason is ''a certain goal'' (A 644/B 672), which, though ''never, of course, attainable'' (A 692/B 720), is a goal the pursuit of which is guided by the ''essential ends of reason'' (A 832/B 860) and the ''logical perfection of knowledge'' (A 838/B 866). Kant's notion of the systematic unity of knowledge and the regulative employment of the ideas of reason is related to the continual and never ceasing search for ever better and ''higher'' grounds of explanation, which implies serial scientific progress. Kant's view on the growth of knowledge is teleological and contrasts with relativism and foundationalism. If theoretical change in the never never land of scientific

progress marks a movement towards a goal, then the change implies a "generic continuity" between counterpart concepts of different but related theories. And the "generic continuity" is essentially tied to the overall role that the categorial structure plays in setting the "norm" according to which empirical laws (laws of substantive theories) "first become possible" (cf. A 128).

If the stress in CPR is placed on the formal unity of experience, namely, the conformity of objects in space and time (cf. B 165) to the categorial structure, then the stress in CJ (particularly in both Introductions) is placed on the systematic unity of substantive, empirical, particular laws as they conform to the general structure and function of the transcendental laws. In order to explain the possibility of the systematic unity of empirical laws, which is not guaranteed by the categorial structure alone, Kant introduces the notion of purposiveness or the technique of nature (FI, pp. 10—11). And the "multiplicity of empirical laws" is "infinite" (FI, p. 9). And it is the role of reflective judgment to "invent" "artfully" new, "higher" empirical laws and the concepts embedded therein in response to reason's call for the never ending search for new theories and in conformity with the "norm" of the categorial structure. For Kant, "the judgment, which in the order of our cognitive faculties forms a mediating link between understanding and reason, has also principles *a priori*" (CJ, p. 4). Kant defines the role of reflective judgment, cast in the present context, as follows:

> But the judgment, whose duty it is to bring the particular laws under higher, although still empirical principles, taking into account their differences under the same universal laws of nature as well, has to make such a principle the formulation of its procedure (FI, p. 15).

Note the phrase "the particular laws under higher, although still empirical principles". It is also clear that here by the "universal principles of nature", Kant means the categorial principles which provide a "guide" for reflective judgment in the process of "ascending continuously from particular empirical laws to more universal though still empirical ones, . . ." (FI, p. 16), that is, moving from an old, "particular" theory to a new, "universal" (note the ambiguity of "universal"), more comprehensive theory (or theories).

Thus, reflective judgment is the very judgment "to subsume the particular under the universal, remaining always within the empirical sphere, proceeding to the highest empirical laws" (FI, p. 10). Now, the role of reflective judgment fits in nicely with the notion of the schema of the ideas of reason (cf. A 833—834/B 861—862), which is needed for human reason as a means of projection of new hypotheses and theories, as long as it cannot—and it never shall—secure "complete satisfaction" (cf. A 856/B 884). In the "asymptotic" (cf. A 663/B 691) process, the role of reflective judgment is ever "to produce a possible concept" (FI, p. 16), namely, a concept or a cluster of concepts for future and, hopefully, better use.

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REFERENCES

Kant, I., *The Critique of Pure Reason* (London/New York 1963); CPR for abbreviation.
Kant, I., *Critique of Judgment* (New York/London 1951); CJ for abbreviation.
Kant, I., *First Introduction to the Critique of Judgment* (Indianapolis/New York 1965); FI for abbreviation.
Kant, I., *Prolegomena to Any Future Metaphysics* (New York 1950); *Prol.* for abbreviation.

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THE DRAUGHTSMAN RECONSIDERED: POPPER AND THE ONTOLOGY OF NATURAL SCIENCE

Brian Baigrie

Karl Popper recommends that we "reject all views of a closed universe"[1] —whether such views assume the guise of Newtonian mechanics or a nonlinear field theory. It is claimed by Popper that even *prima facie* deterministic theories are sufficiently indeterministic to refute the assertions of monists. His reason is that under the presupposition of any deterministic state of affairs there is an impossibility in ascertaining and recording the initial and boundary conditions of a closed system—in other words, in any theoretical description of the world there will be gaps, notably, as concerns the growth of scientific knowledge. Since the world can never be complete, Popper concludes that it must be indeterministic, and, as a matter of course, that we should reject all theories not compatible with this ontology.

This position, however, mistakenly identifies the notion of causal closure with that of completeness, thereby conflating ontological and epistemological considerations. It is simply incorrect to argue that a lack of completeness in theoretical descriptions signifies an indeterminacy in the world. On the contrary, deterministic systems may be incomplete, but causally closed.

Popper is bothered by determinism. And for good reason: his three world theory, or objectivist epistemology, demands that the world of nature (world 1) both contain an element of chance and that it be causally open to worlds 2 (the subjective world) and 3 (the world of objective knowledge). Both are denied by a deterministic or closed world theory.

In virtue of his own extensive work in quantum mechanics, one might expect Popper to solicit the positive successes of this discipline to endorse his indeterminism.[2] However, he is well aware that while quantum mechanics is a statistical theory, and not a *prima facie* deterministic one, David Bohn, for one, has shown that it is compatible with determinism.[3] Rather, the strategy he employs to ground his epistemological views is to argue that determinism has no basis in science, since its strongest support—classical Newtonian mechanics—is undermined by certain considerations.

If we take scientific determinism to be the claim that the future is not only fixed (*pace* metaphysical determinism) but also may be foreknown without limit by scientific calculation or prediction, as Popper advocates,[4] his objective, then, is to show that there are gaps in our knowledge of the world. As Bartley asserts, Popper thus "aims to scotch the hope (as in Einstein) that some future more general theory might return physics to a classical situation which would endorse determinism".[5]

In his "Indeterminism in Quantum Physics and in Classical Physics", Popper asks us to consider a "predictor"—a classical calculating and predicting machine constructed so as to produce records capable of being interpreted as predictions of the positions, velocities, and masses of physical particles—a variation of the much discussed "Laplacean Demon". Popper's claim is that this predictor may be able to admirably fulfill its task but with one crucial exception—namely, it cannot fully predict its own future states. The reason is that although it can be isolated from outside interference, it cannot be isolated from interference from within—in short, from itself or its "closer environment".

In obtaining initial information, the predictor interacts with its environment, and this introduces into the system a disturbance whose magnitude is unpredictable.[6] What this suggests, of course, is that even under the presupposition of classical mechanics there exists an impossibility in ascertaining and recording the initial and boundary conditions of a

closed system. The upshot of this is that the predictor cannot fully predict or be predicted by any similar mechanism with which it interacts. Moreover, in a society of such predictors, no member of such a society can fully predict the future states of that society or of any of its members.

In his "Replies to My Critics", Popper offers a variation of the foregoing. He asks that we consider a draughtsman who draws a large plan of a room in which he is sitting, including in his plan a plan of the plan he is making. The draughtsman, of course, can never complete his drawing, that is, up to the last touches he has made. The reason, as with the predictor, is that the room (or the draughtsman's closer environment), although capable of being isolated from outside interference, cannot be isolated from interference from within, or from the draughtsman himself. In describing the room, the draughtsman interacts with it, thereby continuously disturbing the information he receives in a way he cannot ascertain.

If this example is employed as analogous to the attempt of physicists to describe the world, then the thrust of Popper's argument is that physics will remain *incomplete*. It may very well be complete so far as universal laws are concerned, but it can never be complete in every particular because the physicist—like the draughtsman—is both the composer of his description and part of it. What this means is that in every theoretical description of the world there will be gaps, notably, as concerns the growth of scientific knowledge. Consequently, a true theory of a closed world is not possible, although a good approximation may be *prima facie* deterministic.

This argument is a stunning critique of the determinism of a Leibniz or Laplace. However, it is *not* a sound critique of the determinism of relativity theory or any relativistic field theory, for that matter. To explain, the distinguishing mark of deterministic systems is that they are closed: entities specified by the system can interact only with one another. An additional feature implied by such systems, and formally adduced by the special theory of relativity, is that *there is in principle no unique perspective from which to derive a complete description of the world.* Any observer, in virtue of his existence as part of the world, whether he be a physicist or a draughtsman, must put forth incomplete descriptions. In Leibnizian jargon, we might say that every individual perceives the universe (confusedly) from his own point of view. This stands in direct opposition to Newtonian mechanics, for example, whereby any entity can be given 'simple location' without reference to other entities. More importantly, it clearly asserts the impossibility of Popper's illustration: a draughtsman cannot reside simultaneously both within and outside of his description any more than a Newtonian particle can be given simple location. In the language of relativity theory, this is simply to compound frames of reference.

From the point of view of this theory, completeness is an unattainable ideal: while science attempts to create more comprehensive views, the limit of completeness is never realized, but only approached asymptotically as a line approaches a curve. The ramifications for Popper's argument are serious—he has confused the notion of causal closure with that of completeness of description, thereby conflating ontological and epistemological considerations. It is this which prompts him to maintain that the lack of completeness in theoretical description signifies that physics is sufficiently indeterministic to provide the rationale for his three world theory. Once this confusion is noted, *it is evident that deterministic systems can be incomplete, but remain causally closed.*

Popper is correct in at least one respect, however, when he asserts that "such considerations do not prove that the objective physical world is incomplete, or undetermined: they only show the essential incompleteness of our efforts". But he is mistaken in adding that "they also show that it is barely possible (if possible at all) for science to reach a stage in which it can provide genuine support for the view that the physical world is deterministic".[8] Once we have resolved ourselves to the incompleteness of our descriptions, we can allow our theories to suggest whether the world is closed or otherwise. The issue will not be weighed, as Popper wants it, by the epistemic question of what our theories can and cannot accomplish, but simply by what they positively assert about the world.

One final note: these considerations are quite compatible with Popper's view of science. We can embrace determinism, and nevertheless acknowledge our experience of science as an endless process of self-correction.

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NOTES

1 Popper, K., "Indeterminism is not Enough", *Encounter*, Vol. 40 (1973), p. 26.
2 Cf. K. Popper, "Indeterminism in Quantum Physics and in Classical Physics", *The British Journal for the Philosophy of Science*, Vol. 1 (1950), part 1, p. 127—"Quantum mechanics . . . implies that, however full and precise the initial information obtained, and however well isolated the system in question, there are certain events which cannot be predicted, although it is possible to predict the frequency of their occurrence under like conditions."
3 See P. A. Schilpp (ed.), *The Philosophy of Karl Popper*, Vol. 1 (La Salle 1974), p. 75.
4 Popper (1950), pp. 120—25.
5 Bartley III, W. W., "The Philosophy of Karl Popper, Part II: Consciousness and Physics", *Philosophia*, Vol. 7 (1977), p. 690.
6 Popper (1950), p. 127.
7 Schilpp (1974), Vol. II, pp. 1056—1058.
8 Schilpp (1974), Vol. 1, p. 104.

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7. Ontologische Grundlagen der Sozialwissenschaften

7. Ontological Foundations of the Social Sciences

ONTOLOGY OF EVOLUTION: ONTOLOGY OF BECOMING OR BECOMING OF AN ONTOLOGY?

Werner Leinfellner

1. What is Ontology?

Traditionally, ontology according to the dictionary of philosophy, is the theory of being qua being or the science of the essence of things. Ontology has been regarded as a separate discipline, existing outside of the sciences. But such a view of ontology has completely lost touch with the twentieth century's rapid development of the sciences.

Today ontology must be redefined. It is not a discipline which exists independently of all other scientific disciplines, but rather ontology is better seen as a modern interdiscipline between philosophy and science which derives the most general conceptual structures of the world. The structure of the world as it really is is obtained from the cognitive sciences or from their theories. Since these theories deal only with parts of the world (domains = D), ontology consists of a plurality of regional ontologies over domains, whose general structures they define. Ontology's special task is to derive and select from natural as well as social theories (CTH, where CTH $\subset$ CS) those general structures which are invariant for a certain domain D, the fields of applications of cognitive theories.

We will use here the two-component model of scientific theories $M = L_E \Longleftrightarrow L_T$, which has been used and discussed elsewhere by the author[1] for defining an ontology. The two component model is set theoretically formalized and is a representational model. It represents the empirical structures in D, which are described by an empirical language L_E, by means of set theoretical structures in L_T. The arrow $\Rightarrow$ in one direction indicates isomorphic or homomorphic representation or mapping and the arrow in the opposite direction $\Leftarrow$ indicates interpretation in this model. And it should be remembered that theories normally do not define geneneral structures but only general laws or lawlike regularities of a statistical character, which are used for making predictions or explanations.

Invariant laws, regularities and structures are based on statistical causation. That is—given the probability of an event as partial cause $p(e_i)$ and as non zero—we will characterize statistical causation as: $e_i \rightarrow e_j$; where e_j is the effect and $p(e_j/e_i) \geqslant 1—c$. 1—c is the optimal degree of acceptance, which one is willing to tolerate. The temporal indices should satisfy: $t_i < t_i$ and causation should not be spurious, i.e. should either occur in one system or in a supersystem, to which both events belong. For more details see my article "Kausalität in den Sozialwissenschaften".[2] For example, the Adams, McKinsey, Suppes model of particle physics, the Leinfellner-Booth model of microeconomics under risk and uncertainty, the Jauch-Pyron model of quantum mechanics or the G. Ludwig model of quantum physics[3] are two-component models. The task of ontology is to derive from these set theoretical models the most general and invariant structures which define the ontology in these specific domains of application. Boolean structures that satisfy the TCP theorem may be regarded as the most general structure of the classical particle model, and the probabilistic modular structures as the most general structures of the microeconomic model. Therefore an ontology O_i over a certain well defined empirical domain D_i can be obtained from a set theoretical model $M_i = L_E{}^i \Longleftrightarrow L_T{}^i$ by deriving the most general and invariant structures over D.

Any scientific theory which we describe in a model must be acceptably well confirmed. The set theoretical formalization serves three purposes: 1. Only set theoretical models can be interpreted by an empirical system theory, which has been discussed in details in Leinfellner:

Ontologie, Systemtheorie und Semantik.[4] 2. Only set theoretical models can include the full apparatus of standard mathematics (statistics, differential and integral calculus, etc.). 3. Only set theoretical models of theories can be compared with or can be reduced to other set theoretical models. Set theory is therefore the general formal language of ontology and of scientific models. Set theory is actually the alphabet of thought that Frege had sought and Leibniz had viewed as the ideal conceptual script.

2. Separability and Objective Ontological Reality

Quantum mechanics has changed traditional ontology in many ways. For that purpose we will compare some traditional epistemological and ontological features of physics as prototype of a classical science and quantum mechanics as prototype of a holistic type of science.[5]

Traditional cognitive sciences	Quantum mechanics, modern social sciences
Based on ordinary and direct sense perception	Based on behaviour of subsystems (groups) which are observable only in an indirect sense by observing or measuring systems (MS)
Describes things, rigid bodies, individual objects in space and time and their unary properties (Atomism)	Describes statistical behaviour of the subsystems (individuals) or group behaviour but not single individuals (Wholism)
Predicts yes or no outcomes of events.	Predicts probabilities of events
Assumes an ''objective reality'' out there in the world	Does not assume an objective reality apart from our experience and interference with the world
We can observe something (the world) without changing it (Separability assumption)	We cannot observe something (the world) without changing it (Unseparability or interconnectedness assumption)

The concept of an objective reality in the world collapsed in quantum mechanics. Since this discipline is one of the cornerstones of microphysics, molecular biology, genetics and evolution theory, these disciplines and their ontologies belong to a fundamentally different kind of ontology. But even the social sciences have to be included, since they also violate the separability assumption of the classical sciences. Quantum mechanics was certainly the first cognitive discipline which lost its passive role and became an active realizing science. (Realizing means simply that such sciences change the world by creating new states or new systems.)

According to the classical sciences, a system S can be observed (i.e. measured and tested by experiments), but does not change, when observed by an observing system, MS. That means S causally influences MS assymetrically, S → MS, and any disturbance or feedback, MS → S, can be neglected. But this does not hold in quantum mechanics or in the social sciences. The observing system, MS, interacts during the observation or measurement with the system S : MS → S, in an incontrollable way (i.e. the system S changes its state). For example, if political polls are published too early they may influence the state of the whole political or economic system. If we need for the exact determination of the independent state of a system, S, two or more observables, measured at the same time, then the first observation O_1 will change the objective state of S and the second measurement O_2 becomes fuzzy or smeared. A drastic example would be that after measurement of the length of a cube, it would be impossible to measure with accuracy width and height of the cube (for more details see Leinfellner 1978, 1980).[5] Or, for example, if the boiling point of benzene is measured, it would not be possible to exactly measure the freezing point of benzene! Observations,

measurements and experiments are symmetric interactions: MS ↔ S, where both systems form a supersystem and within this supersystem an uncontrollable interaction takes place, changing the system S. Because of this source of uncertainty we can determine the momentum in quantum mechanics accurately, but for the second necessary observable, *location*, we will get only fuzzy intervals and vice versa. This fact has far reaching consequences for the epistemology and the ontology of these disciplines, it represents not an exception but is the general situation. Epistemology, therefore, becomes a statistical and inductive meta-discipline and ontology becomes wholistic. Under wholistic one may understand simply that systems of the world become inseparable and interdependent. The world loses its unchangeable substances, which were the cornerstone of traditional ontology. It is not any longer divided into observer (subject) and object, the on-looker becomes an acting participant as Heisenberg called it. Since the observation of one observable changes the other, we must give up the idea that systems are unalterable, rigid objects. They are dynamic with an average stable statistical behaviour, e.g., the electronic formulas of organic chemistry which describe wholistic dynamic systems. In microphysics, the concept of unalterable underlying substances has lost all meaning. All particles are open to change, not only to the change of particles to waves, but to the change of the observed system by the observer, vice versa. In other words, observations, measurements become realizations of new states of the systems. The world, therefore, is not constant and unchangeable, there is always a mutual interference of systems with other systems. This mutual interaction and interference produces in the underlying fluctuating causal field effects or random events. Random events are effects or innumerous partial causes, described elsewhere in more details by the author.[6]

3. Ontology of Becoming or the Becoming of an Ontology?

The ontological situation in quantum physics and in elementary particle physics is only a special case of a far more general situation in the realizing sciences. We may classify sciences into the formal sciences (pure mathematics, logic, etc.), the cognitive sciences and finally the realizing sciences (technology, synthetic chemistry, social sciences). Such a science may be partly a descriptive cognitive and partly a realizing discipline. For example, economics may be a cognitive discipline, when it describes the economy of the old Romans. It may be a realizing discipline, when it has to introduce a new economic system in an underdeveloped country. Realizing sciences are planning disciplines. The plan instructs us on how to realize an unprecedented system in a society. On the other hand, realizing sciences deal with goal-oriented realizations according to a fixed given masterplan, containing instructions and rules how to create a new system or order, e.g., automatic technical production belongs to goal seeking, realizing systems which function according to a preprogrammed masterplan (the blueprints for automatic realization and production). On the other hand, beside these automata of realizations, there are the far more important self organizing realizing systems. Organic living systems of this type have not only the capability of realization and selfrealization (reproduction), but also of self organization. Self organization means nothing more than the creation of a program and the improvement of that program. The science which deals with self organizing living systems is the theory of evolution. Evolutionary systems create new systems which have never existed before, together with the masterplan to reproduce these systems again and again. Evolutionary systems are the only creative and innovative systems. Their creative and realizing capability changes the ontology of our world, because they introduce new systems to the already existing systems and new interrelations between the new and the old systems. Thus the theory of evolution entails an ontology of becoming which is at the same time the becoming of an ontology.

In order to explain the ontology of evolution it is necessary to outline a model of the theory of evolution. This has been done already by Leinfellner (1982)[7] by a set theoretical mathematical two-component model of the new theory of evolution. It uses the methodology

of dynamic games to explain various creative and innovative processes. This theory replaces the older Darwinian theory of evolution as well as the Fischer-Haldane-Wright theory of selection and evolution in population genetics. It explains how, e.g., vivid organic compounds and vivid macromolecules have been "created" (i.e. have evolved to better and better adapted living systems). The model explains, moreover, the self organization of higher developed and more complicated living systems, such as hypercycles (i.e. cooperation between the nucleotides and proteins, cells etc., out of other already created systems). The evolution (creation) of plants, animals, living systems, which have not existed before, has actually revolutionized our planet earth. For example, the creation of the oxygen atmosphere which has changed the planet earth in a drastic way. Therefore, the ontology of our world, at least the ontology of the higher developed living systems, is in constant change, its products are the newly created and constantly changing systems, and thus the ontology of evolution is actually the becoming of an ontology of life, a process which continues even now.

To mention just a few important publications in this field, we have to begin with Eigen and Schuster's pioneering works in which for the first time the creation of RNA strands and of hypercycles have been theorized on and explained.[8] The evolution of cells and of multicellular systems were described by earlier authors. The whole evolution of new species by animal behaviour has also been put into the theory of dynamic games by Maynard Smith, Price, Parker, Dawkins.[9] Dynamic game theory was employed successfully for evolutionary games by Zeemann, Schuster, Sigmund, Hofbauer, Wolf.[10] In these and other publications, quoted in Schuster *et. al.*,[10] a new theory of evolution has been created which completely replaces the older Darwinian and the historical theory of evolution simply by the new methods of dynamic games. The theory of evolution is therefore based on 1. dynamic games or problem solving, 2. on statistical causation, 3. on the fluctuating causal field, the source of all randomness and 4. on a steady increase of intelligent behaviour in problem solving, which again can only function if there is a universal common memory for living systems.

Games are seen from a societal point of view—as nothing else than decision making procedures or problem solving processes. Seen from an evolutionary point of view, they are problem solving processes and realizing procedures. Any game reduces the realization of new units—be it by competitive or by cooperative games—to specific moves, or sequences of moves, strategies which are permitted by the rules of the game (See Leinfellner 1980).[11] Therefore any problem solving procedure has to use a memory bank, where all the rules are stored. The rules are, of course, in any evolutionary game instructions, codified and stored in the genetic material of the living cells. These instructions determine the behaviour of the system in certain specific situations. The paradigm of a game is the frame work of problem solving, and problem solving can be characterized as a situation with open alternatives A_1, A_2, . . . , A_n. A system acts just as a player does, it adopts an alternative, A_i, or a consequence of it, as the solution and maximizes simultaneously its survival fitness. This trend to maximize fitness comes pretty close to maximization of utility in societal games. Optimization means that the system, like a player, is dependent on the actions or reactions of all the other systems, competing or cooperating, and finally that it is dependent on random events, which constantly disturb the problem solving process.[12] Problem solving can always be seen as a process of finding a solution or termination of a conflict. Thus problem solving, for example, the coupling of amino acids to codons for the protein synthesis in cells, or the survival of an animal in an unfriendly environment etc., is the termination of a conflict and is actually a measure of intelligence, if there is maximization of survival chances.

Problem solving is intrinsically connected with creation of new systems if the problem solving procedure is selforganizing, i.e., inventing its own program. In terms of societal game theory, this means inventing new rules and thus changing the character of the game. If by mutation a living system acquires a new way of reacting (a new strategy) and this new characteristic behaviour is inherited (stored in the memory bank of the genes), then the other living systems in the game have to react to this new characteristic; in terms of game theory then an old game ends and a new one begins. Without going into the details of problem

solving, such processes may occur between two participants (between many participants, or between groups), where the termination of a conflict may be competitive or even be cooperative. In the first case there will be one survivor and in the second case a new living system may be formed by integrating the participants into a new system. This is a typical wholistic effect of evolution, for example, when proteins and nucleotides began to cooperate by forming hypercycles, or the cells cooperated and integrated into multicellular organisms.

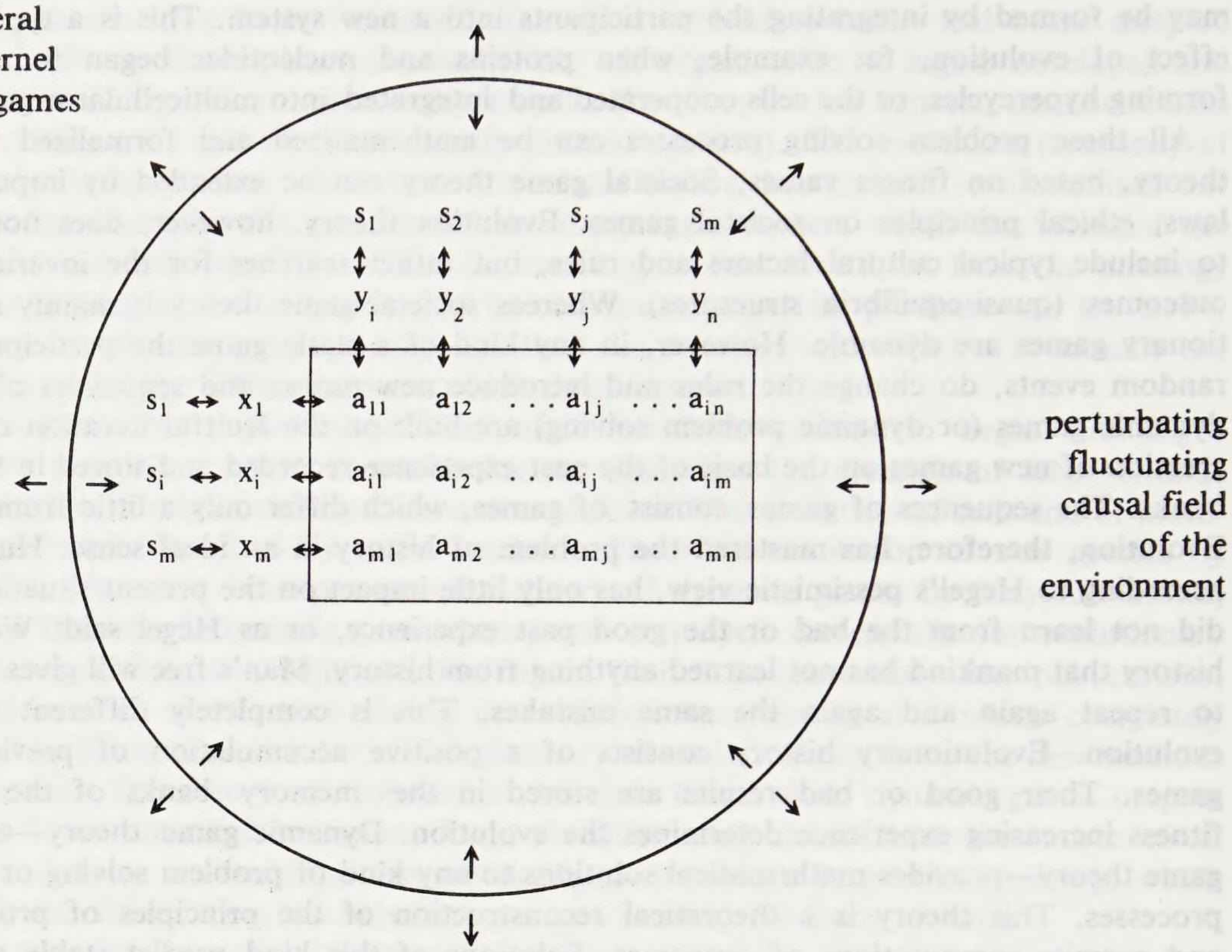
All these problem solving processes can be mathematized and formalized within game theory, based on fitness values. Societal game theory can be extended by imposing societal laws, ethical principles on societal games. Evolution theory, however, does not go this far to include typical cultural factors and rules, but rather searches for the invariant or stable outcomes (quasi-equilibria structures). Whereas societal game theory is mainly static, evolutionary games are dynamic. However, in any kind of a static game the participants, not the random events, do change the rules and introduce new moves and sequences of moves. But dynamic games (or dynamic problem solving) are built on the fruitful iteration of games and creation of new games on the basis of the past experience recorded and stored in their memory banks. The sequences of games consist of games, which differ only a little from past games. Evolution, therefore, has mastered the problem of history in an ideal sense. Human history, according to Hegel's pessimistic view, has only little impact on the present situation. Mankind did not learn from the bad or the good past experience, or as Hegel said: We learn from history that mankind has not learned anything from history. Man's free will gives him freedom to repeat again and again the same mistakes. This is completely different in biological evolution. Evolutionary history consists of a positive accumulation of previously played games. Their good or bad results are stored in the memory banks of the genes. Only fitness increasing experience determines the evolution. Dynamic game theory—as does static game theory—provides mathematical solutions to any kind of problem solving or evolutionary processes. This theory is a theoretical reconstruction of the principles of problem solving and permits computations of outcomes. Solutions of this kind predict stable and invariant outcomes, called evolutionarily stable strategies. Such a strategy is as in game theory a winning strategy which leads to fitness maximization. In the case of competitive games, the stable outcome is an equilibrium point between the interests of the two players. In evolutionary games it is quasi-equilibrium point, which characterizes an achieved invariance of the behavior of a species over a certain period of time. Depending on the rules, such an invariance may favour one player. But in evolutionary games the rules (instructions) are changed either by mutational changes of the environment or by mutational changes of the genetic memory. Mutational changes are nothing else than random events emanating from the fluctuating causal field. Such events add new rules or delete old ones and hence start a new game in the series of games. Thus, a game dynamic is introduced which is characteristic for evolution. We may therefore replace evolutionary processes by sequences of games (or problem solving procedures), where any change in the codified instructions changes the strategies and defines a new game. Such games are similar, show a family resemblance. The participants which are either living chemical compounds, such as RNA-, DNA-macromolecules, cells or animals have access to the previously acquired game experience, that is, memories of successfully played games or even unsuccessfully played games are stored in the genetic material of the cell, the genes, which is automatically available. Thus evolution can be theoretically described in dynamic game models of evolution by trajectories of serial games leading finally to stable solutions. They are based on the fix point mathematics of all games. We are therefore led to the conclusion that evolution is a special kind of creation, where each successfully played game increases, step by step, the survival chances of the species.

4. The Ontological Structures of Evolution

This new method uses a fitness matrix to define the states of the game and uses successfully dynamic interpretations of the probability vectors of the distributions with which

the strategies $X_1, X_2, \ldots, X_{n,m}$ are played by the population. The whole matrix is a typical example of a mutual causation model:

2.6 The general structural kernel of dynamic games at the state t (of time)



perturbating fluctuating causal field of the environment

The whole evolutionary game (in the circle) is embedded in the fluctuating causal field, whose random events may change the strategies, payoffs, and, indirectly, the distributions. The game will become stable if the perturbations lead to a constant swinging around the equilibrium point and indicate an approximation to that point.

This model predicts rather the course of evolution, that is, the trajectories, but not individual trajectories. It tells us nothing about a specific individual, but only about an average group behaviour or about a species' behaviour. If a_{ij} expresses the fitness of the user of the strategy s_i, and if a_{ij} is large, then it is advantageous for survival to adopt the strategy s_i for a participant, when one's opponent adopts the strategy s_j. This advantage results in an increase in the individual's reproductive potential, for example, in a contest for territory rights. In static games the distributions x_i, x_j are mixtures of the strategies, whereas in dynamic games they are proportions of the characters, using strategies s_i within the whole population. A character is any mutant which arises. Such a character may become a new species if it survives and shows stable invariant behavior or uses an evolutionarily stable strategy. (Evolutionarily stable strategies are the guarantee for survival.) We have to understand that the new concepts of evolution are taken from social contexts of societal game theory, but the mathematical concepts which we will define now are of general application for societal games and for evolutionary ones. Yet there is a difference. In static game theory the average pay off for playing a pure strategy, when the other player plays a mixed one, $\bar{x}$ is for s_i the same as in dynamic game theory, but the interpretation is different. In both cases we get a typical statistical average:

$$E_i = y_1 a_{i1} + y_2 a_{i2} + , \ldots , y_j a_{ij} + , \ldots , y_n a_{in} \text{ or } \sum_1^n y_j a_{ij} = (A_y)_j$$

$$\text{with } \sum_1^n y_j = 1 \text{ and } y_i \geqslant O$$

We may, from the point of view of statistical causation, regard the magnitudes on the right side as partial causes in an evolutionary process and the expected fitness as the partial effects standing on the left side of the equation. In dynamic game theory the payoffs or utilities have the same function, except they are called fitness values and the mixtures of strategies are called strategy mixes, as opposed to mixtures in static games, since their interpretation is different. They represent the distribution of a species in the population. It is clear that this distribution may increase and lead either to a winner (surviver), or loser, which may lead to the extinction of the species or the character. The Expectation E_i is, of course, the average fitness E_i of playing a certain strategiy s_i, $(E_i = (Ay)_j$. Now, in static game theory as well as in dynamic game theory the mean average utility $\bar{E}$ is given by the mean average fitness:

$$\sum_{i}^{n}\sum_{j}^{m} x_i a_{ij} y_j \quad \text{or} \quad \sum_{i}^{n}\sum_{j}^{m} (x_i(s_i, s'_j)\, y_j) \text{ or simply by } \bar{E}$$

Once again, the equivalence between utility and fitness may serve as the main justification for applying societal game theory in animal and macromolecular evolution. Let A be a real $(n + 1) \times (n + 1)$ matrix representing the fitness space. Then the payoff for strategy s_i against strategy s_j is a_{ij}, the payoff for strategy s_i against the population y is E_i, and the payoff for the population against itself is:

$$\sum_{1}^{j} x_i(E_i) \quad \text{or} \quad xAx \quad \text{or} \quad \text{simply } \bar{E}$$

in the case of a quadratic matrix $(m = n)$. The invariance condition for dynamic games can now be defined as an evolutionarily stable strategy. Thus e is an evolutionarily stable strategy, if e belongs to the solution set (simplex) Δ, i.e., $e \in \Delta$. We know such a simplex is, in the case of two pure strategies, a point; for three strategies a line; and, in our case, an n-dimensional polyheder, since our fitness space is of $n+1$ dimension. The fitness space represents the evolutionary development in our model.

4.10 We may define e as an evolutionarily stable strategy or invariant behaviour, if it belongs to the solution Δ and either:

$$xAx < eAe \text{ or if } xAe = eAe \text{ then } xAx < eAx$$

according to Maynard-Smith, should hold. That means: a mutant x-strain will be less fit than e, because it will lose out in competition against either e, or itself. This invariance means the following: in a population, consisting entirely of individuals adopting the strategy e, rare variants (arising by mutation) that adopt a different strategy x will never increase in frequency. Hence the population would be invariant under mutation and selection caused by the underlying fluctuation of the causal field and by the screening selection pressure of the other contestants. The definition of the dynamic game structures, which are the ontologically relevant general structures rests on the cognitive hypothesis that the rate of all those playing strategy s_{i*} is proportional to the fitness advantage of s_i. By a suitable choice of a time scale the factor of proportionality can be made 1. We then get the temporal derivative or the time dependent trajectory of the evolution in Δ, where $\dot{x} = dx/dt$,

4.12 $\dot{x}/x = ((\text{payoff to i}) - (\text{payoff to x})) = E_i - \bar{E}$ or $(Ax)_i - xAx$

or simply:

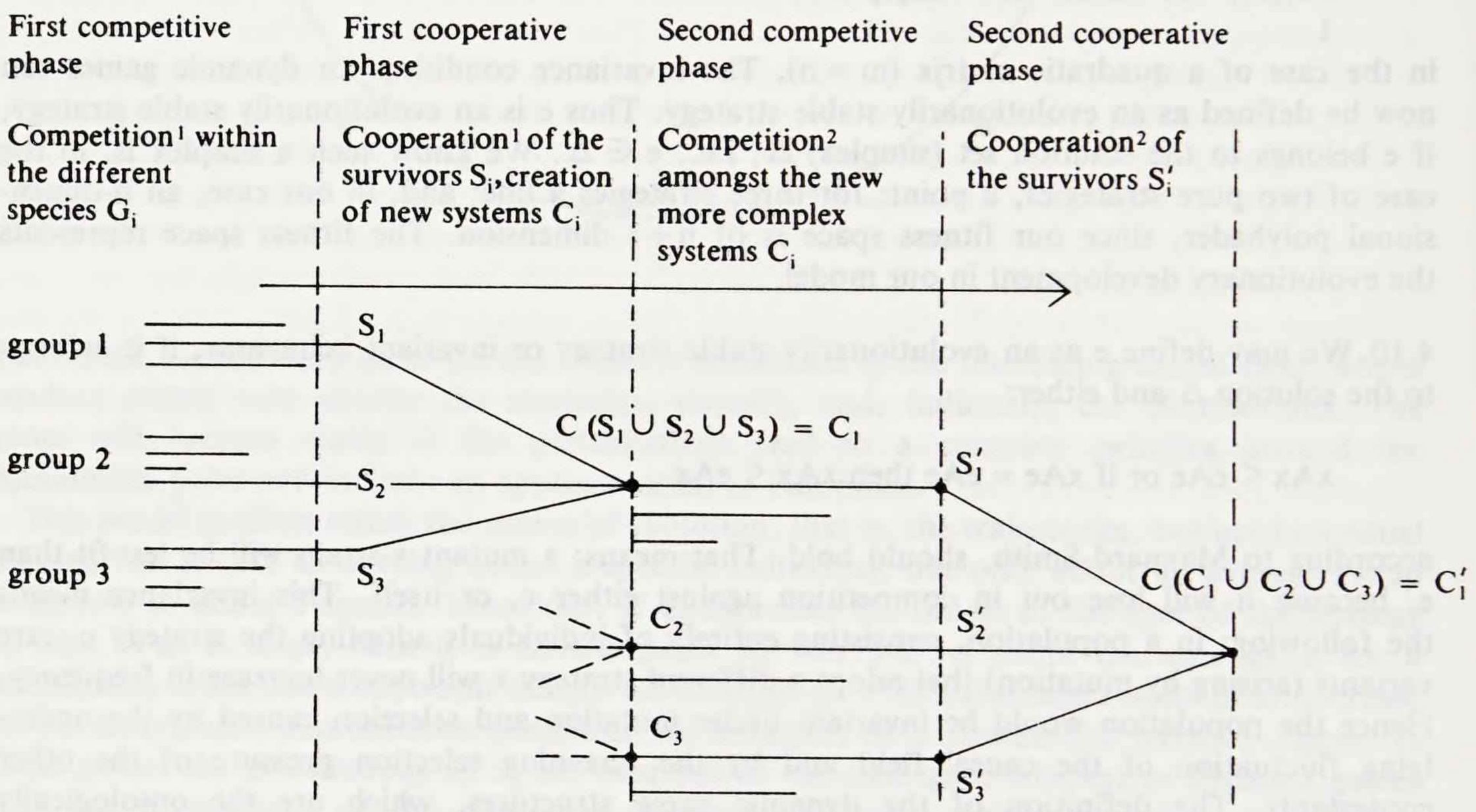
4.13 $\dot{x}_i = x_i((Ax)_i - xAx))$

4.13 are exactly Schuster's principal time dependent differential equations. These equations cover not only most types of evolutionary games, but are at the same time the most general ontological structures of evolution.

This new model of evolution is based on three assumptions: 1. Each individual plays a pure strategy as Selten has pointed out.[14] 2. Memory assumption: the offsprings play the same strategies or strategies are inherited. 3. Payoff or utility is equivalent to fitness, in the sense that the more payoff, the more offspring.

In game dynamics the difference between average payoff (E_i) of a certain strategy s_i and the mean average payoff ($\bar{E}$) expresses the relative increase in frequency of the participant i. Taylor and Jonker, Zeeman and Schuster have proven that every stable strategy corresponds to an assymptotically stable fix point of a dynamic game, $\dot{x}_i = x_i((Ax)_i - xAx))$, played over the differential equations which represent mathematically, in L_T of the theory of evolution, the temporal path of evolution. This fully explains the invariance thesis for the theory of evolution. But it does not predict which species will survive in a competitive game, or when this will occur, nor which cooperative compounds will be formed and will survive, but simply explains that there will always be one survivor.

The evolutionary trajectories of the past represent the history of evolution but can be computed mathematically, too, once the model with its general structures is established. All that belongs to the history of evolution, is stored in the genetic memory of the species, for possible use in the future evolution. Thus evolutionary processes are composed of two principle alternating phases, the competitive and the cooperative phase, i.e., we get the following diagram:



discontinuation of a line indicates extinction, continuation survival

The dynamic differential equations, changing in the course of time, are a typical case of an ontological structure which cannot be expressed in classical logical systems, e.g., predicate logic.

4. Conclusion: a Comparison

According to our model of biological evolution the evolutionary process has created and is creating innumerous new organisms (systems) and by creating these new systems directly and indirectly changes the whole ecosphere and environment of life on earth. The comparison described here is a direct continuation of the table in chapter 2.

Ontology of Being (Static or classical ontology)	Ontology of Becoming (Dynamic or creative ontology)
No creation but only replication in the sense of replication production	Primary creation of completely new organic living systems (species)
There exists a constant amount of things with essential (never changing) and accidental properties	Systems, subsystems change, there is no absolute difference between essential and accidental properties
Combinatory changes in the interactions	Secondary creation of new interactions between newly created systems and between the new and old systems
Classical causality of Newtonian or Minkowski-type	Statistical mutual causation. Systems are constantly disturbed by the underlying fluctuating causal field = randomness
Systems (things, objects) are unalterable substances (consisting of basic atomic units). Atomic units are independent and separable from the rest of the world. Subject-object-dichotomy	Systems (objects, things) are fairly stable; are in the long run invariant but dynamic structures (in the long run = existing during a long period of time). All systems are interdependent, directly or indirectly, are inseparable from the rest of the world (including the observer). No subject-object-dichotomy
Natural laws are universally valid generalizations	Laws and regularities are only invariant or evolutionarily stable statistical quasi-equilibria, are temporally building up invariances (invariant behaviour and interactions)
The world is an automaton or clockwork which exists vis-à-vis the observing and acting human scientist who alone possesses intelligence	The world is an ever growing and evolving creative process of selforganizing type, evolving its own intelligence for all living beings, counteracting to an all permeating fluctuating causal field, producing randomness

Semantic ontological consequences

Semantics is static and does not change. Meanings as propositions do not change; the causal theory of reference. Semantic markers, categories, features are innate even in their specialized forms	Semantic is changing by introducing new referential names, new meaning postulates, no rigid designators
Causal theory of meaning: semantic relations, referential relations are one-one and unambiguous	Semantic relations and referential relations are fuzzy
Absolute difference between systems and relations, interactions and therefore between subject and predicate	Relative difference between systems (object) and relations, interactions, any subject can be represented by a noun or predicate and any relation by a predicate or noun

There is only one all-embracing logic of Russell-Fregean type, and one semantical system	There are many regional logical and semantical systems, which are adapted to their specific regional use in D (quantum logic, intuitionistic logic, empirical logic, logic of evaluation)
Only human beings and animals dispose of a brain memory with an conceptually based semantics	Evolution of living organism creates its own genetically fixed memory and increases it. Memory possesses a general semantics

For more details about this type of semantics, see Leinfellner/Leinfellner, *Ontologie, Systemtheorie und Semantik* (Berlin 1978).

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NOTES

1 Leinfellner, W., "Grundtypen der Ontologie", in: R. Haller. *et al.* (eds.), *Language, Logic, and Philosophy* (Vienna 1980), p. 124—131.
2 Leinfellner, W., "Kausalität in den Sozialwissenschaften", in: G. Posch (ed.), *Kausalität: Neue Texte* (Stuttgart 1981), p. 221—260.
3 Leinfellner, W., *Einführung in die Erkenntnis- und Wissenschaftstheorie* (Mannheim 31980), p. 139—145.
Jauch, J. M., *Foundations of Quantum Mechanics* (Reading 1968).
Ludwig, G., *Die Grundlagen der Quantenmechanik* (Berlin 1961).
4 Leinfellner, W., Leinfellner, E., *Ontologie, Systemtheorie und Semantik* (Berlin 1978), p. 168—208.
5 See Leinfellner (1981), p. 108—112.
6 Leinfellner, W., "Evolutionary Causality, Theory of Games, and Evolutionary Intelligence", in: Wuketits, F. M., (ed.), *Evolutionary Theory of Knowledge* (Dordrecht) (forthcoming).
7 See Leinfellner (forthcoming), chapter 3.
8 Eigen, M., "Self Organization of Matter and the Evolution of Biological Macromolecules", in: *Die Naturwissenschaften*, Vol. 58 (1973), p. 465—526.
Eigen, M., & Schuster, P., "The Hypercycle. A Principle of Natural Self-Organization B: The Abstract Hypercycle", *Die Naturwissenschaften*, Vol. 65 (1979), p. 7—41.
Eigen, M., Gardiner, W., Schuster, P., & Winkler-Osatitsch, R., "The Origin of Genetic Information", *Scientific American*, Vol. 244 (1981), p. 90—126.
9 Maynard-Smith, J., and Price, G., "The Logic of Animal Conflicts", *Nature*, Vol. 246 (1973), p. 15—18.
Maynard-Smith, J., and Parker, G. A., "The Logic of Asymmetric Contests", *Anim. Behaviour*, Vol. 24 (1976), p. 159—175.
Dawkins, R., *The Selfish Gene* (Oxford 1976).
Parker, G. A., "Sexual Selection and Sexual Conflict", in: M. S. Blum and N. A. Blum (eds.), *Sexual Selection and Reproductive Competition* (Academy Press 1980).
10 Schuster, P., Sigmund, K., Hofbauer, J., & Wolff, R., "Selfregulation of Behaviour in Animal Societies", *Biolog. Cybernetics*, Vol. 40 (1981), p. 1—25; esp. p. 1—3.
11 Leinfellner, W., "Entscheidungstheorie", in: J. Speck (ed.), *Handbuch wissenschaftstheoretischer Begriffe* (Göttingen 1980), p. 160—165.
Leinfellner, W., "Spieltheorie", in: Speck (1980), p. 597—599.
12 See Leinfellner (1980), ch. 1.
13 See Leinfellner (1980), p. 3.
14 Selten, R., "A Note on Evolutionarily Stable Strategies", in: Asymmetric Animal Contests", *Journ. Theoret. Biology*, Vol. 84 (1980), esp. p. 93—101.

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DIE ORGANISATION DES LEBENDIGEN: ASPEKTE ZU EINER „BIO-ONTOLOGIE“

Franz M. Wuketits

Vorliegender Beitrag versteht sich als Versuch eines Brückenschlags von der Ontologie zu den Biowissenschaften. Ein allgemeines *bio-ontologisches* Konzept soll anvisiert werden, wobei ich eines der Grundprinzipien in der Organisation lebender Systeme kurz auseinandersetzen möchte, nämlich das Prinzip der *Hierarchie*.

Zunächst aber ist es wesentlich, den hier gebrauchten Begriff ‚Ontologie‘ zu klären: Ich verstehe die Ontologie nicht im traditionellen Sinne als ‚Metaphysik des Seins‘, sondern vielmehr als den Versuch, (natur-)wissenschaftliche Aussagen über die reale Welt oder Ausschnitte daraus zu einem philosophischen Gesamtsystem zusammenzufügen. Eine so verstandene Ontologie muß die in den empirischen (Natur-)Wissenschaften gewonnenen Resultate über die Struktur der Wirklichkeit ihrem eigenen System stets vorordnen. Umgekehrt freilich ist das Postulat zu erheben, daß ontologische Prämissen empirisch für die einzelnen Teilbereiche der realen Welt prüfbar sein müssen, von den empirisch gewonnenen Erkenntnissen gleichsam ‚ausgefüllt‘ werden können. Dabei kommt diesen Prämissen für die naturwissenschaftliche Begriffs- und Theorienbildung eine wichtige heuristische Funktion zu, wenn man sie als *proto-ontologische* Annahmen formuliert und die ‚Proto-Ontologie‘ selbst als eine Disziplin deklariert, „die denjenigen Teil der empirischen Welt, der erkannt werden soll, im vorhinein zu einem gewissen Grade ordnet“.[1]

Eine der proto-ontologischen, für alle empirischen Wissenschaften relevanten Annahmen ist folgende: „Die Welt ist ein System von Systemen oder eine Hierarchie von Systemen“.[2]

Für den von der Biologie zu untersuchenden Teilbereich der Welt gilt mithin: Ein Organismus ist ein System von Systemen oder eine Hierarchie von Systemen. Allerdings beschränkt sich diese Annahme nicht auf individualisierte organismische Komplexe, sondern besitzt in gleichem Maße sowohl für die Struktur- bzw. Organisationselemente eines Lebewesens (Organe, Zellen), als auch für überindividuelle organismische Systeme (Populationen, Ökosysteme, Biosphäre) ihre Gültigkeit. In diesem Sinne bringt Bunge[3] die hierarchische Organisation der belebten Welt wie folgt zum Ausdruck:

> The biosphere is composed of ecosystems, which in turn are composed of biopopulations, the components of which are organisms, which may be composed of organs, which are composed of cells;
> cells constitute the cellular level, organs the organ level, organisms the organismic level, populations the population level, ecosystems the ecosystemic level and biospheres . . . the biospheric level.[4]

In neuerer Zeit ist die hierarchische Organisation, der hierarchische ‚Systemaufbau‘ des Lebendigen von mehreren Autoren diskutiert worden (vgl. v. Bertalanffy (1973), Grobstein (1974), Riedl (1975), Weiss (1969), Wuketits (1978), (1979) u.a.). Als eines der Grundmuster der *Ordnung* des Lebenden ist die Hierarchie besonders von Riedl (1975) ausführlich beschrieben und definiert worden:

> Die Ordnung der Hierarchie ist durch Merkmale (oder Begriffe) gekennzeichnet, deren Geltungsbereiche, ohne daß sich ihre Grenzen schnitten, ineinander verschachtelt sind; wobei meist mehrere gleichrangige Unterbegriffe innerhalb eines Oberbegriffes vorkommen. Dabei bestimmt der Oberbegriff die Bedeutung seiner Unterbegriffe und diese gegengleich dessen Inhalt.[5]

Die hierarchische Ordnung lebendiger Systeme läßt sich als ein *enkaptisches* Prinzip beschreiben und etwa anhand der sog. ‚chinesischen Schachteln‘ veranschaulichen. Hierbei

repräsentiert jede Schachtel in bezug auf die ihr übergeordneten Schachteln ein ‚Subsystem' und in bezug auf die ihr eingefügten (untergeordneten) Schachteln ein ‚Supersystem'.

Nun dürfen solche Modelle nicht darüber hinwegtäuschen, daß ein lebendes System per definitionem ein *dynamisches* System ist, dessen Elemente (Subsysteme) in wechselseitiger Beziehung zueinander stehen. D.h., daß es sich im Bereich des Lebendigen nicht um eine strenge ‚Stufenanordnung' von Elementen handeln kann, wie dies von den traditionellen ‚Schichtenontologien' suggeriert wird, sondern vielmehr um komplexe Netzwerke von Kausalrelationen. Damit gelangen wir auch zu einer Definition lebender Systeme. Ein System ist genau dann ein lebendes System (‚Bio-System'), wenn x Strukturelemente und y Funktionskomponenten ein Gefüge mit im wesentlichen folgenden Unterscheidungskriterien gegenüber anderen Systemen ergeben:

(1) der Fähigkeit zur Selbstregulation und Autoreproduktion;

(2) einem Ausmaß freier Reaktionsenergie, das stets den Nullwert übersteigt ($\Delta G \neq O$);

(3) einer steten Wechselwirkung mit der Umwelt im Sinne eines Stoff- und Energiewechsels (Fließgleichgewicht).[6]

Für jedes Lebewesen gilt ferner, daß es mehr oder minder komplizierte Entwicklungsprozesse durchläuft (Ontogenese) und daß seine Spezies Produkt der *Evolution* ist.

Die biologische Entwicklung kann als ein ‚hierarchischer Systemprozeß' beschrieben werden (vgl. Weiss (1969)): Jedes Ensemble von Elementen (Subsystemen) bildet für sich stabile Einheiten, die — korreliert mit gleichrangigen Struktur- bzw. Organisationseinheiten — zur Bildung ‚übergeordneter' Systeme fortschreiten. Die Ausgangselemente der individuellen Entwicklung eines Organismus, die Gene, sind „einerseits selbst relativ hochorganisierte Gebilde (Systeme) und andererseits Bestandteile (Subsysteme) eines geordneten Systems, mit dessen strukturierter Dynamik sie in Wechselwirkung stehen".[7]

Aus diesen, hier freilich nur schlaglichtartig dargelegten Kriterien lebender Systeme lassen sich für eine Bio-Ontologie vor allem zwei Postulate ableiten:

(1) Eine Ontologie des Lebendigen muß als ein die Dynamik repräsentierendes Konzept angesetzt werden, da lebende Systeme in sämtlichen Komplexitätsgraden (von biomolekularen Elementen bis zur Biosphäre) als dynamische Systeme erscheinen und in der Zeit Entwicklungsprozesse durchlaufen.

(2) Da alle Subsysteme eines definierten lebenden Systems miteinander in Wechselwirkung stehen (miteinander interagieren), muß eine Bio-Ontologie Netzwerke von Kausalbeziehungen (‚Kreisrelationen') repräsentieren. Man könnte sagen, daß so die Schichtenontologie in eine ‚Netzwerk-Ontologie' transformiert wird.

Beide Postulate möchte ich nun noch durch einige Zusatzbemerkungen ergänzen, woraus insbesondere nochmals die Wechselbeziehungen zwischen Ontologie und Biologie hervorgehen mögen.

Die Definition eines dynamischen Systems ist selbst eine proto-ontologische Annahme. Als dynamisch wird ein System bestimmt, „in welchem Systemereignisse vorkommen und dessen Zustand sich innerhalb einer gewissen Zeitperiode Δt ändert".[8] Diese Annahme würde aber im leeren Raum stehen, ließe sie sich nicht auf die biologische Forschung anwenden und würde nicht umgekehrt die Biologie die Evidenz dafür erbringen können, daß und wie sich Systemzustände in der Zeit ändern.

Was die Erkenntnis netzartiger, kausaler Beziehungen betrifft, so läßt sich daran zugleich das Desiderat einer Konzeption der ‚Einheit der realen Welt' bzw., eingeengt auf die Bio-Ontologie, der ‚Einheit des Lebenden' knüpfen. Damit dieses Desiderat nicht mit bloß metaphysischen Prämissen identifiziert wird, ist es notwendig, entsprechende Ansätze dazu

aus den empirischen (Natur-)Wissenschaften zu entlehnen. Konkret heißt das, daß *isomorphe Prinzipien* in Systemen unterschiedlichen Komplexitätsgrades festgestellt werden; mit anderen Worten geht es hierbei um die (empirisch prüfbare) Erkenntnis einheitlicher Organisationsprinzipien der Wirklichkeit. An die Stelle metaphysischer Konzepte hat hier mithin ein Systemkonzept zu treten. Auch v. Bertalanffy hat seinen systemtheoretischen Konzepten die — wie wir sagen können — proto-ontologische Annahme isomorpher Beziehungen zugrunde gelegt:

> A unitary conception of the world may be based . . . on the isomorphism of laws in different fields . . . it means that the world, i.e. the total of observable events, shows structural uniformities, manifesting themselves by isomorphic traces of order in the different levels or realms.[9]

Ich habe an anderer Stelle drei dynamische Komponenten in der Organisation der realen Welt als isomorphe Prinzipien dargelegt (vgl. Wuketits (1982)) und zwar:

(1) Selbstorganisation,

(2) Evolution,

(3) Information.

Diese drei Prinzipien sind im Grunde genommen drei Gesichter ein und derselben Sache: der Entwicklungsdynamik der realen Welt, von der Organisation einfachster materieller Elemente bis zur Organisation der Biosphäre.

Für die Bio-Ontologie insgesamt ergibt sich letzten Endes daraus ein Konzept, welches zwar nicht-reduktionistisch formuliert werden kann, zugleich aber auch — als ein systemtheoretisches, ‚emergentistisches' Konzept (Bunge (1979)) — jedem metaphysisch verstandenen Holismus ausweicht.

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ANMERKUNGEN

1 Leinfellner (1978), S. 33.
2 Leinfellner (1978), S. 168.
3 Bunge (1979), S. 167.
4 Ich verwende den Begriff ‚organismisch' in einem weiteren Sinne: nicht nur bezogen auf die ‚Stufe' des Organismus, sondern darüber hinaus auf jedes als ‚belebt' zu kennzeichnende System, was wiederum dann gelten soll, wenn — wie z.B. bei einer Population — das fragliche System sich aus definierten Wechselwirkungen zwischen seinen Elementen (Individuen) eindeutig bestimmen läßt. Den Begriff ‚Biosphäre' sollte man m.E. nur im Singular gebrauchen, solange außerirdisches Leben nicht einwandfrei nachgewiesen ist, möge auch seine Existenz theoretisch sehr wahrscheinlich sein.
5 Riedl (1975), S. 153; im Original kursiv.
6 Man erinnere sich dabei an das Konzept des ‚offenen Systems' (vgl. v. Bertalanffy, z.B. 1973).
7 Wuketits (1979), S. 376.
8 Leinfellner (1978), S. 191. Dabei ist ein ‚Systemereignis' „der Wechsel oder die Änderung in mindestens einem strukturellen Teilzustand oder dem Zustand des Systems, innerhalb eines gewissen und für den einzelnen Fall definierten (spezifischen) Zeitintervalls Δt (Leinfellner (1978), S. 189f.).
9 v. Bertalanffy (1973), S. 48.

LITERATUR

Bertalanffy, L. v., General System Theory: Foundations, Development, Applications (Harmondsworth 1973).

Bunge, M., Some Topical Problems in Biophilosophy, in: J. Social Biol. Struct., Vol. 2 (1979).

Grobstein, C., The Strategy of Life (San Francisco ²1974).

Leinfellner, E. und W., Ontologie, Systemtheorie und Semantik (Berlin 1978).

Riedl, R., Die Ordnung des Lebendigen: Systembedingungen der Evolution (Hamburg-Berlin 1975).

Weiss, P. A., The Living System: Determinism Stratified, in: Studium Generale, Bd. 22 (1969).

Wuketits, F. M., Wissenschaftstheoretische Probleme der modernen Biologie (Berlin 1978).

Wuketits, F. M., Die hierarchische Ordnung lebendiger Systeme, in: Zool. Beiträge, Bd. 25 (1979).

Wuketits, F. M., Systems Research: The Search for Isomorphism, in: Progr. Cyb. Syst. Res., Vol. 11 (1982).

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INTELLIGENT NEURAL NETWORKS

Jeffrey C. Schank

The "black box" problem of intelligence is a crucial puzzle for the *brain-mind* controversy and even epistemology. Dennett illustrates this conundrum with the following story:

> Suppose you find yourself locked in a windowless room, with two walls covered with flashing lights, two walls covered with little buttons, and a note telling you that you are imprisoned in the control center of a giant robot on whose safety your own life depends. Your task is simply to guide the robot through its somewhat perilous environment, learning to discriminate and cope with whatever comes along, finding "nourishment" and safe haven for the robot at night (so you can sleep) and avoiding dangers. All the information you need is conveyed by the flashing lights, and the robot's motor activity is controllable by pushing the buttons. To your dismay, however, you see that none of the lights or buttons are labeled . . . You don't know whether when you push a button and the light goes out, you've scratched an itch, occluded your view of something or destroyed your attacker.[1]

Put succinctly, the problem is, how does a so-called "black box" of an *input-output* system (in the above case you) get uninterpreted input information into a functionally appropriate position for the output of the system. The brain of an organism is faced with the same problem, since it does not have a "window" through which it can "look" in order to correlate features of its environment with the input it receives, and then put it into a functionally appropriate position for the behavioral repertoire of the whole system. This is the fundamental problem of epistemology as Quine has pointed out: "The relation between the meager input and the torrential output is a relation that we are prompted to study for somewhat the same reason that always prompted epistemology; namely, in order to see how evidence relates to theory, and in what ways one's theory of nature transcends any available evidence."[2]

One might argue as does Rorty that this is the wrong question to ask in the first place. Rorty calls into question the loose use of such words as "information" and "processing", and asks whether there can be experimental *criteria* for such words that are unproblematic when we want to say something about justification, e.g., "Could psychology discover that it is not at the retina . . . that information begins to be processed?"[3] He concludes that there is no philosophically interesting way to mark off a "black box".

Moreover, it is tempting when answering this question to introduce intelligent homunculi, since as Dennett has pointed out:

> Any time a theory builder proposes to call any event, state, structure, etc., in any system (say the brain of an organism) a *signal* or *message* or *command* or otherwise endows it with content . . . He implicitly posits along with his signals, messages, or commands, something that can serve as a signal-*reader*, message-*understander*, or *commander*, else his "signals" will be for naught, will decay unreceived, uncomprehended.[4]

Dennett's point is that we don't come one step closer to answering the question: "What makes for intelligence?" if we posit intelligent homunculi, i.e., a signal-*reader*, a message-*understander*, or a *commander*. Since, obviously, we are on our way to an *infinite regress*.

But this infinite regress is blocked if we adopt Dennett's suggestion that the intelligence of a system is to be explained, not by tacitly positing an intelligent homunculus within it, but rather by positing a *team* consisting of several more specialized homunculi which cooperate to produce intelligence. These teams of sub-homunculi may subsequently be replaced in deeper theories by teams of even more specialized homunculi. This procedure is continued

until all previously posited teams of homunculi are replaced by teams of empirical "homunculi", for example, in the case of an organism's brain, these teams of empirical "homunculi" are neural networks.[5] But would this move also block Rorty's objection that, philosophically speaking, the "black box" problem of intelligence is the wrong problem to ponder? In the case of empirical "homunculi", experimental criteria for "input information" and "processing" are unproblematic in one sense, but are such criteria philosophically interesting?

It may be protested that intelligence presupposes *intentionality* (e.g., goals, beliefs, etc.).[6] Thus teams or networks of empirical "homunculi" (such as networks of neurons) cannot be endowed with intelligence without begging the question of intentionality, since clearly, empirical "homunculi" such as neurons, cannot have goals, beliefs, desires, etc.

In answer to this objection, we will adopt Dennett's argument that a system is intelligent *only* in virtue of the strategies one uses to interpret, explain, or predict its behavior.[7] A system's behavior is called intelligent behavior, when and only when, its behavior is optimal in a problem solving situation.[8] This will require as a minimum that we posit at least two homunculi as a first step, i.e., a *problem solver* and a *librarian* or *memory homunculus.*

Now if endowing a system with intelligence is only a strategy one uses to interpret, explain, or predict its behavior, then one must be operating on some *criterion* of intelligent behavior, viz., *optimal behavior in a problem solving situation.* If, however, only a problem solving and librarian homunculus are posited, then we will be forced to say, for example, that a chess playing computer is intelligent since relative to its opponent and if it wins, that it has found an optimal solution to that particular game. But, yet its intelligence is obviously *owed* to its programmers.[9] Therefore, we will posit a third homunculus which *poses* some of the problems solved *independent* of any other system we would be inclined to call intelligent.

In the next step, we will consider the analogy between behavioral evolution and the problem of intelligence. The *genes* are faced with much the same problem as you and the robot in Dennett's story, that is, if the individual organisms in a population are the *input-output* components of the population and the gene pool is the "black box", then the analogy is most apposite. The problem for the gene pool is to evolve individuals which take input information and put it into the appropriate output for the individuals of the population. In modern evolutionary theory, much the same methodology is followed by the evolutionary theorist as the theory constructor of human information processing models. He begins on the hypothesis that a population is a *team of interacting* (cooperating and competing) members. If a population is to survive, it must be able to solve problems in its environment and store these solutions, but also—since an evolving population has no programmer—it must be able to pose the problems it solves.

Modern evolutionary theory, incorporates these three components, *viz.*, selection of the stable, genetic memory, and random variation.[10] We will, therefore, consider modern evolutionary theory in more detail as recently developed in game theoretical models, and see what relevance it has to the issues of this paper.[11]

Since evolution is a dynamic process, we will consider the dynamic game theoretical approach developed by Taylor and Jonker.[12] In an evolutionary game, Γ, there are n participants, each of the participants is assumed to adopt a behavioral strategy s_i, $s_i \varepsilon S$: the set of behavioral strategies for the game. Let $m \subset n$ be the number of individuals adopting the strategy s_i, and thus each strategy s_i is characterized by a probability, $m/n = x_i$ of the frequency that s_i is played in Γ. Thus at a certain time, t, the population is characterized by the state vector:

$$X(t) = (x_1(t), x_2(t), \ldots, x_n(t)), \text{ where } \sum_i^n x_i = 1 \text{ and } x_i \geqslant 0.$$

Another important concept is "utility" or "payoff". The list of all possible outcomes is represented by a payoff-matrix, such that a_{ij} is the "payoff" in *fitness* for an individual i adopting the strategy s_i.[13] The "average payoff" of the strategy s_i in Γ is given by the equation:

$$(1)\quad E_i = \sum_j^n a_{ij}x_j$$

and the "mean average payoff" is:

$$(2)\quad \bar{E} = \sum_i^n x_i E_i = \sum_{ij}^n x_i a_{ij} x_j$$

The difference between the "average payoff" and the "mean average payoff" of a certain strategy, s_i, gives the relative increase in frequency of s_i in the population, i.e., where $dx_i/dt = \dot{x}_i$:

$$(3)\quad \dot{x}_i/x_i = E_i - \bar{E} \quad \text{or} \quad \dot{x}_i = x_i(E_i - \bar{E})$$

Next we introduce the concept of selection of the stable (natural selection is a special case) by the notion of an *evolutionarily stable strategy* which is defined:[14]

Definition 1. A strategy is an *evolutionarily stable strategy* (*ess*) iff an *ess* is denoted by a state vector P and for any other state vector X,

(i) it is the best reply against itself: $\bar{E}' = \sum_{ij}^n p_i a_{ij} p_j \geqslant \bar{E}'' = \sum_{ij}^n x_i a_{ij} p_j$; or

(ii) if $\bar{E}' = \bar{E}''$, then P fares better against X than X does against itself:

$$\sum_{ij}^n p_i a_{ij} x_j \geqslant \sum_{ij}^n x_i a_{ij} x_j$$

In short, *definition 1* says that an *ess* is a strategy adopted by the population or a subpopulation of the population which cannot be bettered by an alternative best reply. Thus the evolutionary trajectory of an evolving population is: $X = (X_1(t), X_2(t+1), \ldots, X_n(t+m))$.

Interestingly, on the assumption that certain kinds of behavior are genetically determined, the population carries out the posited processes of an intelligent system. The *problem solving* process was defined in terms of dynamic game-theory, and the solutions are given by the notion of an *ess*. The memory component is dynamic, and is a record of payoff in fitness given by the number of offspring of individuals adopting the strategy s_i that survive.

But, if all behavior of organic systems were genetically determined, then the problem of intelligence would boil down to understanding the interactions (competitive and cooperative) in gene pools. Unfortunately for the genes—but fortunately for us—this is almost never the case. The problem for the genes is that they cannot store solutions to all the problem-solving situations which they may encounter. In other words, they have no "idea" (in many cases) what information will maximize fitness. Therefore, the best bet for the genes would be to evolve strategies that are *flexible* learning strategies that maximize information in general, rather than to evolve strategies which are *fixed* genetically for particular kinds of problem-solving situations. We may conjecture then, that an *ess* for the genes is to design systems that maximize information in different kinds of problem-solving situations, on the very plausible assumption that there is a positive correlation between information maximization and fitness maximization. In short, our conjecture is that the solutions (i.e., *ess*'s) to evolutionary games are in many cases (e.g., where all possible solutions cannot be anticipated and stored), *specialized* evolutionary processes, e.g., as we will see, the dynamic activity of an organism's brain.

If this conjecture is plausible, then there should be evolved processes (e.g., brain activity) which have the same structure as genetic evolutionary processes. Thus it should be possible

to prove that neural network equations can be derived on the basis of the dynamic game model of evolution expressed by equation (3). We will sketch how this can be done, and then show that these equations are equivalent standard neural network equations as derived by Cowan.[15]

Briefly, a neuron is a cell which consists of a cell body (soma), dendrites which receive incoming excitation, and an axon which transmits the cell's own excitation to other cells. Neurons are either excitatory or else they are inhibitory, and they have a firing threshold, θ.[16] Let X and Y stand respectively for excitatory and inhibitory neural networks. And let x_i and y_i be dynamic variables measuring the percentage of time that a neuron is firing (x_i and y_i in the equations below are heuristic estimates of the percentage of time that a neuron is firing) such that: $x_i + (1-x_i) + (1-y_i) = 1$ and $x_i, (1-x_i) \geqslant 0$ and $y_i, (1-y_i) \geqslant 0$.

With the coupling or connectiveness "scores"—$\gamma_{ij} > 0$ (an excitatory synapse) and $\xi_{ij} < 0$ (an inhibitory synapse)—we can define the stability conditions for the *i*th neuron of the net:

Definition 2. The *i*th neuron fires at $t+1$, $f(t+1)$ iff

$$\sum_{j}^{n} \gamma_{ij}(t) + \sum_{j}^{n} \xi_{ij}(t) \geqslant \theta$$

The neural equation derived is a special case of (3) with *n* neurons randomly interconnected each with two strategies, i.e., where there are interactions of X with itself, X with Y, Y with itself, and Y with X (where spatial separation of populations of excitatory and inhibitory neurons is not assumed). To begin with, we will consider the *ij*th subgame (i.e., the subgame of the *i*th neuron against the *j*th neuron), in the case of x_i there are two subgames over a long period of time (with a time constant τ: the mean intercellular transit-time for neural activity): the excitatory subgame, $\binom{0}{b=0}\binom{a}{0}$ and the inhibitory subgame, $\binom{0}{d=0}\binom{c}{0}$. The "mean connectiveness scores" are:

$$(4)\quad \tau(\gamma_{11}(1-x_j)+\gamma_{12}x_j) \text{ and } \tau(\xi_{11}(1-y_j)+\xi_{12}y_j)$$

and the "average mean connectiveness scores" are

$$(5)\quad \tau(\gamma_{11}(1-x_j)\,x_i+\gamma_{12}x_jx_i+\gamma_{21}(1-x_j)\,(1-x_i)+\gamma_{22}x_j(1-x_i) \text{ and}$$

$$\tau(\xi_{11}(1-y_j)\,x_i+\xi_{12}y_jx_i+\xi_{21}(1-y_j)\,(1-x_i)+\xi_{22}y\,(1-x_i)$$

The difference between (4) and (5) is equivalent to:[17]

$$(6)\quad (1-x_i)\,((\gamma_{12}+\xi_{12}) - (\gamma_{12}x_j+\xi_{12}y_j))$$

Clearly, since the sum of the payoffs of the *ij* subgames for the *i*th neuron give its payoff for the whole game we have:

$$(7)\quad \sum_{j}^{n} \tau(1-x_i)\,((\gamma_{12}+\xi_{12}) - (\gamma_{12}x_j+\xi_{12}y_j))_{ij} =$$

$$\tau(1-x_i)\,((\sum_{j}^{n}\gamma_{ij} + \sum_{j}^{n}\xi_{ij}) - (\sum_{j}^{n}\gamma_{ij}x_j + \sum_{j}^{n}\xi_{ij}y_j))$$

If we then incorporate the threshold coefficients, we have the differential equation:[18]

$$(8)\quad \tau\dot{x}_i = x_i(1-x_i)\,(\beta - 1/\beta_i\sum_{j}^{n}\gamma_{ij} - 1/\beta_i\sum_{j}^{n}\xi_{ij} + 1/\beta_i\sum_{j}^{n}\gamma_{ij}\,x_j + 1/\beta_i\sum_{j}^{n}\xi_{ij}y_j)$$

We get a similar equation for $\tau \dot{y}_i$.

Cowan, however, derives the equation:

$$(9) \quad \tau \dot{z}_i = z_i(1-z_i)\left(\varepsilon_i + 1/\beta_i \sum_j^n \alpha_{ij} z_j\right)$$

but notice that (9) is equivalent to (8) since Cowan has $\alpha_{ij} = \begin{cases} y_{ij} \\ \xi_{ij} \end{cases}$, $z_i = \begin{cases} x_i \\ y_i \end{cases}$, and

$$\varepsilon_i = \beta - 1/\beta_i \sum_j^n \alpha_{ij}.$$

The stationary states for the *i*th neuron are either 0, 1, or the solution to:

$$(10) \quad p = \sum_j^n \alpha_{ji}^{-1} \beta_i \varepsilon_i$$

where α_{ji}^{-1} is the *i*th element of the inverse of α_{ij} and it is assumed that α_{ij} is skewed symmetric and of even order.[19] Since it is the frequency over time which is important, Cowan derives a neural "Hamiltonian" which describes the oscillations of x_i about the stationary state p_i, i.e.,

$$(11) \quad H = \Sigma \beta_i (1n(1 + p_i \exp v_i) - p_i v_i), \text{ where } v_i = 1n \frac{x_i}{(1-x_i)p_i}$$

Cowan then derives a statistical mechanics for neural networks which gives a heuristic estimate of neural network behavior.

Since the evolutionary activity of neural networks is a special kind of evolutionary process, there are important differences between the empirical interpretations of it and genetic evolution, the most important being the analog of genetic mutation (or random variation) on the neural level. The *i*th neuron at t has only two strategies open to it, *viz.*, either it fires or it does not, but in behavioral evolution, the strategies open to the individuals of a population are not fixed (genetic mutations occur). So how do "mutations" occur in neural networks? It is well known that neural *plasticity* characterizes all levels of brain function, i.e., there is no absolutely fixed wiring at any level of neural organization.[20] Research has provided two important results: Firstly, that neural activity affects plasticity (e.g., neural growth). It is this fact about brain function that makes memory possible. Secondly, neural growth is to a certain degree random,[21] i.e., there is only a probabilistic (partial) causal relationship between neural activity and neural growth.[22] This is an important result. It means that an organism's brain—in at least some cases—does not owe its intelligence to anything else (e.g., the genes).

Therefore, psychobiological research can yield philosophically relevant consequences. We have shown that the brain as a neural network can be endowed with intelligence. The *problem solving* component was defined game-theoretically, and the solutions are given in terms of each neuron possessing a genetically given threshold, θ. The *memory* component is dynamic, and is given in a neural network by the connectiveness "scores".[23] Finally, neural networks have a *problem posing* component, since there is an analog of genetic mutations on the neural level.

In conclusion, we must reject the view that the information bearing states of the central nervous system must be isomorphic to the structure and elements of sentences.[24] A neuron is plainly not the kind of thing that has sentential attitudes. Some intelligent creatures do talk, but this is not a consequence of a train of inferences from premises to conclusion, it is rather a product of the evolutionary group activity of neurons which make up the brain of an organism.

Thus when Rorty claims the "unnaturalness" of epistemology by arguing: ". . . the claim

that we possess a system of internal representations embodies at worst, not only the confusion between pictures and propositions but a more general confusion between causation and inference'',[25] he is making the dubious assumption that the information-bearing states of the brain are a kind of sentential attitude. But we have not made this assumption. It is in the sense that the brain as an evolutionary information-processing system, producing *optimal solutions* (relative to the rules and constraints of the evolutionary game), that it is philosophically relevant to the problem of justification.[26]

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NOTES

1 This example was taken from a recent publication of Bennett's but unfortunately I don't remember which one.
2 Quine, W. V. O., *Ontological Relativity and Other Essays* (New York 1969), p. 83.
3 Rorty, R., *Philosophy and the Mirror of Nature* (Princeton 1979), p. 224.
4 Dennett, D., *Brainstorms* (Bradford 1978), p. 12.
5 Dennett's (1978) argument also blocks a number of standard infinite regresses in the philosophy of mind as Lycan points out (W. G. Lycan, ''Form, Function, and Feel'', *Journal of Philosophy*, Vol. 78 (1981), p. 28.).
6 Gauld, A., and Shotter, J., *Human Action and its Psychological Investigation* (Oxford 1977), p. 111.
7 Dennett (1978).
8 Leinfellner, W., ''Evolutionary Causality, Game Theory, and Intelligence'', in: F. Wuketits (ed.), *Evolutionary Epistemology* (forthcoming), and W. Leinfellner, ''Ontology of Evolution'' (in this Volume).
9 Block made a similar point: N. Block, ''Psychologism and Behaviorism'', *Philosophical Review*, Vol. 90 (1981), pp. 5—43.
10 Leinfellner (forthcoming and in this volume).
11 See, for example, P. Schuster, K. Sigmund, J. Hofbauer, and R. Wolff, ''Selfregulation of Behaviour in Animal Societies'', *Biological Cybernetics*, Vol. 40 (1981), and Leinfellner (forthcoming and in this volume).
12 Taylor, P. D., and Jonker, L. B., ''Evolutionarily Stable Strategies and Game Dynamics'', *Mathematical Biosciences*, Vol. 40 (1978), pp. 145—156.
13 Leinfellner (forthcoming and in this volume).
14 Schuster, P., *et. al.* (1981) and Leinfellner (forthcoming and in this volume).
15 This identity has been suggested by Schuster, *et. al.* (1981).
16 The neural parameters discussed, can be found in more detail in: J. D. Cowan, ''A Statistical Mechanics of Nervous Activity'', in: Murray Gerstenhaber (ed.), *Lectures on Mathematics in the Life Sciences*, Vol. 2 (Providence 1970), pp. 1—58, and J. D. Cowan, ''Statistical Mechanics of Nervous Nets'', in: E. R. Caianiello (ed.), *Neural Networks* (New York 1968), pp. 181—188.
17 Schuster, P., *et. al.* (1981).
18 See Cowan (1971) for an approximation of θ.
19 Cowan (1970).
20 Cotman, C. W., (ed.), *Neuronal Plasticity* (New York 1978), pp. 335.
21 Equations of type (9) are incomplete until the connectiveness ''scores'' are supplemented by equations which give the change in these scores. For some interesting attempts, see M. Bunge, *The Mind-Body Problem* (Montreal 1980), pp. 250.
22 See Leinfellner (forthcoming and in this volume) for the role of probabilistic or partial causation in evolutionary processes: specifically random variation.
23 Cotman (1978) and Bunge (1980).
24 Churchland, P. S., ''Language, Thought, and Information Processing'', *Nous*, Vol. 14 (1980), pp. 147—170.
25 Rorty (1979), p. 254.
26 I would like to thank professor Leinfellner for his helpful comments on this paper.

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ZUR ENTWICKLUNG DER MANAGEMENTLEHRE AUS EVOLUTIONSTHEORETISCHER SICHT

János Ács

In letzter Zeit wird die traditionelle Managementlehre nicht nur von der Praxis, sondern auch von den Vertretern der verwandten Disziplinen (z.B. Organisationstheorie), aber auch von mehreren Managementtheoretikern (z.B. Mintzberg, Malik usw.) einer ausführlichen Kritik unterzogen, wobei die gewaltigen Veränderungen in der Wirtschaft und Gesellschaft eine besondere Rolle spielen dürften. Die ständig zunehmende Verflochtenheit und die Dynamik der unternehmerischen Umwelt, die schlechte Voraussagbarkeit von zukünftigen wirtschaftlichen, technischen, sozialen und ökologischen Entwicklungen haben an das Management qualitativ neue Anforderungen gestellt, denen nur teilweise bzw. in vielen Fällen überhaupt nicht entsprochen werden konnte. Schlagworte wie „das Ende der Macher", „das Versagen der Technokraten" charakterisieren das Schwinden des Vertrauens in die umfassende Machbarkeit der Dinge, aber auch den Vertrauensschwund in die Grundlagen der traditionellen Managementlehre.

Die von Mintzberg, Malik und neuerlich von Ulrich beschriebene Krise der traditionellen Managementlehre könnte einen sich anbahnenden Paradigmenwechsel im Sinne von Kuhn signalisieren. Ein Paradigma verfügt über ein eigenes Sprachspiel, seine Anhänger teilen

> eine Menge von (z.B. methodologischen) Regeln, die die Lebensform dieser scientific community konstituieren, . . . Die Ähnlichkeit des Kuhn'schen Paradigmas mit Wittgenstein's Sprach- und Lebensform mit ihrer jeweils spezifischen Art der Welterschließung ist unverkennbar.[1]

Zahlreiche Disziplinen haben sich der Problematik der Führung angenommen. Auch nur eine grob vereinfachende Darstellung der verschiedenen Disziplinen, Ansätze, Forschungsrichtungen und Schulen würde den hier vorgegebenen Rahmen sprengen, spricht man doch von einem unübersichtlichen Dschungel der Managementtheorien. Zahlreich sind die Versuche, diese Ansätze zu klassifizieren. In diesem Zusammenhang ist das von Kirsch vorgestellte Scheinwerfer-Modell der Führungslehre sehr aufschlußreich.

> Die Lehre von der Führung liefert die Erkenntnisperspektive, die mit einem Scheinwerfer verglichen werden kann, der ein großes Spektrum von Paradigmen bzw. Forschungstraditionen der (Nachbar-)Disziplinen anstrahlt . . . Die von Scheinwerfern angestrahlten Paradigmen reflektieren, was unter Umständen zu einem Fortschritt in der Lehre von der Führung führen kann. Und dieser Fortschritt mag . . . zu einer Verbesserung der Scheinwerfereinstellung und damit des Vorverständnisses für die Probleme der Führungspraxis führen.[2]

Mintzberg beklagt die unzulängliche Relevanz der traditionellen Managementlehre für die Beschreibung der Führungspraxis:

> Tatsache ist, daß die vier Wörter, die das Managementvokabular beherrschen, seit der französische Industrielle Henry Fayol sie im Jahre 1916 einführte, über die eigentliche Tätigkeit eines Managers nur wenig mitteilen. Bestenfalls sind sie Ausdruck sehr vager Zielvorstellungen, die Manager von ihrer Arbeit haben. Die Managementwissenschaft hat, obwohl dem Fortschritt und Wandel verschrieben, seit mehr als einem halben Jahrhundert versäumt, die entscheidende Frage zu stellen: Was tut ein Manager? Wie aber soll Management als Disziplin gelehrt werden, wenn es auf diese Frage keine angemessene Antwort gibt? Wie sollen Planungs- und Informationssysteme für Manager entwickelt werden? Und wie soll die Praxis des Management verbessert werden?[3]

Planung, Organisation, Koordination, Kontrolle, diese vier, in allen Lehrbüchern bis zum Überdruß strapazierten magischen Begriffe, können aber die vielfältige Führungspraxis nur mit sehr großen Vereinfachungen beschreiben und bieten insgesamt ein zu grobes Raster an. Mintzberg stellt dem Ansatz von Fayol sein rollentheoretisches Konzept gegenüber, wonach die Führungstätigkeit mit zehn Rollen beschrieben werden kann. Aus der formellen Autorität entspringen drei interpersonelle Rollen (Repräsentations-, Führungs-, Kontaktrolle), aus diesen wiederum drei Kommunikationsrollen (Informationssammler, Informationsverteiler innerhalb des Systems, Informationsverteiler in der relevanten Umwelt), wozu noch vier Entscheiderrollen (Innovator, Konfliktlöser, Verteiler von Ressourcen, Verhandlungsleiter) kommen. Obwohl die einzelnen Rollen je nach der hierarchischen Stellung der Manager unterschiedliche Bedeutung und Ausprägung aufweisen können, sind sie miteinander untrennbar verknüpft und bilden eine einheitliche Gestalt.

Inwieweit der Ansatz von Mintzberg als neues Paradigma zum Erkenntnisfortschritt in der Managementlehre beitragen kann, ist nicht Gegenstand dieser Untersuchung. Sicherlich könnte man die Kommunikationsrollen auch anders einteilen und definieren; sogar andere, wie z.B. informelle, Rollen finden. Im Sinne des Scheinwerfermodells hat aber das Konzept von Fayol eindeutig zum besseren Problemverständnis — „Scheinwerfereinstellung" — beigetragen.

Malik geht mit seiner Kritik an der traditionellen Managementlehre noch weiter und zeigt ihre unzulänglichen erkenntnistheoretischen Grundkonzeptionen und fragwürdigen Annahmen auf.

> Obwohl die philosophischen Fundamente der meisten Autoren auf dem Gebiet der Managementlehre im Dunkeln bleiben und aus den Texten erschlossen werden müssen und dort, wo sie explizit gemacht werden, sie meistens oberflächlich und mit den späteren Ausführungen häufig nicht konsistent sind, läßt sich doch nicht übersehen, daß die Grundhaltung . . . technomorph ist.[4]

Diese technomorphe Grundhaltung, meistens mit „naivem Rationalismus", „technokratischem Konstruktivismus" verbunden, zeigt sich am besten in der Annahme, daß alle Organisationen und Institutionen ausschließlich durch planvolles menschliches Handeln zustandegekommen sind und aus diesem Grunde von Managern nach Belieben geändert werden können. Dieser naiv konstruktivistische Rationalismus kann in vielen Fällen die Illusion der totalen Machbarkeit und Beherrschtheit der verschiedenen Prozesse vortäuschen.

Die Ursachen dieser philosophischen Grundpositionen sind mannigfaltig und wie Leinfellner in seinen Schriften zeigt, sind sie der vorherrschenden, der auf Aristoteles zurückgehenden traditionellen Ontologie zuzuschreiben. Technomorphe Ansichten findet man auch bei Descartes, Hobbes, Voltaire, aber auch anderen Philosophen. Die überwältigenden Erfolge der Naturwissenschaften, der modernen Technik haben die Illusion der totalen Machbarkeit und Beherrschtheit der sozio-technischen Systeme weiter verbreitet und verstärkt und den Weg zu neuen erkenntnistheoretischen Fragestellungen versperrt.

Auch bei mehr Aufgeschlossenheit gegenüber erkenntnistheoretischen Fragestellungen konnten die Vertreter der Managementlehre keine bedeutende Hilfestellung erhalten, weil sich die traditionelle Ontologie bis heute hauptsächlich mit leblosen Gegenständen und Phänomenen beschäftigt hat. Ihre Betrachtungsweise war bis heute hauptsächlich statisch, die dynamischen Aspekte der Phänomene wurden bisher grob vernachlässigt. Die Versuche, mit Hilfe der Systemtheorie diese Unzulänglichkeiten zu eliminieren, haben auch nicht immer den gewünschten Erfolg gebracht.

Aus diesem Grund ist es verständlich, daß die Managementlehre ihre Grundannahmen und erkenntnistheoretischen Grundpositionen kritisch überprüft und dabei die bemerkenswerte Entwicklung der modernen Evolutionstheorie berücksichtigt.

Nach Auffassung der modernen Evolutionstheorie sind die sozio-technischen Systeme nicht nur das Ergebnis bewußter menschlicher Planung und Handlung, sondern in hohem Maße das jeweils vorläufige Resultat von vielfältigen Evolutionsprozessen.

Die Grundprinzipien der Evolutionstheorie sind im Grunde einfach, fast trivial. Die jeweilige Ordnung von sozio-technischen Systemen resultiert aus dem Zusammenwirken des Verhaltens der unterschiedlichen Systemelemente. Obwohl das Verhalten jedes einzelnen durchaus planvoll, bewußt, zweckrational erfolgen kann, ist das daraus resultierende Verhalten der Organisationen oft völlig anders als gewollt oder erwünscht, manchmal sogar etwas, was eigentlich niemand wirklich wollte. Alltägliche Erfahrungen aus der Führungspraxis bestätigen dies immer wieder.

Evolutionäre Systeme verfügen über wirksamere Regelsysteme und können deswegen praktisch beliebige Grade an struktureller Komplexität erreichen. Konstruktivistische Systeme sind dazu niemals fähig, sie haben auch meistens große Schwierigkeiten, mit erhöhter Umweltkomplexität fertig zu werden, deswegen sind sie auch nicht so effizient, anpassungs- und überlebensfähig.

Die Grundlogik des Verfahrens für die Beherrschung von Komplexität in evolutionären Systemen basiert auf dem Prinzip von Versuch und Irrtumsbeseitigung. Wie Rechenberg (1973) formal und experimentell nachgewiesen hat, ist dieses Prinzip unter evolutionären Bedingungen ein optimales Suchverfahren für die Optimierung von komplexen technischen Systemen. Die von der Natur evolvierten Problemlösungen als Vorbilder für technische Ausführungen zu nehmen, ist für gewisse Gebiete der Technik schon zur Selbstverständlichkeit geworden (Bionik). Beer (1973) hat auf dieser Grundlage ein interessantes Strukturmodell für die Unternehmensorganisation entwickelt, das von vielen Theoretikern und Praktikern als die optimale Lösung gewertet wird. Auch die Lehre von der informellen Organisation ist für das evolutionäre Management von großer Bedeutung. Die vielfältigen Rückkoppelungen in den betrieblichen Informationsprozessen, die verschiedenen Plan- und Zielkorrekturen können auf evolutionstheoretischer Grundlage wesentlich schöpferischer interpretiert und angewandt werden als aus naiv-konstruktivistischer Sicht.

Evolutionäres Management ist die logische Weiterentwicklung der systemorientierten Führungslehre, denn erst das Verständnis der Unternehmung als System ermöglicht die Anwendung der Wirkungsprinzipien der Evolution. Evolution kann nur im relevanten Systemzusammenhang erkannt, verstanden und angewandt werden. Die Unternehmung ist als evolvierendes, selbstorganisierendes System zu verstehen, das nur in einem begrenztem Maße durch bewußtes, geplantes Eingreifen gestaltet und gesteuert werden kann. Malik betont die folgenden Hauptkomponenten:

1. Selbstkoordination im Rahmen eines polyzentrischen Systems durch wechselseitige, antizipierende Anpassung und Modifikation des Verhaltens der beteiligten Personen oder Gruppen, wodurch eine wirksamere Komplexitätsbewältigung erreicht werden kann.

2. Das Verständnis des Verhaltens der einzelnen Personen als Resultat der Befolgung von Regeln, die nach der Auffassung der sozio-kulturellen Evolutionstheorie aus Interaktionen der Individuen unter- und miteinander und mit ihrer Umwelt, durch Selektion und Mutation entstehen. Diese Regeln sind häufig gar nicht bewußt, wirken aber de facto, und zusammen mit den gesetzten, angewandten Regeln bilden sie einen der wesentlichen Mechanismen der Steuerung eines sozio-technischen Systems.

3. Man muß stärker als bisher berücksichtigen, daß menschliches Handeln immer unbeabsichtigte Nebenwirkungen, Folgen, Ergebnisse „produziert", die manchmal weder von dem einzelnen noch von der Gesamtheit der Beteiligten erwünscht sind. Diese Nebenwirkungen können sogar positive Ergebnisse, echte Chancen darstellen und dadurch Wachstum, Diversifikation ermöglichen. Wie die Praxis zeigt, können sie aber auch echte Gefahren, Bedrohungen bringen, wodurch die Überlebensfähigkeit des Systems ernst gefährdet werden kann.

Die Auseinandersetzung über die Anwendbarkeit der evolutionstheoretischen Erkenntnisse in der Managementlehre hat einige Einwände aufgezeigt, die teilweise auf die dargelegten technomorphen Grundannahmen zurückzuführen sind. Man versucht Beispiele aus der Praxis vorzuzeigen, die die absolute Steuerbarkeit der sozio-technischen Systeme beweisen sollen. Fehlschläge, Mißerfolge, unbeabsichtigte Nebenwirkungen werden oft als Ergebnis absichts-

voller, bewußter menschlicher Handlungen interpretiert. Oft werden die Zielsetzungen im nachhinein an das eingestellte Resultat „angepaßt" und interpretiert und die Evolutionstheorie als trivial, unrelevant abgelehnt.

Obwohl die Diskussionen langsam die schwachen Positionen dieser Einwände mehr und mehr aufzeigen, wird es andererseits klar, daß diese Vorbehalte die Weiterentwicklung der Evolutionstheorie fördern werden. Die Evolutionstheorie wird sich umfassender mit den Gesetzmäßigkeiten von sozio-technischen Systemen auseinandersetzen müssen, um ihre Ergebnisse allgemeiner, plausibler präsentieren zu können. Das Aufkommen der evolutionären Erkenntnistheorie, einer dynamischen Ontologie, die Weiterentwicklung des formalen Apparates sind ein sicheres Zeichen dafür, daß wir in dieser Hinsicht noch am Anfang einer vielversprechenden Entwicklung stehen. Andererseits wollen wir aber hier darauf hinweisen, daß die Berücksichtigung der Evolutionstheorie in der Lehre und Praxis des Managements nur einen vielversprechenden Ansatz, Kontext oder ein neues Paradigma darstellen und keineswegs die anderen Ansätze, Paradigmen, Kontexte als absolut überflüssig hinstellen kann.

Im Sinne des Scheinwerfermodells kann aber das Paradigma „evolutionäres Management" die anderen Ansätze anders erscheinen lassen, gewisse Ergebnisse anders interpretieren. So kann z.B. die Entwicklung der Führungsansätze in dem evolutionstheoretischen Paradigma als die Weiterentwicklung des Regelsystems des Verhaltens interpretiert werden. Dies recht umfangreiche empirische und theoretische Material kann im Lichte der Evolutionstheorie vielfältiger ausgewertet und interpretiert werden. Selbstverständlich können diese Auswertungen nur interdisziplinär durchgeführt werden. Dabei könnte die mit den Gesetzmäßigkeiten der sozio-technischen Systeme erweiterte Evolutionstheorie eine Metatheorie der Managementlehre werden.

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ANMERKUNGEN

1 Kirsch (1981), S. 658.
2 Kirsch (1981), S. 662.
3 Mintzberg (1981), S. 66.
4 Malik (1979), S. 303.

LITERATUR

Beer, S., Kybernetische Führungslehre (Frankfurt/New York 1973).
Kirsch, W., Aspekte einer Lehre von der Führung, in: ZfB 51. Jg. (1981).
Leinfellner, W., Kausalität in den Sozialwissenschaften, in: G. Posch (Hrsg.), Texte zu Fragen der Kausalität (Stuttgart 1980).
Malik, F., Die Managementlehre im Lichte der modernen Evolutionstheorie, in: Die Unternehmung: Schweizerische Zeitschrift für Betriebswirtschaft, H. 4 (1979).
Malik, F. und Probst, G., Evolutionäres Management, in: Die Unternehmung: Schweizerische Zeitschrift für Betriebswirtschaft, H. 2 (1981).
Mintzberg, H., Der Managerberuf: Dichtung und Wahrheit, in: Harvardmanager, Nr. 2 (1981).
Rechenberg, J., Evolutionsstrategie: Optimierung technischer Systeme nach Prinzipien der biologischen Evolution (Stuttgart/Bas Cannstatt 1973).

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PROBLEME DER KONTROLLE DES DEUTUNGSVORGANGS IN DER VERSTEHENDEN SOZIOLOGIE MAX WEBERS

Franco Bianco

„Jede Deutung strebt nach Evidenz. Aber eine sinnhaft noch so evidente Deutung kann als solche und um dieses Evidenzcharakters willen noch nicht beanspruchen, auch die kausal *gültige* Deutung zu sein. Sie ist stets an sich nur eine besonders evidente kausale *Hypothese*".[1] Mit diesen Worten leitet Weber in „Wirtschaft und Gesellschaft" das Thema der Kontrolle des Deutungsvorgangs ein, das bereits in seinen vorangegangenen Schriften im Mittelpunkt der Aufmerksamkeit stand. In „Objective Möglichkeit und adäquate Verursachung in der historischen Kausalbetrachtung" hatte er unter Hervorhebung der Identität des logischen Verfahrens bei den Naturwissenschaften und der Geschichte allgemein von den Hypothesen gesprochen, die „‚intuitiv' in der Phantasie auf-[blitzen] und [. . .] alsdann an den Tatsachen ‚verifiziert' [werden]".[2] Mit grösserer Präzision kam er auf dieses Thema in dem Aufsatz „Über einige Kategorien der verstehenden Soziologie" zurück, der auch unter diesem Aspekt eine deutliche Vorwegnahme des Standpunkts darstellt, der in Webers nachgelassenem Werk vertreten wird. „Ein durch Deutung gewonnenes ‚Verständnis' menschlichen Verhaltens", heißt es am Anfang des Aufsatzes von 1913, „enthält zunächst eine spezifische, sehr verschieden große, qualitative ‚Evidenz'. Daß eine Deutung diese Evidenz in besonders hohem Maße besitzt, beweist an sich noch nichts für ihre empirische Gültigkeit. [. . .] Immer muß vielmehr das ‚Verstehen' des Zusammenhangs noch mit den sonst gewöhnlichen Methoden kausaler Zurechnung [. . .] kontrolliert werden, ehe eine noch so evidente Deutung zur gültigen ‚verständlichen Erklärung' wird".[3] Und ein Stück weiter betonte er: „‚Sinnhafte' Deutungen konkreten Verhaltens rein als solche sind natürlich auch für sie [die Soziologie], selbst bei größter ‚Evidenz', zunächst nur Hypothesen der Zurechnung. Sie bedürfen also der tunlichsten Verifikation mit prinzipiell genau den gleichen Mitteln wie jede andere Hypothese".[4]

Diese Stellungnahmen in ihrer Gesamtheit zeigen deutlich, daß das Problem einer Kontrolle der Deutung für Weber stets von großer Wichtigkeit war für die Erzielung von gültigen Ergebnissen durch die verstehende Soziologie, die er zweifelsohne auf dem Niveau einer Erfahrungswissenschaft gesehen haben wollte. Was aber ist eigentlich gemeint, wenn von einer „Kontrolle der Deutung" gesprochen wird? Die Frage ist, wie wir sehen werden, nicht überflüssig, und um sie beantworten zu können, werden wir zuerst versuchen, die Gründe deutlich zu machen, die Weber dazu veranlaßt haben, ein Überprüfungsverfahren gegenüber der Deutung für unerläßlich zu halten, um sodann auf die Art und Weise einzugehen, in der er diese Kontrolle vorzunehmen gedachte.

Es ist bekannt, daß für Weber der Gegenstand des soziologischen Verstehens im Sinn der Handlung besteht. Man muß hinzufügen, daß es für ihn nur durch den Unterschied zwischen der Beobachtung des äußerlichen Verhaltens des Handelnden und der Interpretation des Sinnes möglich ist, die Einheit und die Rationalität der verschiedenen Momente des Handelns zu erfassen. Jetzt können wir einige Folgerungen ziehen, und zum Beispiel unterstreichen, daß, falls der Sinn der Handlung nicht direkt wahrgenommen werden kann, dies bedeutet, daß die Kenntnis, die wir eventuell von ihm haben, nicht Ergebnis eines unmittelbaren Wissens sein kann. Sie rührt vielmehr von einer Konstruktion her, an deren Ursprung man leicht eine mehr oder weniger lange Reihe von Experimenten feststellen kann, die weit davon entfernt sind, mit ausreichender Überzeugungskraft aufzutreten und

von Mal zu Mal eine Bestätigung ihrer Gültigkeit erfordern. In diesem Sinne schreibt Weber: „Kontrolle der verständlichen Sinndeutung durch den Erfolg, den Ausschlag im tatsächlichen Verlauf, ist also, wie bei jeder Hypothese, unentbehrlich".[5]

Nachdem so der hypothetische Charakter der Deutung festgestellt ist, bleiben die spezifischen Modalitäten zu klären, die es der verstehenden Soziologie erlauben, die zur Diskussion stehenden Kontrollvorgänge vorzunehmen. Die Äußerung Webers hierzu ist, wie man weiß, sehr knapp und beschränkt sich darauf, vier Verfahrensweisen zu unterscheiden und kurz zu charakterisieren. Man kann somit sagen, daß sich auf der einen Seite die Berufung auf das „psychologische Experiment" und die „Statistik"[6] befinden, deren gemeinsamer Zug in der Zuhilfenahme von Verfahren mit nicht-interpretierendem Charakter besteht und die mit einem sehr hohen Potential zum Wahrheitsnachweis ausgestattet sind, gerade weil ihnen beobachtende Methodologien zugrunde liegen. Auf der anderen Seite finden wir dagegen das „gedankliche Experiment" und die „Vergleichung",[7] die vom theoretischen Standpunkt aus geringere Probleme aufwerfen wegen ihrer grundsätzlichen Analogie zu dem, was den Gegenstand der Nachprüfung zu bilden hat, aber aus eben diesem Grund auch beschränktere Fähigkeiten aufweisen, da sie sich auf dem gleichen Gebiet der hypothetischen Konstruktionen bewegen, auf dem sich die zu überprüfende Sinndeutung befindet.

Die von Weber als zwingend vorgebrachte Forderung nach einer Kontrolle der Deutung wirft somit Probleme auf, die nicht ingnoriert werden können, und auf die sich in letzter Zeit die Aufmerksamkeit der Kritik gerichtet hat.[8] Es scheint in der Tat, daß in der einen Hinsicht Verfahren von beobachtendem Charakter zu bevorzugen sind, während in der anderen Hinsicht hermeneutische Methodologien eher angebracht erscheinen; beiden gemein ist jedenfalls das Bewußtsein, daß in jedem der Fälle letzten Endes dem Kontrollvorgang genaue Grenzen gesetzt sind. Es ist deshalb notwendig, die verschiedenen Möglichkeiten zur Kontrolle der Deutung aufmerksam zu untersuchen und dabei vor allem die Leistung der nicht-hermeneutischen Verfahrensweisen zu berücksichtigen.

Die Deutung des Sinnes — so wurde von Weber wiederholt gesagt — ist nicht das Resultat der Beobachtung. Sie ist unerläßlich für die kausale Erklärung der Handlung, ist aber ihrerseits keineswegs das Ergebnis einer aus der Beobachtung gewonnenen Erklärung. Um sie zu kennzeichnen, prägt Weber den völlig neuen Begriff der „deutenden Erklärung", der er im Vergleich mit der kausalen Erklärung eine Mehrleistung zuschreibt, die mit der Fähigkeit, den Sinn der Handlung zu erfassen, übereinstimmt.[9] Wahr ist, daß der auf diese Weise erzielte Vorteil auf der Ebene der Erkenntnis durch eine geringere Gewissheit über die Gültigkeit des *deutenden* gegenüber dem *beobachtenden* Erklären aufgewogen wird. Aber es trifft auch zu, daß das erstgenannte, das höher und weiter zielt, als dies dem zweiten möglich wäre, einer größeren Möglichkeit des Irrtums ausgesetzt ist, und zwar nicht nur infolge seiner Methode, als vielmehr wegen der sicher erhöhten Schwierigkeit, den eigentlichen Gegenstand genau zu treffen. Was die Mehrleistung deutlich macht, ist genau dies, daß ein solches Risiko in Kauf genommen werden muß, wenn der Sinn der Handlung zu einem möglichen Objekt der Erkenntnis werden soll.

So erscheint evident — und Weber mußte sich dessen wohl bewußt sein — daß der Vorgang zur Kontrolle der Deutung durch beobachtende Methoden nicht im Stande ist, einen positiven Nachweis für die Gültigkeit der Deutung zu erbringen. Falls dies möglich wäre, würden wir uns in Widerspruch zu den Ausgangsbedingungen befinden, welche die Deutung als besondere Erkenntnisform legitimierten und ihr dann noch die Fähigkeit bescheinigten, eine zusätzliche Leistung im Hinblick auf die Beobachtung zu liefern. Denn der Beobachtung ist es, wie wir schon bemerkt haben, an sich unmöglich, den Sinn der Handlung zu durchdringen. Es bleibt also nichts anderes übrig, als diese Form der Kontrolle ausschließlich auf jenen Bereich zu beschränken, in dem deutende Erklärung und beobachtende Erklärung übereinstimmen. Ohne den Charakter einer Bestätigung anzunehmen, besteht doch wenigstens die Möglichkeit einer Widerrufung der Gültigkeit der Deutung, falls die Ergebnisse der Beobachtung gegen die Deutung sprechen sollten. Immerhin kann kaum angenommen

werden, daß eine solche These eine tatsächliche Korrektur des Weberschen Standpunkts darstellt. Es ist eher möglich, sie als seine Verdeutlichung und in gewissem Sinne als seine Weiterentwicklung zu sehen.

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ANMERKUNGEN

1 Weber, M., Wirtschaft und Gesellschaft, Bd. I (Tübingen 51976), S. 4.
2 Weber, M., Gesammelte Aufsätze zur Wissenschaftslehre (Tübingen 41973), S. 278.
3 Weber (1973), S. 428.
4 Weber (1973), S. 437.
5 Weber (1976), S. 4.
6 Weber (1976), S. 4—5.
7 Weber (1976), S. 5.
8 Winch, P., The Idea of a Social Science (London 1958); deutsche Übersetzung: Die Idee der Sozialwissenschaft und ihr Verhältnis zur Philosophie (Frankfurt a. M. 1966), S. 143—53.
9 Weber (1976), S. 7.

* * *

THE ONTOLOGY OF LAW

Chhatrapati Singh

What kinds of entities qualify to be a member of a legal system? Is the membership arbitrary or are there specific principles which govern legal membership and identity? In this paper I shall briefly argue that there are some specific rules governing legal ontology, and that these rules of inclusion and exclusion are necessary to every legal system.

The basic legal unit around which a legal system is built has been traditionally taken to be a 'person'. Attempts are then made to distinguish a juristic person from a physical or a natural person. The orthodox approach is to divide Private law into three parts: the law of persons, the law of obligations and the law of property. The question of legal ontology is discussed mainly under the first division of private law, in terms of 'status', 'natural personality' and 'corporate personality'. The problem of the criteria defining basic legal unit, is, however, pervasive. It turns up in discussions of Public law whenever the ontological status of the State comes under scrutiny. A satisfactory criterion ought to provide a unique definition which will encompass the ontology of both the Private and the Public law.

The basic problem of legal ontology has its source in the practical difficulty that not all entities seem to possess a full legal personality; and secondly, sometimes one does not wish to grant a legal personality to beings who ought to possess it. Thus, in early systems slaves were regarded as mere chattels and aliens were not allowed to bring suit in the courts. Many human beings may possess restricted legal personalities, such as infants and lunatics. Moreover, legal personalities may sometimes be granted to entites other than individual human beings, such as a group of human beings, a fund, a company, trust and even to idols[1] and animals.[2]

Typical responses to the question of legal ontology have taken two basic approaches. In the first approach physical, natural or rational human beings are distinguished from non-persons such as associations or companies. To provide a unitary theory of a juristic person, either the ontic reality of the first or that of the second type of entity is then denied. We have thus R. Ihering affirming the reality of only physical human beings and defining corporations as legal formulas having only an epistemic worth.[3] Kelsen, on the other hand, denies that the notion of physical or natural human being in principle creates any legal reality. For him the corporations are legally real exactly in the same way as natural persons are, the notion of a juristic person is all that is practically required.[4] A third, and a middle of the road response, is to grant ontic reality to both natural persons as well as non-persons such as corporations. We find Gierke speaking of the group as having a real will, a real mind and a real power of action; and moreover, its functions divide up in almost the same way as that of the human body.[5]

All these theories have perhaps served their historical purposes. But, by making a decision about the ontology of law based only on either the local pragmatic necessities, or the formal aesthetics of legal language, they have failed to provide a universal criterion or justification for deciding what should or what should not be a juristic person. Since there is no moral or rational justification, in the final analysis such decisions become a matter of arbitrary fiat or decree.

The second typical approach to solve the problem of legal ontology has been to shift the question from being one of law of persons to that of being a question of law of obligations. Juristic persons are then defined as those capable of posessing legal rights and legal duties. Hohfeld, Kelsen and H. L. A. Hart, among others, have advocated this approach. Such a definition is only a semantic definition and not a real definition, and it is indeed

circular. By saying that legal persons are those who possess rights and duties and at the same time defining the possessors of rights and duties as legal persons, one does not manage to answer the basic question of legal ontology—who shall have rights and duties and be a legal entity?

Hart's analysis confuses the issue further by suggesting, in a Wittgensteinian manner, that to understand the concept of a legal person one must refer to different legal systems and see what rules enable one to make true or untrue statements about legal entites within that system.[6] Such an experiment will no doubt make a person knowledgeable about what different types of entities are accepted as legal entities in different legal systems, but will it tell him why there are these basic differences? On what basis will he appraise these differences? Any rational person today, I am sure, will find a legal system which has a place for slaves in it objectionable and repugnant. The question of legal ontology is, evidently, not purely a factual matter which can be settled by mere observation. If anyone were to ever actually carry out the type of investigation which Hart suggests, I am sure, he would soon discover that there are limits to the tolerable differences between different legal systems.

A failure to find out what is common to persons, corporations companies, trusts, etc., does not, of course, mean that there is nothing in common between them. This remark applies to the Wittgensteinians in general, a failure to find the essence, say between different games, does not necessarily mean that the games have nothing in common. One must grant the possibility that one has not looked for the right elements, or in the right direction; or that one has not been successful in having the appropriate insights into the matter so as to be able to discover what binds all these notions together.

Following Hans Vaihinger's work it has perhaps become a common practice amongst lawyers and jurists to refer to the theoretical terms of legal ontology as 'fictions'.[7] Despite its modern complex technical use in legal language, this terms seems to have retained its original confusions. The confusions stem from the fact that, like the term 'illusion', 'fiction' has both epistemological as well as moral implications. Legal experts, such as Kelsen and Lon. L. Fuller, perhaps under the influence of Logical Positivists and Analytical philosophers, have tended to discuss the problem of legal fictions as though it were only a matter of epistemological concern.[8] Fuller points out that legal fictions are theoretical constructs of law and function almost in the same way as the theoretical constructs of mathematics, physics and other sciences do. He is no doubt right in emphasizing that philosophy of language can only be poorly done if one neglects the language of law. What Fuller fails to notice is that although there is an epistemological similarity between the theoretical terms of mathematics, physics and law, there is also at the same time an essential difference. Whereas the theoretical terms of mathematics lie at the one end of the moral spectrum, those of the law lie at the other extreme. How one defines or accepts one's mathematical ontology may very indirectly be the grounds for injustice in the world, but how one defines or accepts one's legal ontology affects the existence of just or unjust conditions in the world immediately. If numbers and triangles are said not to be existing in any or some possible world, there is perhaps not much to worry. But if some people or groups are said not to be existing in any or some possible legal world, there is certainly a great deal to worry, for to deny them existence is to deny them their rights, duties and privileges. The first statement would be amoral but the second may be immoral.

What may be a permissible legal ontology, then, is evidently a moral question; and it is a question of the sort which cannot be sought to be answered by referring to the law of obligations, for its answer is already presupposed by the law of obligations. Where, then, must one look for the solution? In so far as law is a systematic enterprise to bring about certain conditions in the society, the answer to the question who may be its members must clearly depend upon what is taken to be the systematic aims and conditions which people are trying to bring about by means of law. In other words, the criteria concerning who shall possess rights and duties and thus be a legal entity are dependent upon what we take to be

the ends of law. The relationship between the criteria for class membership and the ends of the system is not something which is peculiar to law, it is true of all teleological systems. If, for example, we wish to create a team which will play good football, the criteria for membership are good health, ability to control the ball, etc. Similarly, if we want to create an administrative system for the country, we select men with certain educational and technical qualifications; or if we wish to prepare a system which will defend the country against external invasions, the criteria for class membership to such a system are such that alert, healthy and obedient men are chosen. For deciding on the criteria for class membership for any system which is meant to achieve something, we must essentially and naturally know what are the purposes, goals and aims which are desired in creating that system.

Why do we create and sustain a legal system? Or, as the question has been traditionally put, what are the teleological postulates of a legal system? We must, evidently, be able to decide upon the answer to this question before we are able to say who may and who may not participate in the legal system.

The solution that I wish to provide is Kantian. Some basic ideas of the civil-society developed along the lines of Kant's moral theory seem to me to be in the right order. An analysis and justification of the civil-society is indeed necessary for both explaining and justifying the ends of law. However, I will not indulge in this foundational analysis presently. The specification and the appraisal of what can be taken to be the ends of law, can be done independently and is all that is perhaps required to make the essential point of this paper.

It is only in a civil-state in which a rule of law and a goverment exist that our rights and freedom can be protected; and it is only in such a state that force can be used in a legitimate manner to coerce some who infringe upon the rights and freedom of others. Prima facie, we need law to systematise and bring peace and order in the society. But why would we need to bring peace and order? Evidently because these are instrumental to the possibility for each individual to excersise his freedom so as to work his way towards whatever he takes to be his moral and teleological ends. Or as Kant would have it, "to allow the greatest possible human freedom in accordance with laws by which the freedom of each is made to be consistent with the freedom of all others".[9] The end of law is hence freedom, derivatively, it is also equality and independence since these two conditions would have to be satisfied to achieve freedom. To say that the teleological postulates of law are freedom, equality and independence, is not to say that any or some legal systems have achieved it, but only that these are the ends towards which all legal systems are propelled, and for the sake of which they all exist, where they really do.

If the ends of law are freedom, equality and independence, then the answer to the question: who shall possess rights and duties and be a legal entity—is evident. *Any and only those entities within the legal jurisdiction about which we have no evidence that they will be an obstacle to the achievement of freedom, equality and independence, can become legal entities.* From the epistemological perspective, this formulation brings five types of entities under consideration: i) those entities for which we have clear evidence that they will not enhance the ends of law; such entities can never become legal entities; functionally corporate bodies such as the Mafia and the Ku Klux Klan fall into this category. ii) At the other end of the spectrum are those entities for which we have clear evidence that they will enhance the ends of law, the law encourages such entities to come into existence; groups which wish to work for the needy, the disadvantaged or the handicapped fall into this category. iii) The majority of groups and individuals, however, fall into this third class and the next two classes: those entities about which we do not know whether they will or they will not enhance the ends of law. All individuals and groups in this category, unless they give evidence to the contrary, are hence to be granted membership in the legal system under the assumption that their ends are consistent with the ends of law. iv) Those entities about which we have only some evidence that they will enhance the ends of law, and v) those entities about which we have only some evidence that they will not enhance the ends of law; these last two categories require special treatment in law. The former's existence is allowed by restricting their activities

in many ways, the latter's activities are restricted in a few ways. In the former category fall groups such as those who deal in pornographic material, and in the second, groups such as those for example who deal in tobacco.

The principle outlined above for determining the ontology of law is *synthetic*, in the sense that it informs one how the legal world is to be populated, but it is also *apriori*, because it bases itself not on the experience of any particular legal system but on the pure postulates which are common to all legal systems. This also answers the traditional question—what is common to natural persons, groups, corporations, associations, funds, etc. What is common to them all when they are legal entities is that they all share the same teleological ends, that is, none of them are obstacles to freedom, equalitiy and independence, and all of them may increase the possibility of the achievement of these ends. The above principle, being a basic synthetic apriori proposition of law, regulates the legal ontology but it leaves open the empirical considerations about when exactly a legal entity comes into being and when it goes out of existence. It also leaves open the possibility of creating an infinite number of novel and different legal entities, because although it can be known apriori what type of legal entities will have their ends consistent with law, it can not be known apriori in what way they will actually realize these ideals.

This principle applies universally to both the Private law and the Public law. It does not exalt the State into being a peculiar type of entity to which the principle which applies to the individuals does not apply. Only a state whose teleological ends are consistent with that of the law is a legal State, otherwise it is merely a system by fiat, force or decree. What this means is that a legal State must work for freedom, independence and equality, and it must thus satisfy the conditions mentioned above, namely, that it must allow for the creation of an infinte number of legal entities. There should be no arbitrary and apriori restriction on the existence of individuals or groups.

This basic principle of legal ontology lays down another strict restriction for legislators and for those involved in the codification of law. It requires that in deciding whether or not an entity can become a legal entity, only those aspects of its existence be taken into consideration which are relevant to the achievement of freedom, independence and equality. Factors over which an individual or a group has no control, or which he can not determine for himself, evidently, can not be the aspects which are conducive to the achievement of freedom, independence and equality. Such factors as the colour of one's skin, one's caste, the place of one's birth are obvious factors which an individual or a group can not determine for itself, and which are hence not conducive to the attainment of the ends of law. It follows therefore that classifications such as 'Blacks', 'Scheduled Castes and Tribes', 'Orientals', etc., can not be a part of the legal ontology. Such biological, sociological, geographical and other non-legal attributes should not even enter the language of law.

What happens if the legislators create positive legal rules which classify people in non-legal categories, such as 'Blacks', etc.? Since they have picked on some common factor, they will no doubt succeed in creating a class, one which perhaps did not previously exist, but since these common factors are non-legal the class will be a class only in positive legal rule, in actuality it may not exist, or, as mostly happens, it will be slowly turned into a political class by shrewd politicians. Secondly, since the creation of such classes is not consistent with the basic principle of legal ontology, the likelihood that just conditions will thereby obtain in the society will be remote, only the possibility of greater injustice will prevail.

Evidence for the truth of the above analysis can easily be marshalled. One has only to observe the atrocities perpetuated on the Scheduled Castes and Tribes and on the Blacks for political reasons. The economic betterment and development of a few Scheduled Caste and Black people can be explained in terms of their own enterprise and efforts and due to the market situations. If betterment of the deprived and the disadvantaged is required it must be done in ways which are realistic, not by merely legislating it and assigning to law a function of which it is inherently incapable. Finding out and discussing what are the realistic ways is an important question in political economics which can not be entered upon here, my

aim here has been only to point out the possible conditions under which such a realistic development can take place.

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NOTES

1 See Pramatha Nath Mullick v. Pradynma Kumar Mullick (1925). L. R. Ind. App. 245. Discussed by P. W. Duff, in: Camb. L. J., Vol. 42 (1927), p. 3.
2 See cases concerning roosters and caterpillars in G. W. Keeton, *The Elementary Principles of Jurisprudence* (London ²1949), p. 149.
3 Ihering, R., *Geist des römischen Rechts* (Leipzig 1872), i, p. 202. Translated by O. De Meulenaere as *L'esprit du droit Romain* (Paris 1880).
4 Kelsen, H., *Pure Theory of Law* (Los Angeles 1967), pp. 168—191.
5 Gierke, O. v., *Natural Law and the Theory of Society* (Boston 1957).
6 Hart, H. L. A., "Definition and Theory in Jurisprudence", in: L. Q. R., Vol. 37 (1954), p. 70.
7 Vaihinger, H., *Die Philosophie des Als Ob* (Berlin 1911). Translated by C. K. Ogden as *The Philosophy of 'As If'* (New York 1924).
8 Fuller, L. L., *Legal Fictions* (Stanford 1967).
9 Kant, I., *Critique of Pure Reason* (London/New York 1965), A317/B373. Also see "Über den Gemeinspruch: Das mag in der Theorie richtig sein, taugt aber nicht für die Praxis", translated by H. B. Nisbet, in: *Kant's Political Writings* (Cambridge 1970).

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STRATEGIES IN PHILOSOPHICAL PSYCHOTHERAPIES

Ronald L. Burr

In this paper I propose a model of some interrelated uses of philosophy in psychotherapy that fits well with some related philosophical approaches which have remained strong in the Anglo/American tradition, for example those of James, the Austro/Anglo Wittgenstein, Rorty and Goodman. As such, I am extending 'philosophical therapy' into a wider treatment-context than the context of professional philosophers. I have previously indicated that doing this is not out of keeping—unjust to, inconsistent—with what Wittgenstein considered philosophical therapy to be.[1]

Two characteristics which these philosophers share bear on being able to characterize 'philosophical therapy'. First, they are reactive to theory (cf., *PI*, § 118) rather than theoretically proactive. That is, their philosophizing starts with theorizing which is already in the air (cf., *PI* § 109), and instead of reworking it into hopefully a better theory, they criticize its assumptions.[2] What is their criticism based on? Not on anything theoretical; for what gets criticized is basing at all. This second characteristic has been referred to as anti-essentialism and also anti-foundationalism (cf., *PI* § 124).

There could not be one and only one thing called 'philosophical psychotherapy', because there is not just one philosophy or one psychotherapy. Or better, anyone is challenged to supply a list of features common to (and distinctive of) all cases of either activity, just as Wittgenstein challenged all comers to produce such a list for all instances of what is called 'playing a game' (cf., *PI* § 66). In a similar vein, a practicing psychotherapist says:

> The term 'psychotherapy' has become an umbrella for a diversity of overlapping, related, contrasting, contradictory, and entirely disconnected concepts and practices. The effort to demonstrate some continuity between all psychotherapeutic disciplines can be accomplished only by extending the meaning of terms to syncretic extremes—to provide definitions so over inclusive as to be entirely meaningless.[3]

Similarly, little has come out of the philosophical tradition that comprehensively characterizes all philosophical activity.

What Rorty, for example, does in the name of philosophy he somewhat loosely connects with the tradition by building on the Socratic notion of philosophy as the love of wisdom:

> One way of thinking of wisdom as something of which the love is not the same as that of argument, and of which the achievement does not consist in finding the correct vocabulary for representing essence, is to think of it as the practical wisdom necessary to participate in a conversation.[4]

Philosophical activity is not seen by him as "'another way of knowing' . . . 'understanding' as opposed to predictive 'explanation'. It is better seen as another way of coping".[5] In one description given of this conversational activity we philosophers

> . . . play back and forth between guesses about how to characterize particular statements or other events, and guesses about the point of the whole situation, until gradually we feel at ease with what was hitherto strange.[6]

As long as one understands the words therein in this 'reactive', non-foundationalist, anti-essentialist framework, one may see what follows in relation to a definition of philosophical psychotherapy which has already been proposed:

> . . . philosophical psychotherapy may be defined as any system that utilizes beliefs, attitudes, convictions, a person's *Weltanschauung* or philosophy of life as a vehicle to alter, control or cope with his psychological or emotional problems, thereby changing his behavior pattern, psychological or emotional state, hence rectifying a maladjusted condition.[7]

I begin my discussion, of the first of three sorts of therapeutic strategies, where I left off in my previous defense of extending Wittgenstein's 'philosophical therapy' to persons other than professional philosophers. There I proposed a piece of Wittgenstein's advice to Drury as an example of philosophical therapy which is not aimed at a philosopher *qua* philosopher.[8] Drury, in the first phase of medical residency, complained to Wittgenstein of being "distressed" at his own ignorance and clumsiness. Wittgenstein's 'treatment' included the following:

> You said . . . that possibly you had made a mistake in having taken up medicine; you immediately added that probably it was wrong to think such a thing at all. I am sure it is. But not because being a doctor you may not go the wrong way, or go to the dogs, but because if you do, this has nothing to do with your choice of profession being a mistake. For what human beings could say that would have been the right thing if this is the wrong one? You didn't make a mistake because there was nothing at the time you knew or ought to have known that you overlooked. Only this could have been called a mistake . . .[9]

The continuation of Wittgenstein's advice better fits my second grouping of strategies, and I will return to it.

Since Drury's own remark that he was "*probably* wrong to think he had made a mistake" (emphasis added) indicated that he was troubled that he *might* have made a mistake, Wittgenstein's reply takes the form of clarification. Drury might fail as a doctor or even as a human being. However, if there is nothing he could or should have known which would have indicated this, he could not be said to have made a mistake.

True to the approach remarked of in my introduction, Wittgenstein did not justify his comment by basing it in some extra-linguistic meaning, essence, or foundation of what is called a mistake. Rather his reason centers around an agreed upon, normal sense of being able to say what was the right thing to do, in such a context, if this were the wrong thing to do. As such, his remarks are in keeping with his later work. This problem, like the philosophical problems he got his "light" from, was to be solved "by looking into the working of our language—in such a way as to make us recognize those workings", even though we might have "an urge to misunderstand them" (*PI* § 109).

Rather than inevitable truth, Wittgenstein indicates what Rorty calls changeable ". . . facts about what a given society, or profession, or other group, takes to be good ground for assertion of a certain sort".[10] This context is one of norms of discourse; and I think it would be possible to see "philosophical psychotherapy" exclusively as investigations surrounding what is whithin and outside of such norms. One might say that Drury had not done this in at least one area and had suffered as a result.

I now move to a second grouping of strategies by continuing with Wittgenstein's advice to Drury.

> . . . and even if you made a mistake in this sense, this would have to be regarded as a datum as all other circumstances inside and outside which you can't alter (control). The thing now is to live in the world in which you are, not to think or dream about the world you would like to be in . . .[11]

After agreeing with Drury that he had not made a mistake and having clarified the reasons for saying so within what might be called 'the social justification of belief',[12] Wittgenstein turns to a consideration of what is to be done if Drury's choice of profession *was* a mistake. That choice was spoken of by Drury in past tense. As such, the past choice would be agreed upon by both (and normally everyone) as a circumstance over which he would no longer be thought to have control. Given this, Wittgenstein shifted his strategy to something they both

might agree *was* subject to Drury's control, namely his evaluative statements made to himself regarding an event seen as past.

Drury and the rest of us would generally agree that he may now think sentences to himself like "I like this", "This is good", or "I don't like this", "This situation is not as good as another might have been", and so forth. Wittgenstein challenged him to investigate this, or at least, the latter, more negative evaluating.

Whereas the first group of strategies directly challenges or investigates the complainant's view of the world, the second naturally follows upon the former and includes challenges or investigations of the complainant's reaction to self, or situation as characterized.

One might jump to the conclusion that this group of strategies assumes and leaves unchallenged a fact/value distinction. This would be to forget the stress, in the first grouping, on seeing self and world-characterizations as cast in *optional* matrices of justification. It would be, as Rorty fears, to disguise ". . . the fact that to use one set of true sentences to describe ourselves is already to choose an attitude toward ourselves, whereas to use another set . . . is to adopt a contrary attitude".[13] This second grouping includes investigations of evaluative reactive statements made toward previous self and world-characterizations wherein there are "value-conflicts" between the value or values imbedded in the characterization and those constituting the reaction.

Finally, at least one other fruitful set of strategies seems obviously worthwhile discussing in the context of this paper. A philosopher trained in the tradition which has been the subject of this paper may well be as qualified as any other to facilitate investigation of another, third sort, namely of a complainant's methods of attempted change in an environment characterized as unsatisfactory, of formulating what constitutes satisfactory change for him, and when it will be considered achieved. The situation envisioned is one in which self or world is already well characterized; that is the complainant has reached a "negotiated settlement" between normal standards and his own perhaps creative alternative characterization. Furthermore, he has perhaps examined the statements he makes to himself which express an urge for the characterized situation to be otherwise. What may now bear investigation is any attempt to negotiate for change within the social and/or natural environment.

Included under this grouping are strategies involving general agreements about successful inductive and deductive reasoning, clear statements of problems, hypothesis formation and testing, and the like. Quite generally these strategies involve investigation of a complainant's use of self-corrective methods of testing how their decisions, statements, choices, desires, requests, confrontations, and the like, are received by social and natural groups. In this grouping the strategies deal not so much with characterizing what is in the world, or society as how what we see as in the world or in society can be brought into harmony with one's own use, where part of the enterprise includes helping to clarify what the individual's uses are.[14]

If a complainant resists doing this enterprise, however, perhaps further investigation is warranted into his reason for not doing so. If his reason assumes statements regarding himself or his world-characterization as more or less objectively true, unchangeable, even determined (from now on), one might challenge these assumptions as possibility attempts to abrogate responsibility for making self-corrective, changeable, time-related choices regarding stating his own "project".[15]

Why have I said that the philosophers who are the subject of this paper are as well qualified as anyone else to guide the investigations I have just mentioned—and which I have mentioned generally in this paper? For one thing, anyone is challenged by them to show grounds for distinctions based on objectively delineated subject matters or method, between scientists, philosophers, religionists, historians, art critics, etc., rather than those which point to, as Kuhn has said, "patterns of education and communication".[16] Further, anyone is challenged to answer why, then, scientists (for example) are to be the keepers of self-corrective methods. Second, though philosophers are not seen in this approach as having a special kind of knowledge about knowledge,

> The useful kibitzing they can provide on various topics . . . [Such as, I take it, those the subject of this paper] is made possible by their familiarity with the historical background of arguments on similar topics, and, more importantly, by the fact that arguments on such topics are punctuated by stale philosophical cliche's which . . . other participants have stumbled across . . . but about which professional philosophers know the pros and cons by heart.[17]

After the challenge to the belief in an objective self or world against which our characterizations can be checked for correctness, the activity remaining is conversational, wherein the standards of rightness and wrongness (better and worse) are negotiable . . . and the point is satisfaction of individual and social goals. Philosophers, perhaps by accident of history, are well accustomed to such conversation and negotiation over standards. Of course it would help, to paraphrase Rorty, to have Wittgenstein's "dialectical acuity", Heidegger's "historical learning", and Dewey's "vision of a new kind of society", guided not "by the ideal of objective cognition but by that of aesthetic enhancement".[18]

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NOTES

1 Burr, R., "Wittgenstein's Philosophical Therapy and Philosophical Psychotherapy", in: R. Haller and W. Grassl (eds.), *Language, Logic and Philosophy: Proceedings of the 4th International Wittgenstein Symposium* (Vienna 1980).
2 Rorty, R., *Philosophy and the Mirror of Nature* (Princeton 1979), p. 366.
3 Buck, L., *Autonomy Psychotherapy: Authoritarian Control Versus Individual Choice* (North Quincy 1979), p. 18.
4 Rorty (1979), p. 372.
5 Rorty (1979), p. 356.
6 Rorty (1979), p. 319.
7 Sahakian, W., "Philosophical Psychotherapy", *Psychologia*, Vol. 17 (1974), p. 180.
8 There, as here, I impute no intention to Wittgenstein to have so extended what he called 'philosophical therapy'. Also, my calling this 'advice' suggests nothing normative about how philosophical strategies should get introduced into potentially therapeutic situations; it is 'advicy' because in letter form.
9 Burr (1980), p. 297.
10 Rorty (1979), p. 385.
11 Burr (1980), p. 297.
12 cf., Rorty (1979), p. 9.
13 Rorty (1979), pp. 363 f.
14 Cf., Rorty (1979), p. 359.
15 Cf., Rorty (1979), p. 361.
16 Rorty (1979), p. 331.
17 Rorty (1979), p. 393.
18 Rorty (1979), p. 13.

* * *

WITTGENSTEIN AND THE FOUNDATION OF SOCIAL SCIENCES

Hugh P. Gallacher

Although Wittgenstein's thought should be conceived as primarily centered around epistemological matters and definitively not as an empirical explanation, the distinction between the two focuses can easily be blurred and as a consequence the false idea may arise in fact Wittgenstein was (among other things) a social scientist.

Though erroneous, such an interpretation indeed has a certain plausibility. Remember, for instance, Wittgenstein's criticism of Frazer's anthropology. Remarks such as: "Nur beschreiben kann man hier und sagen: so ist das menschliche Leben" (*BFGB* , p. 40) and "Die historische Erklärung, die Erklärung als eine Hypothese der Entwicklung ist nur *eine* Art der Zusammenfassung der Daten — ihrer Synopsis. Es ist ebensowohl möglich, die Daten in ihrer Beziehung zu einander zu sehen und in ein allgemeines Bild zusammenzufassen, ohne es in Form einer Hypothese über die zeitliche Entwicklung zu machen" (*BFGB*, p. 45) could be understood by a superficial reader as a defence of synchronical description of empirical data—in other words: as a plea for a non-historical anthropology. Again, this opinion is only one step removed from regarding Wittgenstein's remarks already as a first illustration of such an anthropology.

In fact Wittgenstein had a life-long interest in anthropology and psychology. He was acquainted not only with Frazer's but also with Malinowski's work and he was well-informed on the theories of Bühler and other Gestaltists.[1] But notwithstanding this, we know that Wittgenstein did not see himself as a social scientist. On the contrary, he was always clear about his own, philosophical, position towards the empirical sciences. He wished to describe the world in its essence, not in its multiplicity: "our investigation, however, is directed not towards phenomena, but, as one might say, towards the 'possibilities' of phenomena. We remind ourselves, that is to say, of the kind of statements that we make about phenomena" (*PI* 90). Wittgenstein's considerations, therefore, are grammatical. His aspiration was to eliminate misunderstanding with the help of a "perspicuous representation" of the way we use our words (*PI* 122). Seeing that the problem of psychology (and I would add: also of all other social sciences) is the presence of "conceptual confusion" that cannot be solved through experimental methods, Wittgenstein proposed an investigation *for* psychology which is not an investigation *in* psychology (*PI* II xiv). The utility of such investigations for the fruitful development of the empirical sciences seems to be evident: of course it is useful to know beforehand what in point of fact can be asked before trying to find the answers. Yet as far as I know, a systematic inventory of the various items of conceptual confusion that Wittgensteinian investigations have been able to solve and the different influences of these solutions upon the development of the respective social sciences has not yet been executed.

In this paper I cannot perform this difficult though urgent task, but I will insist on another aspect of Wittgenstein's importance for the social sciences. A major method Wittgenstein applies in his investigations is what Kenneth Burke calls the method of representative anecdotes. Whenever Wittgenstein tells us "Let us imagine a language . . .", "Imagine a script . . .", "Consider a language game . . .", etc., he introduces us to a situation with a more or less realistic character. Obviously his strategy is to derive philosophically relevant conclusions from these anecdotes, but besides this Wittgenstein (being an unconventional and prolific thinker) often lards his examples unintentionally with original ideas about the human character. As a kind of "spin-off" these ideas may contain promising perspectives for the empirical study of man and society. The question for social scientists then is how to admit these ideas into their corpus of knowledge. I will distinguish four different "ways in",

conjoinable into three categories. I will argue that the three categories constitute one theoretical system and consequently are interdependent.

1. Wittgenstein's anecdotes contain more than once highly intelligent observations of phenomena that deserve further empirical study as to their qualities or process. Take, for instance, his remarks on the genesis of belief. "The child learns to believe a host of things. I.e. it learns to act according to these beliefs. Bit by bit there forms a system of what is believed, and in that system some things stand unshakeably fast and some are more liable to shift. What stands fast does so, not because it is intrinsically obvious or convincing; it is rather held fast by what lies around it" (*OC* 144). Apart from its philosophical relevance with regard to the holistic character of beliefs and the refutation of foundationalism, this passage is also significant heuristically for it generates a nest of factual questions such as how systems of beliefs develop and which conditions determine its development. What are the distinctive features of the elements that stand fast and the elements that are liable to shift? Which facts are conducive to such a shift and under which conditions will even the elements that stand fast unshakeably lose their character of unassailability? Further questions emerge with regard to the resemblances and differences between belief systems that are taught to children and belief systems that one makes oneself familiar with at other lifetimes: what characterizes ideological, religious, moral, rational and common sense belief systems, and do they all obey the same laws?

Another example of a heuristically relevant idea would be the one on the development of language, *e.g.* as expressed in: "Words are connected with the primitive, the natural, expressions of the sensations and used in their place. A child has hurt himself and he cries; and then adults talk to him and teach him exclamations and, later, sentences. They teach the child new pain-behaviour" (*PI* 244). This anecdote arouses further questions. What does this new experiential conduct contain besides certain speech acts? What are the functional prerequisites of a transformation of natural exclamations into culture-specific expressions and sentences? And, what difference does it make for this process of transformation if the disciple is no longer a *tabula rasa* but a committed student who actively and creatively reacts to new impressions?

These and similar questions provoked by rich ideas may be reformulated into empirical hypotheses, that is to say: the questions should be turned into factual presuppositions and their vectors, conditions and effects specified.

Gunter Gebauer has undertaken a valuable piece of work by systematizing and summarizing Wittgenstein's various remarks on the phylogenetic genesis of language into eight so-called "principles" and comparing these principles (which are indeed still too general to be labelled "hypotheses" but are yet in a way fit for empirical use) with results of Piaget's research.[2]

Gebauer notices that seven of the principles are in conformity with Piaget's findings. I cannot agree with Gebauer's conclusion that this consonance between Wittgenstein's philosophical reflections and Piaget's empirical findings provide support for the former. I do observe however that the principles Gebauer has found confirmed form a convincing example of the heuristic fruitfulness of Wittgenstein's ideas.

2. Wittgenstein's invention of language games opens a new way of investigating mental activities. The unpleasant and sterile dichotomy between mentalism and behaviorism can be surmounted by the idea that mental concepts such as "understanding" and "intending" should be seen as language games, that is to say as rule-governed practices with both linguistic and action components. This means that what we say in terms of understanding and intending somehow should be related with facts referring to our conduct as well as to the circumstances. "Understanding" is used when we know how to proceed, how to behave, how to use an object or when we know what is going to happen. This knowledge expresses itself in action, in proceeding or behaving—in conduct that can be appraised by other participants of the language game in the light of the given situation (cf. *PI* 180). "Intention" is used

when we want to display the rationality of our course of action. Thus, intention too is expressed in conduct and can also be appraised by others with reference to the situation (cf. *PI* 337). According to this point of view mental concepts do not describe inner states or processes but are "expressions" whose use is tied to public criteria. The occurrence of such signals within their normal situations may be subject to empirical investigation. Consequently the area of social scientific interest expands and may also cover motives, intentions, expectations, beliefs, fears, hesitation, seriousness and other mental categories. Concrete empirical studies are not yet available, but some recent research can be understood as theoretical reconnaissances of the field.[3]

3. The intention of Alfred Schutz, compatriot and contemporary of Wittgenstein, was to describe the basic structure of the social world and by so doing to provide a philosophical elucidation of social scientific concepts, with the ultimate aim to further the empirical social sciences in their methodic exploration of this social world. In his 1932 dissertation it is primarily Husserl's phenomenology together with a brand of Bergsonian philosophy that is called upon in order to cope with the deficiencies in the interpretive sociology of Max Weber.[4] In his American period (1939—1959) the accent shifts towards Mead, James and other pragmatists and symbolic interactionists. A significant illustration of this development is the evolution in Schutz's treatment of "meaning". A central concept for the Austrian Schutz is "context of meaning". It refers to a "plurality of elements which form a coherent whole on the level of meaning".[5] These patterns function as "interpretive schemata", as a system of organised experiences that can be applied to the organisation of new experiences.[6] For according to Schutz, to interpret (and *eo ipso* to understand the meaning of) an experience is to identify it with the help of a scheme. Hardly a limit is set upon what may function as context of meaning—be it logical consistency, the esthetic harmony of a style, the appropriateness of means to an end, practical or ethical rules, motives, signs, ordering procedures of science (including ideal types), even whole scientific disciplines.[7] In any case the meaning of an experience is determined by the content of the scheme, with other words: by the content of other experiences. Consequently, *Der sinnhafte Aufbau* is full of examples of how past experiences dominate new ones—how idealisations, expectations, stock of knowledge and relevances have a colouring influence upon new experiences.

The American Schutz exchanges this material aspect of meaning for a formal one: instead of "context of meaning" the new keyword becomes "province of meaning". This term refers to "a certain set of experiences that show a specific cognitive style and that are (with respect to this style) consistent in themselves and compatible with one another".[8] Through the introduction of the idea of "style" it becomes possible to state the formal properties of sets of experiences, such as a specific tension of consciousness, a specific 'epoche', a prevalent form of spontaneity, a specific form of experiencing one's Self, a specific form of sociality and a specific time perspective. Such an emphasis upon the structure of the scheme leads to the recognition of the phenomenon of "multiple realities" since each set of experiences (organised within a province) constitutes its own reality.[9] Meaning is related now to a way of looking and thinking, a world picture. This idea opens perspectives to the actual paradigm debate.

Schutz's interest, however, is fixed upon eidetic analyses, that is: upon knowledge derived from essential insight. The actual appearance of provinces of meaning is held to be devoid of any philosophical relevance and is destined for the empirical sciences. Consequently his remarks on provinces of meaning remain abstract and summary. At the same time Schutz seems to neglect the material aspects of meaning: he never tries to connect the concepts of the context of meaning and the provice of meaning, and as a result fails to contribute to an integrated philosophy of meaning and reality. So, the ontological foundation for an empirical theory of meaningful action that Schutz wants to design is bound to be imperfect.

I maintain that Wittgenstein's ideas on meaning may better contribute to this ontological

foundation for at least two reasons. First, the concept of language game, "the whole consisting of language and the actions into which it is woven" (*PI* 7) constitutes a meeting point, a common ground for both what is said and the way words are used. On the one hand, the language game forms the context of experiences within which the meaning of a specific experience originates: "In the middle of a conversation, someone says to me out of the blue: 'I wish you luck'—I am astonished; but later I realize that these words connect up with his thoughts about me. And now they do not strike me as meaningless any more" (*OC* 469). This is the material aspect of meaning. On the other hand the language game reflects a practice, a way of managing experiences: "A meaning of a word is a kind of employment of it" (*OC* 61). Reality is bound by modes of action: "The limits of empiricism are . . . ways in which we make comparisons and in which we act" (*RFM* v 18). This is the formal aspect of meaning. Within language games both go together and may only be separated analytically. Therefore, Wittgenstein's philosophy of meaning and reality has a much more unitary character than Schutz's. Moreover, Wittgenstein's strategy is never essentialistic (or "eidetic") but oriented towards the actual construction of meaning and reality in its various forms. As a result of this, his philosophy is not abstract, but on the contrary: rich in details and close to reality. Of course, I realize that the language game concept is not a perfect alternative: it tends to narrow our view to linguistic and language-connected acts (resp. the utterance of words and expressive movements). This causes the lack of a suitable vocabulary for the identification of specific attitudes and attentions that Schutz has found to be characteristic for provinces of meaning. I suggest, therefore, that we take the best out of the two philosophies and by so doing constitute an adequate ontological foundation for the empirical science of meaningful action.

4. Empirical sciences need not only ontological foundation, but also methodological justification. My claim is that Wittgenstein's thought holds various valuable methodological recommendations. Let us return to his *Remarks on Frazer's 'Golden Bough'*. In the first place we find here a plea for description, meaning a sensible organisation of empirical data, instead of explanation, meaning an exogenous reconstruction of data: "Von der Magie müßte die Tiefe behalten werden. Ja, das Ausschalten der Magie hat hier den Charakter der Magie selbst" (*BFGB* 38). And: "Ich glaube, daß das Unternehmen einer Erklärung schon darum verfehlt ist, weil man nur richtig zusammenstellen muß, was man weiß, und nichts dazusetzen, und die Befriedigung, die durch die Erklärung angestrebt wird, ergibt sich von selbst" (*BFGB* 39). What we observe and describe is not doubtful material that should be redressed within a scaffolding of certainty, since it is itself much more certain than its scaffold: "Die Erklärung ist im Vergleich mit dem Eindruck, den uns das Beschriebene macht, zu unsicher" (*BFGB* 49). In the second place Wittgenstein's remarks contain an analysis of the meaning of magic and symbols: "Einem religiösen Symbol liegt keine Meinung zu Grunde. Und nur der Meinung entspricht der Irrtum" (*BFGB* 40). It is unwise to regard primitive usages as reflections of (false) opinions since they do not result from judgments but from interpretations (*BFGB* 49). Moreover, these interpretations of reality are not *described*, they are *performed* —symbols are executed in symbolic action, action exhibits interpretation: "Wenn man mit jener Erzählung vom Priesterkönig von Nemi das Wort 'die Majestät des Todes' zusammenstellt, so sieht man, daß die beiden eins sind. Das Leben des Priesterkönigs stellt das dar, was mit jenem Wort gemeint ist" (*BFGB* 40). In this passage, crucial for Wittgenstein's criticism of Frazer's methodology, it is argued that actions should be seen as performances. It is exactly this idea that is also defended by ethnomethodologists when they mention the reflexivity of social phenomena as constituting their own reality. Take for instance Wieder's analysis of the convict code which was operative at a halfway house, a rehabilitative facility for narcotic-addict felons on parole.[10] In contradistinction to "traditional" sociologists, who treat the convict code as an explanation of deviant behaviour, Wieder proposes to investigate the consequential persuasive character of the use of the code. He notices that telling the code (such as "do not snitch", "do not cop out" and "staff is heat"), either

by residents or by staff, does not simply describe and explain the situation, but is also a method of influencing the situation.[11] Thus, telling the code "exhibits rather than describes" the order that the participants of an situation achieve.[12] The employment of the code performs its order.

Therefore, Wittgenstein's implicit methodological postulate: treat action not as description but as performance of reality, together with the philosophical reasons for this postulate, may be taken as a justification for the ethnomethodological stance.[13]

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NOTES

1 Bartley, W. W., *Wittgenstein* (London 1977), p. 104.
2 Gebauer, G., "Wittgenstein und Piaget zur Genese des Sprechens", in: E. Leinfellner, *et. al.* (eds.), *Wittgenstein and His Impact on Contemporary Thought* (Vienna 1980).
3 See A. F. Blum and P. McHugh, "The Social Ascription of Motive", *American Sociological Review*, Vol. 36 (1971), and D. Silverman, "Speaking Seriously: the Language of Grading", *Theory and Society*, Vol. 1 (1974).
4 Schutz, A., *Der sinnhafte Aufbau der sozialen Welt* (Wien 1932), published as *The Phenomenology of the Social World* (London 1967).
5 Schutz (1967), p. 24.
6 Schutz (1967), p. 34.
7 Schutz (1967), pp. 24, 87.
8 Schutz, A., *Collected Papers*, Vol. I (The Hague 1962), p. 230.
9 Schutz (1962), p. 340.
10 Wieder, D. L., "Telling the Code", in: R. Turner (ed.), *Ethnomethodology* (Harmondsworth 1974).
11 Wieder (1974), p. 158.
12 Wieder (1974), p. 177.
13 I thank Dr. S. Terwee for his comments on an earlier version of this paper.

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LEARNING TO SPEAK AND LEARNING TO THINK

Richard Rosenbluth

This paper presents an argument that both thought and language are dependent on social practice. Since the use of language is an integral part of human activity, much of human thought is not possible without language. The argument goes against the claims that language is acquired *in order* to express thoughts, and that the distinctions we make are in the world and merely given expression in language. The acquisition of language is part of learning to think beyond a range of concrete images.

Wittgenstein gives an example of what it is like for thought to be prior to its expression in language; he then contrasts this with what it is for *language* rather than *a* language to be learned.

> Someone coming into a strange country will sometimes learn the language of the inhabitants from ostensive definitions that they give him; and he will often have to *guess* the meaning of these definitions; and will guess sometimes right, sometimes wrong.
> And now, I think, we can say: Augustine describes the learning of human language as if the child came into a strange country and did not understand the language of the country; that is, as if it already had a language, only not this one. Or again: as if the child could already *think*, only not yet speak. And "think" would here mean something like "talk to itself".[1]

In this passage Wittgenstein is not just attempting to show that the picture of language as a collection of names is too simplistic an account of the function of language,[2] but that there is a picture involved here that is a misleading model of the relationship between a language learner and the world.

As Stanley Cavell says, in *The Claim of Reason*,

> There is more than one "picture" Wittgenstein wishes to develop: one of them concerns the idea that all words are names, a second concerns the idea that learning a name (or any word) is being told what it means, a third is the idea that learning a language is a matter of learning (new) words.[3]

One can reject the first idea, and accept that there are many other things we do with words beyond naming things, and still be in the grasp of a "picture" of the language learner as one looking for a means of expression. But this "picture" makes it incomprehensible how language could function even as a means of naming.

If description is taken as the central linguistic activity, finding expression for our thoughts about the world, it is easy to become seduced by a correspondence theory of truth and of meaning. Naming can easily be regarded as the primary relationship between words and things. This view may be adequate to account for the truth of some descriptions, but it is inadequate to account for the significance of language, and it fails to explain how anyone would come to learn a language.

Linguistic significance arises from the role of language within the activities of a community of language users. Language is not primarily a means of describing the world, but rather a means for promoting the things people do in the world. Even where language is used descriptively, to say true things about the world, the descriptions are not the final purpose of language use but themselves play a role within human activity.

If realism is taken as the claim that there are facts which are independent of what anyone thinks, then an account of language acqusition, that is not restricted by the picture of naming as the basic linguistic function, because it can show that a sound account of the significance

of language will involve realism in an account of only some descriptions of the world, and anti-realism in an account of other descriptions, for instance in moral discourse, is possible. Significance is the feature of language that allows a collection of sounds or marks to be meaningful, while meaning is what is expressed in using language.

I have already referred to a picture of language-acquisition in which the child is trying to discover the public names of objects in order to communicate his private ideas of those objects. On this view, the meanings of words and sets of words are extra-linguistic connections between language and the world. In this picture meaning arises from saying things about the world by discovering the rules for the use of words which enable our ideas about the world to be understood. However this picture must be rejected because of the incoherence of the notion of a private language.

In this picture the child has the concepts, say of blue and yellow, but does not possess the public words for those concepts. In learning English he discovers that the things he classifies as blue are called "blue" and the things he classifies as yellow are called "yellow". Until he learns the public words the child makes these distinctions in a language of his own, a private language.

The incoherence of this picture becomes apparent when we compare the use of language with the use of the private language that is assumed for the child. A language user can make the distinction between blue and yellow according to some rule, and according to that rule he may correctly or incorrectly say of something that it is blue. If he makes a mistake the people to whom he is talking can question his usage of "blue" to describe some object, so there is a sense in which sometimes he can come to know he has made a mistake, and conversely, where this is not the case, there is a sense in which sometimes he can know he is correct in his use of language. However the 'user' of a private language can never be in such a position. The only criterion for the correct use of a private term is that the 'user' applies it here. Thus there is no ground for saying that he 'uses' the term differently on the next application; whatever he says will go, there could be no ground for saying this new application is different. The 'user' of the private language might 'remember' that he applied the term in the same way in the past but he has no check on the veracity of his memory, once again whatever he says will go. But then any term could mean anything at anytime, and the notion of significance is lost in such a private language. Since significance is central to the notion of a language, the notion of a private language, and thus a non-significant language is incoherent.

The picture Wittgenstein offers as a replacement for the picture of the child attaching public meanings to his private language is that of a child being brought into human activities, an aspect of which is language. Significance comes from the role language plays in the activities, both in learning them and in doing them.

We see the child at the same time as a language learner *and* as a new member of a human community. As a member of such a community the child is brought into some activities, of which language use is an integral part, before the child is himself fully a language user. The child is not faced with things to which he must attach words as names, but is faced with words and sets of words being used in such a way that the meanings of the words are expressed in the activities, and the words clarify the nature of the activities. Thus the child develops his concepts of what is in the world, and of how to say things about the world at the same time, and in the same process.

For instance, a child playing with a set of variously shaped and coloured blocks is not only learning what names attach to what colours and shapes, he is also learning what distinctions are made among colours and shapes. An adult, who is talking to the child about the blocks with which the child is playing, will use words that point out which distinctions are made between blocks. "Yellow" and "blue" distinguish these blocks from one another, "square" and "triangle" distinguish these others, but some blocks are square and blue, others square and yellow, while none are square-and-triangle or blue-and-yellow-all-over.

In the rejected picture, that of the child as one who must learn to attach the words of

the public language to the concepts he already possesses, the learning in playing with blocks would be that certain words, "yellow", "blue", "square", and "triangle", attach to objects which the child has already distinguished on the basis of the meanings which these words merely express. Presumably the child is also making many other distinctions between the blocks, differences of weight, texture, size, or brilliance, which the child can not express at present merely because he lacks the proper public words. This picture of language learning was untenable because the child could not be making distinctions in his private language in such a way that he could meaningfully count something as the reapplication of a concept according to a rule. We now see that this picture is objectionable also because it implies that the child makes a vast number of distinctions about objects in the world, before the child is capable of expressing those distinctions, where the *only* ground for saying the child makes these distinctions is that the distinctions are there to be made in the sense that the child can learn to express such distinctions. In rejecting this picture of language acquisition, we replace it with a picture in which the expression in language of distinctions between objects is a sign that the child has learned to make the distinctions expressed. The child learns to distinguish blue from yellow because *that* distinction is one that is made in the language he is learning. He is learning both that a particular distinction, between blue and yellow, can be made and that that distinction is made through certain linguistic expressions.

The language a child learns will not, in this revised picture of language acquisition, be based on what distinctions one *might* be able to make between things in the world, it will be based on what distinctions about things in the world *are* made in the community of language users of which the child is a part.

To have a role within the social context of a human practice, and therefore to be usable in conformity with the distinctions made within human activities and practices, is a necessary condition for a word or set of words being significant. This condition is not only a limit on what can be said, but also is a limit on what can be thought, in so far as the conceptual basis of a thought is tied to language use.

For some thoughts, for instance those concerning the way things are in the world, this limit has little effect. One can conceive of a situation in which someone thinks of using a lever to lift a heavy object in a society that does not have levers, or lift things we would call "heavy things". Our inventor's thought might have the form of an image of a lever lifting a large stone. As an image without further description or qualification this image would be a non-linguistic thought. The fact that there is no existing role in the inventor's society for a linguistic expression of his thought is no limit on what he can think about levers and the movement of heavy objects. It is just a limit on what he can say about his thought. If there is no role in the practices of his society for lifting heavy objects, then what could he say a lever does? One might imagine a leverless society in which objects are partitioned into movable and immovable objects. If our inventor, in such a society, were to try to say what his invention would do he might find himself saying that his lever would move immovable objects. Put that way it is hard to see how he could be understood, as he seems to be contradicting himself. Our inventor could only 'explain' the nature of his inventive thought by demonstrating just what a lever will do. Then if a group of activities arise involving the use of levers the necessary foundation for meaningful speech about levers would also have arisen.

The question of whether a statement by the inventor, that his lever will move large, or 'immovable', rocks, was true before the practices involving levers arose within the inventor's society is both ambiguous and unanswerable. Certainly the world is such that had anyone attempted to move a rock with a lever before such practices arose he could have moved the rock, but how could anyone, including the inventor, have understood the inventor's statement well enough to judge its truth before it *could* have been clear to what state of affairs the *statement*, as a bit of language, applied?

If we were under the influence of the rejected picture of language, we might have attempted to describe the situation of the inventor of the lever as one in which he must discover what

words or sets of words in his language will properly describe his new tool. Perhaps he will invent new words as the name of his invention, but this name would be definable in his existing language, and in any language at any time, if the language is capable of expressing truths about the world. However, were he to try to remain within his existing language he would find that his explanations and definitions are apparently contradictory in his language. It is only by viewing the inventor's thought as non-linguistic, rather than couched in a private language, that the possibility of apparent contradiction is avoided.

However not all that is thought can be viewed in this non-linguistic manner. For some thoughts, for instance those concerning abstract relationships, the condition on the significance of words or sets of words is a limit on what *can* be thought.

One can not conceive of a situation in which someone thinks of a form of introduction in a society that does not have strangers. In such a society not only would there be no role in the practices for introducing one person to another, thus making it impossible to explain what an introduction would be, but the 'inventor' of introduction would not be able to formulate the thought for himself. Unlike the inventor of the lever there is no non-linguistic image of introducing one person to another, as there is such an image of using a lever to move a rock. The concept of introduction depends on other concepts, such as stranger, meeting, and coming to know, so that it can not be thought when those concepts are not part of the culture of the society. In this sense the condition on the significance of words and sets of words also limits what can be thought.

One difference between the situations of the inventor of the lever, and the 'inventor' of introduction is that the object of thought of the inventor of the lever is independent of human activity, while the object of thought of the 'inventor' of introduction is dependent on human activity. The inventor of the lever can show without language what his lever does, and if people start using levers they might develop concepts for talking about what they are doing. The 'inventor' of introduction can not show what an introduction does without using language, and the necessary language can not develop unless the practices change to include concepts that are not yet in the world of the 'inventor'.

The notion that the significant use of words or sets of words is tied to human activities and practices has the implication that the learning of concepts and the learning of language with which to express concepts will not be clearly distinguishable achievements.

Language is significant because of the role words and sets of words play in the practices of a society. The concepts a person has, the distinctions which he can conceive between the things in the world, are limited by, even if they are not limited to, the concepts which have a role and expression in the social context within which he acquires language.

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NOTES

1 *PI* 32.
2 As in *PI* 2, 23, 27 and 46.
3 Cavell, S., *The Claim of Reason* (Oxford 1979), p. 173.

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WITTGENSTEIN AND FRAZER ON RELIGIOUS PRACTICES

Mostafa Faghfoury

Frazer's *Golden Bough* is a brilliantly executed Victorian monument. The aim of the book is to determine the origin of modern religious beliefs and practices; its conclusion is that religious convictions can be traced back to simple forms of life characteristic of primitive societies and that these convictions are based on a false view of how nature really operates. *The Golden Bough* is intended to show how primitive thinking misunderstands cause and effect in nature. What seems to have attracted Wittgenstein to the book and led him to write his *Remarks on Frazer's Golden Bough*[1] (hereafter *RFGB*) was Frazer's view of primitive culture, which he considered symptomatic of a particularly important period in the Western civilisation.

In this paper I shall argue by referring to the *Remarks on Frazer's Golden Bough* for a Wittgensteinian view of culture. I shall demonstrate how attempts by anthropologists like Frazer (and more recently Marvin Harris) to explain religious practices are unsatisfactory.

Wittgenstein's aversion to scientific explanations of religious rituals is well-known. In the *Tractatus* the picture theory of meaning allows the recognition only of questions concerning the natural sciences as meaningful. Other questions, Wittgenstein tells us, should be passed over in silence. In his later works, Wittgenstein gives up the picture theory of meaning but retains the view that certain aspects of our lives cannot be explained scientifically. He objects to our questioning beliefs and practices which seem strange and foreign to us. His reason is that to ask for an explanation of, for example, a religious ceremony is question-begging and pointless. It is question-begging because those who seek explanations think that they can find them by reference to some well-established scientific theories. It is pointless because if we are really troubled by the questions, no answer will tell us what we want to know.

I

Frazer's anthropological research has two immediate objectives. First, it seeks to explain the origin of the contemporary beliefs and behavior by reference to the primitive social and cultural context in which they occur. Second, his search is supposed to convince the reader that primitive thought was founded on a thoroughly false conception of nature. Thus according to Frazer religion is in effect superstition.

In the space of this short paper it is possible to cite only a few of the many examples or accounts of primitive religious practices which Frazer gives in *The Golden Bough*. Such selectivity is of course only possible because, underlying the great variety of material, there are certain basic criteria consciously adopted by the author:

> The real value of such tales is that they serve to illustrate the nature of . . . modern religious worship by providing a standard with which to compare it; and further, that they bear witness indirectly to its venerable age by showing that the true origin was lost in the mists of a fabulous antiquity.[2]

The following quotation concerning a certain African tribe living on the Upper Nile exhibits the general character of Frazer's interpretation and indicates his procedure for explaining a practice strange to him.

> . . . we are told that they have no kings in the common sense: the only persons whom they acknowledge as such are the Kings of the Rain, *Meta Kadou*, who are credited with the power of giving rain at the proper time, that is, in the rainy season. Before the rains begin to fall at the end of March the country is a parched and arid desert; and the cattle, which form the people's chief wealth, perish for lack of grass. So, when the end of March draws on, each householder betakes himself to the King of the Rain and offers him a cow that he may make the blessed waters of heaven to drip on the brown and withered pastures. If no shower falls, the people assemble and demand that the king shall give them rain, and if the sky still continues cloudless, they rip up his belly, in which he is believed to keep the storms. Amongst the Bari tribe one of these Rain Kings made rain by sprinkling water on the ground out of a handbell.[3]

As is obvious from the quotation, Frazer wants to ascribe belief in causal efficacy to the practice of offering gifts to the King of Rain. However, in doing so he has to establish first that the aim of the participants was to bring about rain. Yet from what we are told there is nothing on which to base this assumption. Frazer's interpretation is not necessarily the only one that can reasonably be given of the practice as reported. Wittgenstein counters Frazer's view of the Rain King in Africa by protesting that the fact that people appeal for rain at the rainy season is a good indication that:

> . . . they do not actually think he can make rain, otherwise they would do it in the dry periods in which the land is 'a parched and arid desert'. For if we do assume that it was stupidity that once led the people to institute this office of Rain King, still they obviously knew from experience that rains begin in March, and it would have been the Rain King's duty to perform in other periods of the year. Or again: towards morning, when the sun is about to rise, people celebrate rites of the coming of day, but not at night, for then they simply burn lamps. (*RFGB*, p. 12)

Carrying Wittgenstein's reasoning further, we may point out that if Frazer was right, then the people who were anticipating rain should have been disappointed when it did not come and should have gone back to the Rain King feeling cheated and have demanded the return of the cows they had given him, they should not have asked *again* for rain. Frazer may have misread the behavior of these Africans as being intended to cause the rain rather than as evidencing their expectation of rain.

In the city of Ottawa, people celebrate the third week of May. The celebration is known as the Festival of Spring. Throughout the week people congregate in the streets, parks and other public places. They sing, dance, eat and drink. No serious anthropologist who has witnessed the occasion would theorize that there are people somewhere in our civilized world who believe that by dancing, drinking and eating in the third week of May they *cause* the spring to come. The simple and straightforward reason for the festivities is that the severe winter for another year is finally over. But perhaps only those who have experienced or at least know of the cold Canadian winters could understand the symbolism of the celebration of the festival of spring, without trying to appeal to a direct causal explanation. The people's joy is an expression of how they feel about the weather rather than an attempt to cause anything to happen.

In a reference to the burning of effigies Frazer reports:

> . . . we might naturally be disposed to conclude that all the effigies consumed in the flames on these occasions represent witches or warlocks, and that the custom of burning them is merely a substitute for burning the wicked men and women themselves, since on the principle of . . . imitative magic you practically destroy the witch herself in destroying her effigy. On the whole this explanation of the burning of straw figures in human shape at the festivals is perhaps the most probable.[4]

Here again, Frazer is presenting a practice as if it intended to accomplish something in the physical world. Frazer is blind to the possibility that the practice could by a symbolic expression of an attitude towards an enemy, of an anger being purged. When I call someone a "bastard" or "a son of a bitch", I am not proclaiming facts about his birth: I am manifesting my anger. Wittgenstein writes:

> the same savage who, apparently in order to kill his enemy, sticks his knife through a picture of him, really does build his hut of wood and cuts his arrow with skill and not in effigy. (*RFGB*, p. 4)

Wittgenstein's remark becomes clearer if we compare the practice of burning effigies to similar practices in our society. No reasonable person would suggest that a person who kisses the picture of a loved one believes that this will affect the real person it represents. In kissing a picture of a beloved one one expresses a feeling for that person. Kissing the picture "aims at some satisfaction and it achieves it. Or rather, it does not *aim* at anything; we act in this way and then feel satisfied."

II

We have been criticizing Frazer's causal construal of primitive practices. Wittgenstein, however, has observed another peculiarity in Frazer's accounts, which may also be found in the work of other anthropologists. Wittgenstein has pointed out that in order for Frazer to explain primitive thought, he had to articulate it in a language already comprehensible to his readers. Consider the following quotation from *The Golden Bough*:

> If the reader still doubts whether the rules of conduct which we have just been considering are based on superstitious fears or dictated by a rational prudence, his doubts will probably be dissipated when he learns that rules of the same sort are often imposed even more stringently on warriors after the victory has been won and when all fear of the living corporeal foe is at an end. In such cases one motive for the inconvenient restrictions laid on the victors in their hour of triumph is probably a dread of the angry ghosts of the slain and that the fear of the vengeful ghosts does influence the behaviour of the slayers is often expressly affirmed.[5]

At first we might not notice in this supposedly scientific report something which caught Wittgenstein's attention, perhaps because he was so concerned with how language is used:

> But why does Frazer use the word 'ghost'? He evidently understands this superstition well enough, since he uses a familiar superstitious word to describe it. Or rather, he might have seen from this that there is something in us too that speaks in support of those observances by the savages.—If I, who do not believe that somewhere or other there are human-superhuman beings which we might call gods—if I say 'I fear the wrath of the gods', then this shows that with these words I can mean something or express a feeling that need not be connected with that belief. (*RFGB*, p. 8)

If on the basis of using a term, a person can be said to be a 'primitive' or 'savage' or whatever, Wittgenstein is surely justified in concluding that Frazer is at least as savage as most of the savages he writes about. "For these savages will not be so far from any understanding of the twentieth century. His explanations of the primitive observances are much cruder than these sense of observances themselves."

Quite apart from doubts about Frazer's success in locating the origins of modern religious beliefs, we may observe that he fails to consider why and how these allegedly mistaken beliefs and practices persist despite attempts by scientists like Frazer to debunk them. What should be more interesting to Frazer than the origin of a particular belief is its perpetuation. But to explain this one would perhaps have to begin assuming that religious beliefs are not in the same category as scientific theories and in particular that they are not mistaken beliefs. For a belief to be mistaken, just as for it to be correct, there must be a ground or foundation on which it rests. But here there is no such foundation or ground. To grasp an error in one's belief is to see the fault in the foundation on which it rests and when an error in one's belief is thus recognized the belief is naturally altered or discarded. As to religious beliefs: since there is no ground, one cannot speak in the usual way of error in them or of recognizing error in them.

The disagreement between Wittgenstein and Frazer arises from their looking at religious

rituals from two radically different perspectives. Frazer's interpretations of them is based on certain scientific theories, while for Wittgenstein science has not and cannot clarify any question that we might have about such rituals. Frazer attempts to provide causal explanations of practices; Wittgenstein, on the other hand, views them as symbolic expressions. Frazer hoped that science would eventually replace religion: "yet a time comes when reasonable men find it hard to understand how any one in his senses can suppose that by eating bread and drinking wine he consumes the body and blood of a deity".[6] Wittgenstein accuses Frazer for viewing "spiritual life" in a narrow fashion, and the charge seems justified. "And as a result", Wittgenstein tells us, "how impossible for him (Frazer) to understand a different way of life from the English one of his time!"

Failure to see the symbolic meaning of, for instance, the Christian sacrament, from the point of view of a participant in the practice is to ignore relevant evidence, which is unconscionable in a study supposed to be above all objective. Frazer's prophecy that science will eventually replace religion may one day come true, though I doubt it. But if it should, the reason would not lie in the special failings of religion but in our reverential attitude which would allow for replacing one authority with another, so that in respect to vital questions we would seek the advice of scientists rather than of priests. It is only then that Wittgenstein's remark might make sense:

> Man has to awaken to wonder—and so perhaps do people.
> Science is a way of sending him back to sleep again.[7]

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NOTES

1 Wittgenstein, L., *Remarks on Frazer's Golden Bough* (New Jersey 1979). Originally, the German text of Wittgenstein's remarks was published in *Synthese* (1967), pp. 233—53, and the English translation with an introduction by Rush Rhees appeared in *The Human World* (1971), pp. 18—41.
2 Frazer, J., *The Golden Bough* (London 1963), p. 7.
3 Frazer (1963), p. 141.
4 Frazer (1963), p. 852.
5 Frazer (1963), p. 279.
6 Frazer (1963), p. 654.
7 Wittgenstein, L., *Culture and Value* (Oxford 1980), p. 5.

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8. Die frühe Philosophie Wittgensteins

8. Wittgenstein's Early Philosophy

THE ELEMENTARY PROPOSITIONS OF THE *TRACTATUS*

A. J. Ayer

When I first read the *Tractatus*, as an undergraduate at Oxford in 1931, it made an overwhelming impression on me. In the intervening years I have come to find much of it obscure and to disagree on many points with what it appears to be saying, but I then took what I wanted from it and did not mind the rest. Its main theses, taken at their face-value, can be very briefly summarized. They were that the world is a set of facts which themselves consist in the existence of what in the original German are called '*Sachverhalten*', translated by Ogden as 'atomic facts' and perhaps more accurately by Pears and McGuinness as 'states of affairs'. These states of affairs are composed of simple objects, and are represented by elementary propositions which are logically independent of one another. To have any literal significance a sentence must express either a true or false elementary proposition or one that assigns a certain distribution of truth or falsehood to elementary propositions. In that case the compound proposition is said to be a truth-function of the elementary proposition in question. There are two limiting cases. A proposition may disagree with all the elementary truth-possibilities, in which case it is a contradiction, or it may agree with them all, in which case it is a tautology. The true propositions of logic are all tautologies, in this sense, and so virtually are the propositions of pure mathematics, though Wittgenstein preferred to call them identities. Tautologies and identities serve a purpose in that they facilitate the drawing of deductive inferences, but in themselves they say nothing about the world. A genuine proposition pictures a possible state of affairs. These pictures themselves are facts and share a pictorial and a logical form with what they represent. Failure of representation occurs when a sentence, laying claim to truth or falsehood, depicts no possible state of affairs whether simple or complex. Inasmuch as they are themselves neither elementary propositions nor truth-functions of elementary propositions, metaphysical pronouncements fail to represent anything. They are nonsensical. At their best they are attempts to say what cannot be said but only shown. This applies to ethics and aesthetics. It applies also to any attempt to describe the conditions of representation, so that the propositions of the *Tractatus* are themselves nonsensical. Wittgenstein compared them with a ladder which the reader must throw away when he has climbed up it. He will then see the world rightly. Among the things that he will realize is that philosophy is not a body of doctrine but an activity, the activity of clarifying the propositions of natural science and exposing metaphysics as nonsense. The book ends with the much quoted sentence '*Wovon man nicht sprechen kann, darüber muß man schweigen*'—'What we cannot speak about we must consign to silence'.

Even at the time when I was most impressed by the *Tractatus* I did not wholly accept the author's claim that the truth of all the thoughts that were put forward in it was 'unassailable and definitive' (*TLP*, p. 4).[1] I wholeheartedly endorsed his conclusion that metaphysical utterances were nonsensical but did not count the utterances of the *Tractatus* itself among them. I did not see, and still do not see, how a sentence could at one and the same time express a pseudo-proposition and an unassailable truth. I agreed rather with Ramsey that 'if the chief proposition of philosophy is that philosophy is nonsense . . . we must then take seriously that it is nonsense, and not pretend, as Wittgenstein does, that it is important nonsense'.[2] Avoiding this conclusion, as Ramsey himself did, I looked upon philosophy as an activity of analysis and the propositions of the *Tractatus*, in most cases, as analytic truths. In fact they belong to what would nowadays be reckoned as the domain of general semantics and I see no reason why this in itself should make them nonsensical. There is no doubt that one can significantly ask about the relation of sentences in a given language to what

they are used to signify, and I do not see why this question cannot be generalized, so that we enquire into general conditions of stating a possible fact.

Wittgenstein gives no example of an elementary proposition, nor consequently of an atomic fact, or state of affairs. He makes the mysterious assertion that 'in a state of affairs objects fit into another one like the links of a chain (*TLP* 2.03) and argues that the reason why the objects must be simple is that they make up the substance of the world. 'If the world had no substance', he continues, 'then whether a proposition had sense would depend on whether another proposition was true' (*TLP* 2.0211) and 'in that case we could not sketch out any picture of the world (true or false) (*TLP* 2.0212). The reasoning is cryptic but the assumption behind it seems to be that the most primitive signs, those that combine to express the elementary propositions, must be guaranteed a reference. If this condition is to be fulfilled, none of them can refer to a complex object, because the complex object in question might not exist: the proposition in which it was asserted that its elements were combined in the requisite way might be false. But then the sign which was supposed to name it would lack a reference and consequently could not contribute to the expression of an elementary proposition. The sentence into which it had been inserted would be meaningless.

The trouble with this argument is that there seems to be no good reason to accept its underlying premiss. Wittgenstein himself was later to point out that it is a mistake to identify the meaning of a name with its bearer, and once this is admitted we are freed from the dilemma of having to say of a sign which fails to name a simple object that it either names a complex object or is meaningless. Not that this leaves us very much the wiser. We are frustrated by our not knowing even what sorts of objects are in question or what is the criterion of their simplicity.

This frustration was not felt by the earliest recruits to Wittgenstein's standard. They took it for granted that the elementary propositions of the *Tractatus* were descriptions of sense-experience; the objects which they signified were what Russell and Moore had made it fashionable to call sense-data; their configurations made up the structure of sense-fields. The result was that Wittgenstein was credited with a philosophical standpoint hardly differing from Hume's. His states of affairs, whether simple or compound, corresponded to Hume's matters of fact; his tautologies and identities expressed Hume's relations of ideas. They agreed that these two categories exhausted everything that could significantly be said. Not only that but Wittgenstein also seemed to share Hume's attitude to causality, asserting, as he did, that 'the procedure of induction . . . has no logical justification but only a psychological one' (*TLP* 6.3631) and that 'there is no compulsion making one thing happen because another has happened. The only necessity that exists is *logical* necessity' (*TLP* 6.37).

The main obstacle to this interpretation is that it is not consistent with the logical independence of elementary propositions. It allows for the logical independence of actual states of affairs, so long as these are viewed as being altogether specific, but it does not prevent the truth of one elementary proposition from falsifying another, if, say, they ascribe incompatible colours to the same sensory area at one and the same time. Nor will the requirement of independence be satisfied if the predicates of the elementary propositions are quantitative: the assignment of some measure to a given item will not be reconcilable with its being accorded a different measure at the same time in the same dimension. In any case, if the elementary propositions referred to the contents of sense-experiences, the predicates which they contained would be qualitative rather than quantitative. The fact that the requirement of logical independence is violated by quantitative predicates also rules out the suggestion that Wittgenstein's elementary propositions should be taken as referring to physical events. But what possibility then remains?

The only one I can think of is that the objects which combine to make up the primitive states of affairs are all universal. This would accord with the conception of elementary propositions as pictures representing possible states of affairs. To assent to such a picture would amount to asserting that there existed a state of affairs which matched it; the denial that the depicted state of affairs existed would correspondingly be conveyed by dissent. The fact that

the pictures differed in whatever respect would not make them incompatible, since there would be no internal reference to bring them into conflict. Each would be conveying the information that there was some state of affairs which it matched, but neither would carry the mark of any attempt to pin-point the state of affairs in question otherwise than by describing its qualities.

It would, indeed, be possible to use such a language, provided that there was some convention in force which set limits to the area in which its propositions would be tested. For instance, if the language were phenomenal, it might be tacitly understood that the depicted states of affairs were to be sought in some limited set of sense-fields. It is not, however, clear that this would genuinely preserve the logical independence of elementary propositions. It is true that no two of them would be formally incompatible, but any picture which completely filled the conventionally imposed limits would exclude all the rest.

There is little point, in any case, in pursuing this idea, since it not only runs counter to the symbolism of the *Tractatus*, where variables appear to be distinguished according as they take particular qualities or relations for their values, but falls directly foul of Wittgenstein's objection to Russell's definition of identity, that it prevents us from saying of two objects that they have all their properties in common adding that 'Even if the proposition is never correct, it still has *sense*' (*TLP* 5.5302). This is a point on which Wittgenstein may well have been mistaken, but it does disprove the suggestion that he regarded objects as collections of properties.

In these circumstances, I think that we are driven to saying that Wittgenstein's requirement that elementary propositions be logically independent of one another just cannot be satisfied. Indeed, he himself fairly soon came to the same conclusion. In the short paper on Logical Form which he contributed to the *Supplementary Proceedings of the Aristotelian Society* in 1929, he dismissed the possibility that different colour predicates could be true of the same particular at the same time. He did not recant to the point of saying that elementary propositions could for this reason be mutually incompatible, but, what appears to come to the same thing, he did speak of the 'grammar' of colour-predicates as being such that one colour could 'exclude' another; and of course the same would apply to sizes and shapes. This does not entail a sacrifice of atomicity, since it can remain true that all actual states of affairs are logically independent.

Another difficulty which is mentioned in Wittgenstein's notebooks as standing in the way of his inclination to treat the elementary propositions of the *Tractatus* as descriptions of phenomena is the vagueness, if not of the phenomena themselves, at least of any concepts in which we might try to capture them. Thus it is notoriously not a sufficient condition for two patches to be of the same shade of colour that there is no visible difference of colour between them. The reason for this is that discernibility of difference in colour is not a transitive relation. There may be a series of colour patches A, B, and C, such that A is indiscriminable from B and B from C but A is discriminable from C. So if X and Y are to be accounted exactly alike in colour, they have to satisfy the strong condition that there is no specimen Z which one of them exactly matches but the other does not. It would be of no advantage to us here to substitute roughly matching for exactly matching, for the relation of roughly matching is also not transitive. It would seem to follow, therefore, that in some cases at least our bestowal of a colour predicate upon a sensory datum will have to be provisional. There may, however, be a way of escaping this conclusion. In my example of the ABC series, we might make the ruling that if an instance of B was presented with instances of both A and C, it was to be assigned a different colour predicate from either of the others; if it were presented with an instance of either A or C in the absence of the other, it was to be assimilated to its companion; and if it appeared without either it could be given whichever of the three appellations we pleased. This would have the advantage of avoiding actual contradiction and of our being able to assign a definite truth-value in each case to the elementary proposition. Nevertheless it would hardly satisfy the demands of the *Tractatus*, since B would not be available to enter into different combinations as the same definite object.

Perhaps this point was hardly worth pressing so far, since the problem of vagueness arises in a more acute form when it comes to the assessment of the compound propositions which are supposed to be truth-functions of the elementary ones. Presumably we want to make full use of mathematics in our theories but once we do so, then, as Wittgenstein himself admits, when he deals explicitly with mathematics, the extension of our concepts becomes indeterminate. For instance, if our physical theory incorporates Euclidean geometry, there may well be lengths to which it assigns irrational numbers, like $\sqrt{2}$, as values; yet no actual operation of measurement can have an irrational number as a result. Again, our theory may well allow for an infinite number of possible differences in weight, but the observable differences that we can distinguish will always be finite. The result is that there is not always a sharp division between the elementary propositions, considered as reports of observation, with which a more abstract proposition concurs and those with which it does not. The states of affairs which are taken as verifying a theory fall within a certain range, but the boundaries of the range are not precisely drawn.

Another obvious objection to Wittgenstein's system is that it makes no provision for unfulfilled conditionals. In a purely truth-functional scheme, admitting only the values 'true' and 'false' and assigning one or other of these values to every proposition, the formula 'if *p* then *q*' is equivalent to 'not-*p* or *q*' with the result that among the outcomes which are sufficient for its truth are all those in which *p* is false. But we do not wish to be put into the position of having to assent to any possible result of an experiment, just so long as the experiment is not actually carried out. It may be feasible to develop a theory of conditionals which avoids allowing them to be true in cases where their antecedents are not satisfied but the problem is not one that should simply be overlooked, especially if one is taking one's basic propositions to be phenomenal. If things are to be treated, in John Stuart Mill's terms, as permanent possibilities of sensations, we have to set limits to what we are taking to be possible.

It is not clear to me whether the conception of elementary propositions as picturing their senses was meant to ensure that they are definitely either true or false. Perhaps the way in which pictures were held to be composed excluded their being fuzzy; otherwise a degree of fuzziness in the picture might serve to reflect some indeterminacy in the facts. A more serious question is whether we gain any illumination from this idea of propositions as pictures. The model on which it is based is that of a photograph or a map, where there is a temptation to think that what turns these objects into symbols is their similarity of structure or content to some possible state of affairs. A map is an accurate portrayal of a stretch of country if the distances between the points with which it is dotted reflects, according to some uniform scale, the distances between towns, if its various shadings correspond to differences of altitude and so forth. But the choice, say, of a green colour to represent heights of under 600 feet and a purple colour to represent those of over 9000 feet is obviously a matter of convention. So, less obviously, is the correlation of distances between marks on the map and the distances between features of the countryside. Without the convention according to which the map, or the painting, or whatever it may be, is to be interpreted as a sign of what it resembles, in some fashion or other, we know only the fact that two objects are in some way similar, and this no more makes one of them a sign of the other than the buttons on the right sleeve of my jacket symbolize those on my left. In short, the fact of physical likeness becomes relevant only when it is selected as a method of representation. It comes naturally to us to associate like with like, but it is not the only choice open to us nor for many purposes the most practical. Most importantly, since it is only one out of many possible methods of representation, it does not serve to explain in what representation consists.

The view that elementary propositions are records of actual or possible experiences is likely to evoke the problem of solipsism. Whose experiences are in question? Must they not be those of the speaker and in that case how can his utterances convey anything to persons other than himself? For surely one has direct access only to one's own experiences? One may infer from the behaviour of other persons that they have experiences which are analogous to

one's own, but this is not something that one can actually verify. Indeed, if the propositions to which I can attach significance are all and only those that are truth-functions of elementary propositions which are descriptive of my experiences, it is not clear how the ascription of experiences to others can have any meaning for me, let alone be justified.

Towards the close of the *Tractatus* Wittgenstein deals with the problem of solipsism in an oracular fashion in which there are echoes of his reading of Schopenhauer. 'What solipsism intends', he says, 'is quite correct, only it *cannot* be said, but it shows itself. That the world is *my* world shows itself in the fact that the limits of the language (the language, which alone I understand) mean the limits of *my* world.' (*TLP* 5.62) And later on he says 'The subject does not belong to the world; rather, it is a limit of the world' (*TLP* 5.632), comparing it in this respect with the eye's not being itself a constituent of the visual field. The conclusion is that 'solipsism, when its implications are followed out strictly, coincides with pure realism. The solipsistic ego shrinks to an extensionless point, and there remains the reality co-ordinated with it' (*TLP* 5.64). And finally 'The ego occurs in philosophy through the fact that ''the world is my world''. The philosophical ego is not the human being, not the human body, or the human soul, with which psychology deals, but the metaphysical subject, the limit—not a part—of the world' (*TLP* 5.641).

It is not surprising that commentators on the *Tractatus* have found these passages difficult to explain. To have said that 'the world is my world' is obviously false if it is construed as a claim made by Wittgenstein about himself. The world existed before he was born and has not vanished with his death, and during his life he knew relatively little of it. But it is also obvious that this is not what he intended—it is not just to whoever happens to be speaking but to each one of us that 'the world is my world' applies. But this is surely contradictory. We cannot all of us be so uniquely privileged. Or rather, it would be contradictory if the 'my' in each case referred to a particular human being, but we are told that it does not. It refers to the metaphysical subject. And what is this metaphysical subject? Here we reach the point where nothing further can be said.

This is not at all satisfactory. Even if we allow ourselves to be fobbed off with the remark that the solipsist is trying to say what cannot be said, we need some clear indication of what it is that he intends, and why it is correct. A case can be made for saying that the range of my experience sets limits to my understanding, but if we take this so far as to equate the truth-conditions of any proposition that I understand with the experiences that would lead me to hold it true, we run into inextricable difficulties concerning my attribution of experiences to persons other than myself. A behavioural analysis is no solution since in order to be consistent one has then to deal similarly with one's own experiences, which results in pretending that one does not have them. And here the owner of whoever's experiences are in question is the human being. To suggest that 'my world' is the world of a metaphysical subject makes no sense at all.

Wittgenstein returns to this topic in the *Blue Book*, treating it at greater length and showing fas less indulgence to the solipsist. He repeatedly makes the point that the solipsist who proclaims that only he feels pain is not drawing attention to some empirical fact, not even the fact that the pains which he feels are located in his own body. To show that this is no more than an empirical fact, Wittgenstein ingeniously constructs a set of examples which might lead us to say that a man was feeling pain in another man's body or even that the pain was located in some inanimate object. The point of these fantasies is that they do not disarm the solipsist. Wherever the pain may be located, he still wants to say that it is he who feels it and not anybody else. In this way it becomes clear that he is making it a necessary proposition, a feature of usage, that he alone has experiences. There is no room in his language for the expression of a proposition which assigns a feeling of pain, or indeed any conscious state whatever, to anyone but him. But then, Wittgenstein argues, we can dispose of him simply by indulging him in his foible. We agree to confine our use of terms like 'pain' to the description of his experiences, and invent different terms for characterizing the experiences of others. Alternatively, we might say that his pains are the

only real pains, his thoughts the only real thoughts, and so forth. In short, we give him a privileged status in our notation, since this is what he seems to want.

But of course this is not what he wants. He is not claiming any special privilege for himself. He is not conceiving of himself as the only sentient being in the world and of all those others who might appear to be human beings as robots. His image puts him on a level with other people, since it casts us all in the same predicament. Each one of us is confined within the circle of his own experiences. Taken straightforwardly, this image is contradictory, since one would have somehow to stand outside all the circles in order to frame it, but it has a powerful appeal, which is not merely, as Wittgenstein suggests, the result of our being bewitched by our habitual use of language, which makes no provision, or not the right sort of provision, for the sharing of experiences. It is all very well to say that we come up against a point of grammar when we complain that we cannot know about our friends' thoughts and feelings in the way that he knows about them; or what comes to the same thing, that we have to depend upon physical evidence in a way that he does not and in a way that we do not when it is our thoughts and feelings that are in question. The fact remains that the point of grammar is not the effect of a merely wanton choice. The ground for making it a necessary fact that I cannot have your experiences lies in the different way that propositions about thoughts and feelings and sensations are verified by any given person, according as they are or are not his own.

One of the principal errors into which we are led, according to Wittgenstein, by our failure to understand the workings of our language, is that of supposing that someone could use words to refer to his private thoughts and sensations, so that only he could understand what he was saying. There has been a great deal of discussion of this thesis of Wittgenstein's, but no universal agreement as to its import. An important point, which tends to be overlooked, is that he does not deny that we have sense-experiences, including sensations of pain and feelings of movement, or that these experiences are private in at least one reputable sense of the term. There is plenty of evidence for this in the latter part of his *Zettel*, published in 1967, and containing fragments which mainly date from the years 1945-8. For example, note 472 runs: 'Plans for the treatment of psychological concepts. Psychological verbs characterized by the fact that the third person of the present is to be verified by observation, the first person not. Sentences in the third person of the present: information . . . The first person of the present akin to an expression. Sensations: their inner connexions and analogies. All have genuine duration . . . Places of feeling in the body: differentiates seeing and hearing from sense of pressure, temperature, taste and pain'. And later note 479: 'We feel our movements. Yes, we really *feel* them; the sensation is similar, not to a sensation of taste or heat, but to one of touch: to the sensation when skin and muscles are squeezed, pulled, displaced.'

Neither does Wittgenstein suggest that a man's sensations or feelings, let alone his thoughts and images, are indentical with physical events. He does not follow the line, taken by Carnap,[3] and intermittently by Ryle,[4] that it is only if they are interpreted in physical terms, whether as referring to physiological states, or as dispositions to overt behaviour, that statements about one person's experiences can be made intelligible to another. He shows no signs of holding even the milder thesis, which has more recently come into fashion, that what are ordinarily classified as mental states are factually identical with states of the central nervous system.

What then are the pitfalls from which Wittgenstein thinks that we need to be guarded when we philosophize about experience? I find them to be two in number. The first is that of forgetting that one's references to one's private experiences are made within the framework of a public language; they are made in accordance with linguistic rules and there must be public criteria for deciding whether these rules are being complied with. The second is that of supposing that one can know what one's own experiences are but can do no more than surmise, not really know, what are the experiences of others.

Let us consider each of these points in turn. The argument on which the first of them

rests is substantially contained in a well-known paragraph of the *Investigations*: 'Let us imagine the following case. I want to keep a diary about the recurrence of a certain sensation. To this end I associate it with the sign "E" and write this sign in a calendar for every day on which I have the sensation.—I will remark first of all that a definition of the sign cannot be formulated.—But still I can give myself a kind of ostensive definition.—How? Can I point to the sensation? Not in the ordinary sense. But I speak, or write the sign down, and at the same time I concentrate my attention—and so, as it were, point to it inwardly.—But what is this ceremony for? for that is all that it seems to be: A definition surely serves to establish the meaning of a sign.—Well, that is done precisely by the concentration of my attention; for in this way I impress on myself the connexion between the sign and the sensation.—But "I impress it on myself" can only mean: this process brings it about that I remember the connexion *right* in the future. But in the present case I have no criterion of correctness. One would like to say: whatever is going to seem right to me is right. And that only means that here we can't talk about "right"' (*PI*, § 258).

At this point someone might object that one could rely on one's own memory for a criterion of correctness. One could also check one memory by another. But Wittgenstein will not allow this. He imagines his interlocutor's suggesting that he could check his memory of the time of a train-departure by calling to mind an image of the time-table, and rebuts this suggestion on the ground that 'this process has got to produce a memory which is actually *correct*.—If the mental image of the time-table could not itself be *tested* for correctness, how could it confirm the correctness of the first memory? (As if someone were to buy several copies of the morning paper to assure himself that what it said was true' (*PI*, § 265).)

This is a striking simile but I do not think that the argument which it serves is sound. The point which Wittgenstein seems to have overlooked is that any check upon the use of language must depend sooner or later on what I call an act of primary recognition. To revert to his own example, it is supposed not to be sufficient for me to check my memory of the time at which the train is due to leave by visualizing a page of the time-table. I have to check the memory in its turn by actually looking up the page. But unless I can trust my eyesight at this point, unless I can recognize the figures that I see written down, I am still no better off. I can, indeed, appeal to the testimony of other persons but then I have to understand their responses. I have to identify correctly the signs that they make. The point here is not the trivial one that the series of checks cannot continue indefinitely in practice, even if there is no limit to them in theory, but rather that the whole series counts for nothing unless it is brought to a close at some stage. Everything hangs in the air unless there is one item that is straightforwardly identified. Wittgenstein is mistaken also in suggesting that the corroboration of one memory by another is an inferior substitute for some other method of verification. There is no other method. Whatever I have to identify, whether it be an object, an event, an image or a sign, I have only my memory to rely on. The difference lies only in the degree to which the memories are cross-checked.

It is worth remarking that, so far as the present argument goes, there is no essential difference between one's use of signs to refer to 'public' objects and one's use of signs to refer to one's 'private' experiences. If my reference to some public object seems to my fellow-speakers to be deviant, various courses are open to them. They may judge that my perception is at fault, or that I am trying to deceive them, or that I am making a linguistic error. Which explanation they adopt will depend upon the circumstances of the case. They have equally to decide whether it is my words or my feelings that are deviant if I issue reports of my sensations which do not consort with their observation of my behaviour. This does, indeed, concede the point, on which Wittgenstein insists, that we should not, in practice, be able to learn and teach the words for our sensations unless they had characteristic 'outward' manifestations. It does not follow that when we refer to our sensations, we are referring to these manifestations, or indeed that there is any logical connection between them. It is a contingent fact that the congruence between the experiences of our

'outer' senses, which permits the objects of perception to be conceived as public, is not matched by a congruence between our respective feelings. It is a contingent fact even that few, if any, of us are endowed with telepathic powers.

The second of the theses which I chose to examine can also be illustrated by a paragraph from the *Investigations*. 'In what sense', Wittgenstein asks, 'are my sensations *private*?—Well, only I can know whether I am really in pain; another person can only surmise it.—In one way this is false, and in another nonsense. If we are using the word "to know" as it is normally used (and how else are we to use it?) then other people very often know when I am in pain.—Yes, but all the same not with the certainty with which I know it myself!—It can't be said of me at all (except perhaps as a joke) that I *know* I am in pain. What is it supposed to mean—except perhaps that I *am* in pain?

Other people cannot be said to learn of my sensations *only* from my behaviour,—for *I* cannot be said to learn of them. I *have* them.

The truth is: it makes sense to say about other people that they doubt whether I am in pain; but not to say it about myself' (*PI*, § 246).

In the light of the attention which we have seen that Wittgenstein paid in *The Blue Book* to the philosophical problem of one's knowledge of other minds, the summary fashion in which this problem is dealt with here is rather surprising. Neither is its abrupt dismissal at all convincing. Even if it were true that I cannot be said to learn about my sensations, nothing would follow about the way in which other people get to know about them, as Wittgenstein says that they very often do, and in particular it would not follow that they had other means of acquiring this knowledge than through observation of my behaviour. This is not to say that they do not have other means, they may have physiological or even telepathic evidence, but only that the question is left entirely open by Wittgenstein's argument.

Wittgenstein may be right in saying that it makes no sense for me to say about myself that I doubt whether I am in pain, though this is a view that has not gone undisputed. For instance, pragmatists like C. S. Peirce and Lewis have held that all judgments, including judgments about one's present sensations, are fallible. One can certainly be in doubt as to the correct description of an experience, say a sensation of colour, that one is undergoing, but such examples may perhaps be set aside, on the ground that the doubt relates only to one's choice of words, not to any matter of fact. For our present purpose this question may be left open, since however it be decided the consequence cannot be that it is only as a joke that I can be said to know that I am in pain. What Wittgenstein presumably had in mind is that it is very difficult to think of contexts in which there would be any point in saying 'I know that I am in pain'. One can imagine its being said to a sceptical doctor, though some such phrase as 'I assure you, it really does hurt' would be more natural. But the reason why there is little or no occasion for saying that one knows that one is in pain, is not that one would be talking nonsense but that if one were speaking seriously one would be almost bound to be telling the truth. I do not want to say that being in pain and knowing that one is in pain are simply equivalent since I believe that sentient creatures without the command of language can truly be said to be in pain without knowing it, but I do not deny that the information which we gain from someone's saying 'I know that I am in pain' is no more than we should already have inferred from his making what we took to be the honest avowal 'I am in pain'. But what follows from this is that he really can know that he is in pain, so that the sentence in which he expresses his knowledge, so far from being senseless, is true.

In his book *On Certainty*, first published in 1969, eighteen years after his death, and consisting of notes which he composed in the last eighteen months of his life, Wittgenstein carries the same line of thought a good deal further. The peg on which he hangs the argument which runs through these notes is that of G. E. Moore's defence of common-sense. Wittgenstein does not deny the truth, or even the certainty, of propositions of the sort that Moore took for his examples. On the contrary, he maintains that to express any doubt of their

truth, in normal circumstances, would be nonsensical. At the same time, he argues that if it were significant to doubt them, it would not be sufficient to allay the doubt for anyone just to say that he knew them to be true. Not only that, but he takes Moore to be at fault in saying this. His ground for reproaching Moore is not that the propositions themselves are any less certain than Moore took them to be but that to say, in the circumstances in which Moore did say them, such things as 'I know that this is a hand' or 'I know that the earth has existed for many years past' is a misuse of the expression 'I know'.

Wittgenstein's thought here is the same as that which prompted him to say that sentences like 'I know that I am in pain' are nonsensical. He believes that in both sets of instances one is expressing not an ordinary empirical proposition but what he chooses to call 'a proposition of grammar'. What one is really saying is 'There is no such thing as doubt in this case' or 'The expression "I do not know" makes no sense in this case'. From which, Wittgenstein takes it, it follows 'that "I know" makes no sense either' (*OC*, p. 58).

We have already seen that this conclusion is fallacious. Even when the use of the expression 'I know that' serves no purpose, indeed even when its use is misleading, as suggesting that the circumstances are exceptional when in fact they are not, it still does not follow that its use is senseless, or even that it is not used to state what is true. It may perhaps be worth illustrating this by another example. Although people most commonly believe what they assert, the conventional effect of prefacing an assertion with the words 'I believe that' is to weaken its force. It suggests that one is not entirely sure of what follows. If I say, for instance, 'I believe that Smith has been elected' I commit myself less than if I had said outright: 'Smith has been elected'. Nevertheless it certainly does not follow that when I do assert something outright, I do not believe it. In exactly the same way, the fact that it may be pointless or even misleading for me to say such things as 'I know that this looks red to me' or 'I know that these are my hands' in no way entails that what I am saying is not true.

There is more at stake here, however, than the implications of our use of the verb 'to know'. Wittgenstein's reason for refusing to say that he knows the truth of such propositions as 'This is a human hand' is exactly the same as Moore's reason for saying that he does know them to be true, namely that under the appropriate conditions there can be no doubt of their truth. They both also accept the consequence that there can be no doubt of the existence of the physical world of common sense. I assume familiarity here with Moore's approach.[5] The present point of interest is the degree to which Wittgenstein shared it. What is there about our belief in the physical world that made him take it to be sacrosanct?

The answer is that he regarded it, not as an ordinary factual belief, but rather as part of the framework within which the truth or falsehood of our factual beliefs is assessed. In his own words 'All testing, all confirmation and disconfirmation of a hypothesis takes place already within a system. And this system is not a more or less arbitrary and doubtful point of departure for all our arguments; no, it belongs to the essence of what we call an argument. The system is not so much the point of departure, as the element in which arguments have their life' (*OC*, p. 105). This does not prevent the system from being susceptible to change, but its propositions are protected from doubt inasmuch as it does not occur to us to doubt them so long as they hold their place in the system. 'What prevents me', asks Wittgenstein, 'from supposing that the table either vanishes or alters its shape and colour when no one is observing it, and then when someone looks at it again, changes back to its old condition? —"But who is going to suppose such a thing?"—one would feel like saying (*OC*, p. 214). And then he continues: 'Here we see that the idea of "agreement with reality" does not have any clear application' (*OC*, p. 215). I assume that what he means by this is that it is only in the light of certain assumptions that the notion of agreement with reality comes into play. The assumptions themselves neither agree nor disagree with reality. They determine the nature of the reality with which agreement is sought.

What is not clear is how far these assumptions are taken to extend. Wittgenstein speaks of the system which they define as an inherited world picture and of its propositions as

being part of a kind of mythology' (*OC*, p. 95). He says

> It might be imagined that some propositions, of the form of empirical propositions, were hardened and functioned as channels for such empirical propositions as were not hardened but fluid; and that this relation altered with time, in that fluid propositions hardened, and hard ones became fluid. The mythology may change back into a state of flux, the river-bed of thoughts may shift. But I distinguish between the movement of the waters on the river-bed and the shift of the bed itself; though there is not a sharp division of the one from the other. But if someone were to say "So logic too is an empirical science" he would be wrong. Yet this is right: the same proposition may get treated at one time as something to test by experience, at another as a rule of testing' (*OC*, pp. 96—98).

This is a very interesting passage in more ways than one. In spite of the injunction not to regard logic as an empirical science, it seems to soften the analytic-synthetic distinction. At least security, even if it is only provisional, is no longer purchased at the price of saying nothing about the world. For it does not appear that the 'hardening' of empirical propositions is thought to deprive them of their empirical content. But what are we to make of his speaking of the elements of our world picture as being part of a kind of mythology? The suggestion is not, I think, that the picture is false, but rather that what we count as the nature of things is not independent of the fashion in which we describe them. As W. V. Quine was to point out in his *Ontological Relativity* and elsewhere, our judgments about what there is are always embedded in some theory. We can substitute one theory for another, but we cannot detach ourselves from theory altogether and see the world unclouded by any preconception of it. Whether or not Wittgenstein would have approved of this way of formulating it, the impossibility of there being any cognitive process which would require the prising of the world off language appears central to his position. Here he returns to Kant's famous dictum that 'intuitions without concepts are blind' and foreshadows not only Quine but also Nelson Goodman's *Ways of Worldmaking*.[6]

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NOTES

1 Wittgenstein, L., *Tractatus Logico-Philosophicus* (London 1961).
2 Ramsey, F. P., *The Foundations of Mathematics and Other Logical Essays* (London 1931).
3 Carnap, R., *The Unity of Science* (London 1934).
4 Ryle, G., *The Concept of Mind* (London 1949).
5 Moore, G. E., "A Defense of Common Sense" and "Proof of an External World", in: *Philosophical Papers* (London 1959).
6 Goodman, N., *Ways of Worldmaking* (Indianapolis 1978).

* * *

THE OBJECTS OF WITTGENSTEIN'S *TRACTATUS*

Merrill B. Hintikka

One of the most persistent and most pervasive misunderstandings concerning Wittgenstein's *Tractatus*[1] is the idea that what he there calls objects (*Gegenstände*) include only individuals (particulars) but not properties and relations. (Instead of "objects" (*Gegenstände*) Wittgenstein sometimes says "things" (*Dinge*), cf., e.g., *TLP* 1.01. Nothing of importance seems to hang on this terminological variation.) The eminent victims of this misunderstanding include G. E. M. Anscombe, Irving Copi, Richard Bernstein, and a host of other philosophers.[2] This misunderstanding has been criticized among others by Eric Stenius and André Maury.[3] It is my hope in this paper to bury it for good.

The terminological counterpart to this mistake is the view that what Wittgenstein calls "names" in the *Tractatus* are logically speaking all *singular terms*, and hence exclude *predicates* (including relation symbols). (Cf. *TLP* 3.203: "A name means an object.")

An additional reason for discussing this misinterpretation is that doing so leads us to sharpen our understanding of Wittgenstein's *Tractatus* in several important respects. They include Wittgenstein's notions of relation and simplicity as well as his use of the contextual principle he inherited from Frege ("only in the nexus of a proposition does a name have meaning").

To discuss the purely historical and textual aspects of the problem first, there is excellent *prima facie* evidence that Wittgenstein included properties and relations among what he called objects (*Gegenstände*). This evidence is as explicit as one could hope. In his *Notebooks* (p. 61, for June 16, 1915)[4] Wittgenstein writes: "Relations and properties, etc. are *objects* too" (Wittgenstein's emphasis).

And this remark is more than a fleeting aside. It was penned at a time when Wittgenstein had already recorded a large number of what later became propositions of the *Tractatus* in his notebook. Moreover, six days later (June 22, 1915: *Notebooks*, p. 69) Wittgenstein is obviously relying on the same classification. After discussing the apparently complex entities *Socrates* and the *property of mortality* Wittgenstein concludes that "here they just function as simple objects". Further (indirect) evidence is provided by *Notebooks*, p. 70 (June 22, 1915). "A name designating an object thereby stands in a relation to it which is wholly determined by the logical kind of the object and which signalises that logical kind." Individuals are thus not all of one and the same "logical kind"; hence Wittgenstein must be admitting properties and relations among his "objects".

These observations may seem to close the issue for good before it really gets going. However, it is not quite the end of the story. It has been objected that Wittgenstein could very well have changed his mind between the writing of the *Notebooks* passage and the writing of the *Tractatus*.

If so, he changed his mind twice. For in his middle period writings, he is again happily pigeonholing properties and relations among objects; witness e.g., *Philosophical Grammar* I, 20 (p. 58 of the translation);[5]

> And this is the origin of the bad expression: a fact is a complex of objects (*Gegenstände*). Here the fact that a man is sick is compared with a combination of two things (*Dinge*), one of them the man and the other the sickness.

Likewise, in the *Philosophical Remarks* VIII, 77—79 Wittgenstein treats colors as if they were logically speaking individual objects.

The improbability of a dual change of terminology in this important respect provides

excellent reasons for rejecting the identification of Wittgenstein's "objects" in the *Tractatus* with individuals (particulars).

But what about the evidence that is offered by the *Tractatus* itself? There unfortunately are no direct statements about the matter to be found there. However, there is good indirect textual evidence for my view also in the *Tractatus*. Indeed, there is virtually conclusive evidence that Wittgenstein included in the *Tractatus* properties, relations, and functions (in logicians' usual sense of certain kinds of relations) among his "objects". In *TLP* 5.02 he writes:

> The arguments of functions are readily confused with the indices of *names* . . . For example, when Russell writes '$+_c$', the '$_c$' is an index which indicates that the sign as a whole is the addition sign for cardinal numbers. But the use of this sign is the result of arbitrary conventions and it would be quite possible to choose a *simple sign* instead of '$+_c$'. . . (. . . An index is always part of a description of the *object* to whose *name* we affix it . . .) . . ." (My italics throughout this quotation.)

Here Wittgenstein implies in two different ways that the symbol for addition is a name and hence stands for an object. First, it can have an index, which is a characteristic of names. Second, it is equivalent with a simple sign, i.e., a name. (Cf. *TLP* 3.202: "The simple signs employed in a proposition are called names.")

My interpretation is clinched by Wittgenstein's own explanations (to Desmond Lee) of the first few propositions of the *Tractatus*.[6] In them Wittgenstein said: "'Objects' also include relations; a proposition is not two things connected by a relation. 'Thing' and 'relation' are on the same level." After this the purely exegetical issue can be considered pretty much as being closed for good.

The *textual* evidence thus confirms my claim quite conclusively. However, this still leaves us with the problem of the *interpretational* (doctrinal) evidence. Most of the evidence adduced by the defenders of the view under criticism is of this nature. This poses the problem of understanding those views of Wittgenstein's that have been appealed to for this purpose —or at least some of them. Perhaps the most pressing interpretational problem here is this: If Wittgenstein included properties and relations among the objects of the *Tractatus*, why didn't he say so? Once again, my total interpretation of Wittgenstein yields an excellent explanation. Wittgenstein's silence in the *Tractatus* about this important *terminological* point might *prima facie* seem surprising, but it is in reality a straightforward consequence of his assumption of the ineffability of semantics. One corollary to this assumption (on his view) is that the number of argument-places of the primitive predicates we need in our ideal language cannot be predicted *a priori* and is completely arbitrary. (See *TLP* 5.553—5.556, especially 5.554: "It would be completely arbitrary to give any specific form.") By the same token, the distinction between individuals (relations with zero argument-places), properties (relations with one argument-place), and relations proper is likewise completely arbitrary. No wonder Wittgenstein disregarded it in his terminology.

The prize specimens of those interpreters who think that Wittgenstein included among his objects in the *Tractatus* only individuals are *TLP* 2.03—2.031:

> 2.03 In a state of affairs objects fit into one another like the links of a chain.
>
> 2.031 In a state of affairs objects stand in a determinate relation to one another.

It is clear that these statements are perfectly compatible with the view that objects also include properties and relations. The suggestion in 2.03 that there is a kind of symmetry between different kinds of objects occurring in a state of affairs (they are all members of the same chain) will be accounted for later. The point that the relation mentioned in *TLP* 2.031 cannot be one of Wittgenstein's objects is well taken, but it falters on this question: Is it a *relation* in the sense in which relations are a part of one's ontology? A closer analysis quickly shows that it cannot be. Wittgenstein is not even speaking in *TLP* 2.031 of *a* relation, but of how objects *are related to each other* (*verhalten sich . . . zueinander*). A comparison with *TLP* 2.14—2.15 shows that the relationship which Wittgenstein has in mind is of the kind

that constitutes the form of states of affairs and (by isomorphism) pictorial forms. It is eminently clear that these are not constituted by ordinary relations.

Highly relevant evidence is here forthcoming from the *Notebooks*, p. 26. Speaking of the linguistic counterpart of the connection of objects in a state of affairs (''the logical connexion'') Wittgenstein says there: ''N. B. that connexion is not a relation but only the *holding* of a relation.'' It is also instructive to note that in *TLP* 2.032 Wittgenstein does not speak of how objects are *related to* each other in a state of affairs, but rather of ''die Art und Weise, wie Gegenstände im Sachverhalt zusammenhängen''.

Moreover, *TLP* 5.553 shows that Wittgenstein agreed with Russell that there can be simple relations between different numbers of individuals. He disagrees with Russell only as to whether we can find out a priori which ones there are.

One way of seeing that Wittgenstein must have included among the objects more than individuals is to ask the following: What would the linguistic representatives, the names, of these objects look like? On the view I am criticizing, they must all be on a par. But then we cannot use these names to make type distinctions in the way in which Wittgenstein assumes that we can when he discusses Russell's theory of types (cf. *TLP* 3.333) and when he discusses the stipulations which determine the ranges of different quantifiers (see *TLP* 3.316—3.317 and cf. 5.52, which is based on 5.501). If there were no categorial distinctions among Wittgenstein's ''objects'', all quantifiers would of necessity have the same range, and no stipulation would be possible.

This is borne out by a closer study of Wittgenstein's logical practice. Here, as in so many other walks of logic, the real evidence does not come so much from what a philosopher says, but from what he does. As Quine has eloquently reminded us, what entities a philosopher countenances is shown by the entities he is prepared to quantifiy over. Now in Wittgenstein's case we can find a passage of the *Tractatus* where he tips his hand in this respect. Not surprisingly, it is the passage where he speaks of fully generalized propositions (*TLP* 5.526—5.5261). In *TLP* 5.526 he says that

> We can describe the world completely by means of fully generalized propositions, i.e., without first correlating any name with a particular object.
> Then, in order to arrive at the customary mode of expression, we simply need to add, after an expression like, 'There is one and only one x such that . . .', the words, 'and this x is a'.

Here the use of the lower case symbols ''x'' and ''a'' might *prima facie* suggest that Wittgenstein is thinking only of generality with respect to individuals. This is in effect what one of the perpetrators of the view being criticized, Irving Copi, in fact does. His argument is strictly circular, however. Wittgenstein never identifies lower case variables with individual variables. Instead, he explains it by means of the notion of object, whose interpretation is precisely the most important point here: ''Thus the variable name 'x' is the proper sign for the pseudoconcept *object*.'' (*TLP* 4.1272)

In any case, *TLP* 5.5261 shows conclusively that Wittgenstein is also thinking of quantification over (generality with respect to) properties and relations:

> A fully generalized proposition, like every other proposition, is composite. (This is shown by the fact that in '$(x, \phi)\ .\ (\phi x)$' we have to mention 'x' and 'ϕ' separately. They both, independently, stand in signifying relations to the world, just as is the case in ungeneralized proposition.) . . .

In other words, Wittgenstein is accepting as quantified variables and indeed as variables, all of which independently have ''signifying relations to the world'', those ranging over properties and not only those ranging over individuals. It is hard to think of a more revealing statement by a philosopher as to what there is in his universe. (Note also the use of the terms ''object' and ''name'' in *TLP* 5.526).

There are other clear indications in his early writings that Wittgenstein is prepared to quantify

over properties and relations, and not just over individuals; witness, e.g., *TLP* 3.331 and section (5) in Wittgenstein's letter to Russell of August 19, 1919 (*Notebooks* p. 130).

Indeed, Copi himself calls attention to a further passage of this kind. Copi misunderstands Wittgenstein's comments on Russell's axiom of reducibility in *TLP* 6.1232—6.1233, when he claims that they support his interpretation. Or, rather, he misconstrues the import of the axiom. It does not assert anything of the existence of certain properties and relations *simpliciter*. Hence its possible falsity *apud* Wittgenstein does not mean that certain actually existing properties and relations can possibly fail to exist, as Copi fancies. Rather, the axiom says that *given* any property or relation of a certain kind, viz. a higher-order one, there exists an equivalent predicative one. In other words, the axiom does not speak of the absolute existence and nonexistence of properties and relations but of the configurations all properties and relations of a certain kind in fact exhibit.

Wittgenstein's point in *TLP* 6.1233 is clearly that even if all the existing properties and relations in fact were so related to each other as to make the axiom of reducibility true, they could exhibit a different structure which would invalidate the axiom. Hence this axiom (Wittgenstein avers) cannot belong to logic.

Hence on this correct reading the passage does not offer evidence for Copi, but for me, for in it Wittgenstein is unmistakably quantifying in effect over properties and relations.

Copi has also been seriously misled by Wittgenstein's concise way of expressing himself in *TLP* 3.1432:

> Instead of 'The complex sign "*a R b*" says that *a* stands to *b* in the relation *R'*, we ought to put, 'That "*a*" stands to "*b*" in a certain relation says *that a R b*.'

Copi takes this to imply that there are only two ingredients (objects) in the fact that is being represented. This is of course absurd. There must be according to the *Tractatus* the same number of names in the elementary proposition as there are objects in the situation represented (*TLP* 4.04). Now what the situation is is not determined by the names "*a*" and "*b*" alone. Therefore, there must be a third element in the proposition, which is somehow determined by "*R*". Hence, there likewise must be three objects in the situation, not two.

Copi thinks that by using the locution "a certain relation" Wittgenstein is in effect abstracting from the relational sign, as it were generalizing existentially with respect to it. This is a plain misreading of the text; the words "a *certain* relation" (eine gewisse Beziehung) don't function there as an abstracting or quantifying operator. This is shown by a passage in "Notes dictated to G. E. Moore in Norway" (*Notebooks*, p. 110, Fifth paragraph). From them we can see that there could be a more explicit version of the second half of *TLP* 3.1432. It might run as follows:

> We ought to put, 'That "*a*" stands to "*b*" in a certain relation, *viz. in the relation of flanking "R" (in the relation that obtains when "R" is* between "*a*" and "*b*") says *that a R b*'.

This point is verified by other Wittgensteinian passages; witness e.g. *Notebooks*, p. 99:

> Symbols are not what they seem to be. In '*a R b*' '*R*' looks like a substantive but is not one. What symbolizes in '*a R b*' is that '*R*' occurs between '*a*' and '*b*'. Hence '*R*' is *not* the indefinable in '*a R b*'.

This clearly means that what *is* indefinable in "*a R b*" is the relation which consists of the symbols' "*a*" and "*b*" flanking "*R*". But indefinables are for Wittgenstein precisely *names*, and they stand for *objects*.

This passage is especially relevant to my interpretation of *TLP* 3.1432 because it occurs earlier in the very same work, viz. in Wittgenstein's "Notes on Logic" in which he a little later formulates in effect the very same proposition as *TLP* 3.1432 (see *Notebooks*, p. 105).

This brings out an important point of exegesis, and an insight into Copi's difficulties. What we have found is not just that there is a third ingredient in the relational proposition Wittgenstein contemplates in 3.1432. We have found what this third ingredient is. It is the

relation which consists in two individual names' flanking a symbol correlated with a certain relation in the world. Now this third ingredient of the proposition must *apud* Wittgenstein's *Tractatus* be a *name*. Hence we see that a *name* can for Wittgenstein be not a *symbol* (e.g. the *letter* "*R*"), but a certain *relation* (e.g., that of flanking a particular letter). This usage may sound utterly strange, and it may have this *prima facie* strangeness that has made it impossible for the likes of Copi and Anscombe to swallow. Yet it is merely the precise linguistic counterpart to the idea that a relation obtaining in the world has as its linguistic counterpart a linguistic *relation*. Far from being strange, this idea is almost a matter of course for those who are taking seriously Wittgenstein's idea of an elementary proposition as a picture (e.g., Stenius).

Part of the difficulty of accepting this interpretation is terminological. A *name* certainly seems to be always a *word*, not a linguistic *relation*. Furthermore, Frege set up a contrast between saturated entities, which he called *objects*, and unsaturated entities, which he termed *functions*. On my interpretation, Wittgenstein departs from Frege terminologically very sharply in this respect, for according to this interpretation Wittgenstein calls in the *Tractatus* both kinds of entities *objects*. These are merely terminological perplexities, however, and have no bearing on the real issues of interpretation.

There nevertheless remains a genuine interpretational hurdle. One of the most important characteristics of the objects of the *Tractatus* is that they are *simple*. And this certainly appears to rule out relations as objects, for a relation does have a structure: in it, we have to distinguish the terms of the relation from one another and from the relation that obtains between them. In the linguistic representative of a relation, we likewise have to distinguish the argument places and the relational letter or word itself ("*R*" in the example above).

In view of this objection, it is important to see precisely what the simplicity of (basic) objects means for Wittgenstein. It turns out that the notion of simplicity has two components for Wittgenstein. On the one hand, a simple object cannot be analyzed by means of definitions. On the other hand, simple objects are logically independent of one another. The first can perhaps be considered as a consequence of the second. Be this as it may, the important thing here is that by both criteria, primitive (unanalyzable) relations can obviously be "simple" in Wittgenstein's sense, and hence can be objects.

Furthermore, the kind of complexity which a relation exhibits (e.g. one's being able to distinguish different terms) concerns entirely its different possibilities of being combined with other entities into states of affairs. Now this kind of complexity Wittgenstein attributes in so many words to his simple objects: "If I know an object I also know all its possible occurrences in states of affairs. (Every one of these possibilities must be part of the nature of the object.)" (*TLP* 2.0123) Hence the kind of complexity which a relation instantiates is not the kind of complexity Wittgenstein denies of his objects, and hence is not a reason for not including relations among the objects Wittgenstein countenances in the *Tractatus*.

There is a kind of an indirect justification for Wittgenstein's use of 'object' (*Gegenstand*) in the *Tractatus*. As is argued elsewhere, the logic of the *Tractatus* is a second-order logic with what has later become known as nonstandard interpretation.[7] Such logics are not really greatly different from many-sorted first-order logics, with properties and the different kinds of relations (relations with different numbers of argument places) playing the role of the different sorts of individuals. In this sense, there is in the scheme of the *Tractatus* little difference between individuals, and properties and relations. I suspect that Wittgenstein was not completely unaware of this state of affairs, which partly vindicates his lumping individuals, properties and relations together as all of them being "objects".

But surely, one may object, Wittgenstein could not have been aware in the *Tractatus* of anything as fancy as nonstandard interpretations in Henkin's sense. Of course he could not have been aware of the precise distinction, but there was enough for him to be aware of to have appreciated the situation. For one thing, what has since been labelled the nonstandard interpretation of higher order logics was pretty uniformly accepted in the time of

the writing of the *Tractatus*. What is even more important, on the view I have attributed to Wittgenstein in the *Tractatus*, there is a basic *symmetry* between individuals on the one hand and properties and relations on the other. And of this symmetry he could have been completely well aware. Indeed, the notorious proposition *TLP* 2.03 relied on by Copi and Co. may be thought of as evidence for this very symmetry in Wittgenstein's mind.

A closely related way of looking at Wittgenstein's view in the *Tractatus* is to suggest that he realized a tacit contradiction which may be lurking in the contrast Frege drew between saturated and unsaturated symbols and the contextual principle which both Frege and Wittgenstein accepted ("only in a proposition have words really a meaning", *Grundlagen* sec. 60; "only propositions have sense; only in the nexus of a proposition does a name have meaning", *TLP* 3.3). The contrast is supposed to be between those ("unsaturated") entities ("functions", in Frege's jargon) that need another entity to "complete" them and those ("saturated") entities ("objects", in Frege's terminology) that don't. This contrast corresponds to an analogous distinction between the linguistic representatives of the two kinds of entities. But the contextual principle says that neither unsaturated nor saturated symbols have independent meaning outside propositions. Either kind of symbol is "in need of completion" by the other kind. The same will, of course, apply to the corresponding entities. Hence the saturated-unsaturated contrast becomes otiose. There are no other ways of creating an asymmetry between saturated and unsaturated symbols, either. For instance, according to Frege both saturated and unsaturated symbols have references, which are respectively saturated and unsaturated, too. Hence, the Fregean distinction between objects and functions becomes a merely correlative one, and there was no reason for Wittgenstein not to call both of them "objects".

Moreover, if we want to assimilate from this vantage point the "objects" of the *Tractatus* either to Frege's saturated entities ("objects") or to his unsaturated entities ("functions"), we can now see that the better identification is with Frege's functions, for they are for him unsaturated, which we found *all* entities to be in a sense according to the contextual principle. Thus the usual identifications of the "objects" of Wittgenstein's *Tractatus* with individuals (saturated entities) is not only mistaken, but diametrically wrong. It is less misleading to think of Wittgenstein's "objects" as all being functions than to think of them all as individuals. The misunderstanding which I initially called persistent and pervasive is also perverse.

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NOTES

1 I am using the text and translation of the 1961 version of *Tractatus Logico-Philosophicus*: the German text of *Logisch-philosophische Abhandlung* with a new translation by D. F. Pears and B. F. McGuinness (London 1961). I shall refer to the *Tractatus* by means of the proposition numbers in the text.

2 See G. E. M. Anscombe, *An Introduction to Wittgenstein's* Tractatus, (London 1959); Irving M. Copi, "Objects, Properties, and Relations in the *Tractatus*", *Mind,* Vol. 67 (1958), pp. 145—165; G. E. M. Anscombe, "Mr. Copi on Objects, Properties, and Relations in the *Tractatus*", *Mind*, Vol. 68 (1959), p. 404; R. J. Bernstein, "Wittgenstein's Three Languages", *Review of Metaphysics*, Vol. 15 (1961), pp. 278—298.

3 Stenius, E., *Wittgenstein's* Tractatus: *A Critical Exposition of its Main Lines of Thought* (Oxford 1960); A. Maury, *The Concept of* Sinn *and* Gegenstand *in Wittgenstein's "Tractatus", Acta Philosophica Fennica*, Vol. 29, no. 4 (Amsterdam 1977).

4 Wittgenstein, L., *Notebooks 1914—1916* (Oxford 1961).

5 Wittgenstein, L., *Philosophical Grammar* (Oxford 1974).

6 Lee, B., *Wittgenstein's Lectures, Cambridge 1930—32* (Towata, N.J. 1980), p. 120.

7 See L. Henkin, "Completeness in the Theory of Types", *Journal of Symbolic Logic*, Vol. 15, (1950), pp. 81—91. J. Hintikka, "Standard vs. Nonstandard Logic: Higher-order, Modal, and First-order Logic", in: Evandro Agazzi (ed.), *Modern Logic: A Survey* (Dordrecht 1980), pp. 283—296.

* * *

DIE „GEDANKEN“ WITTGENSTEINS UND ANDERER

Hans-Joachim Dahms

1) Im Vorwort des Tractatus schreibt Wittgenstein über das Verhältnis zu seinen philosophischen Vorgängern:

> Wieweit meine Bestrebungen mit denen anderer Philosophen zusammenfallen, will ich nicht beurteilen. Ja, was ich hier geschrieben habe, macht im Einzelnen überhaupt nicht den Anspruch auf Neuheit; und darum gebe ich auch keine Quellen an, weil es mir gleichgültig ist, ob das, was ich gedacht habe, vor mir schon ein anderer gedacht hat. Nur das will ich erwähnen, daß ich den großartigen Werken Freges und den Arbeiten meines Freundes Herrn Bertrand Russell einen großen Teil der Anregung zu meinen Gedanken schulde.

Diese Erwähnung Freges und Russells hat viele Wittgenstein-Kommentatoren dazu geführt, die Ähnlichkeit des Tractatus mit den Lehren Freges und Russells zu überschätzen und andererseits den Einfluß zu unterschätzen, den der einzige Autor auf Wittgenstein ausgeübt hat, dessen Erwähnung in TLP 4.04 — abweichend von der im Vorwort gemachten Ankündigung — doch mit Quellenangabe geschieht, nämlich Hertz. Inzwischen ist ja schon von verschiedenen Autoren der Versuch unternommen worden, Art und Umfang des Einflusses anzugeben, den Hertzens nachgelassenes Werk „Prinzipien der Mechanik“ auf Wittgensteins Bildtheorie der Sprache gehabt hat.[1]

Mit den folgenden Bemerkungen möchte ich nun einen Schritt weiter gehen und die These vertreten, daß in den Fällen, wo Wittgensteins Erweiterung der Hertzschen Bildkonzeption mit den Vorstellungen Russells und Freges kollidiert, dies jeweils zugunsten der Bildtheorie und zu Ungunsten Russells und Freges ausgeht. Diese These werde ich begründen durch einen Vergleich des Gedankenbegriffs bei Wittgenstein mit den entsprechenden Konzeptionen Russells und Freges.

2) Beginnen wir mit einer kurzen Rekapitulation der Wittgensteinschen Bildtheorie in ihrem Verhältnis zu Hertz! Bekanntlich ist Wittgensteins Begriff eines Bildes in wesentlichen Aspekten dem nachgebildet, was Hertz „dynamische Modelle“ nennt. Für Bilder und Modelle im Hertzschen Sinne gilt, daß das, was abgebildet wird, mit dem, was es abbildet, die gleiche Mannigfaltigkeit aufweist, also die gleiche Anzahl von Bildelementen sowie die gleiche Anzahl und Art von Relationen zwischen den Bildelementen. Diese Gemeinsamkeit von Bild und Abgebildetem nennt Wittgenstein in TLP 2.17 „Form der Abbildung“. Wittgenstein erweitert nun die Hertzsche Bildkonzeption erheblich und korrigiert sie gleichzeitig in einem wichtigen Punkt.

Die *Erweiterung* besteht darin, daß bei Wittgenstein Gedanken und Sätze explizit zu Bildern werden.

Dagegen wird bei Hertz die Tauglichkeit der Bildvorstellung zur Veranschaulichung des Verhältnisses von Natur, menschlichem Geist und sprachlicher Darstellung der Natur nur verschiedentlich angedeutet. So heißt es zum Beispiel S. 199: „Das Verhältnis eines dynamischen Modells zu dem System, als dessen Modell es betrachtet wird, ist dasselbe, wie das Verhältnis der Bilder, welche unser Geist von den Dingen bildet, zu den Dingen.“ In der Einleitung zu den „Prinzipien“ wird weiter zwischen diesen Bildern unseres Geistes und den sprachlichen Darstellungen der Bilder unterschieden und damit auch die Wittgensteinsche Unterscheidung von Gedanken und Sätzen vorweggenommen. Es kann nun aber keine Rede davon sein, daß Hertz diese prinzipiellen Einsichten auch für den ganz allgemeinen Fall des Verhältnisses von Realität, Geist und Sprache wirklich durchgeführt hätte. Dies ist vielmehr nur für den

spezielleren Fall physikalischer Theorien, nämlich insbesondere der Elektrodynamik und der Mechanik geschehen, wo Hertz jeweils die Theorie als Bild unseres Geistes von den verschiedenen Darstellungen dieser Theorie unterscheidet.[2] Diese speziellere Diskussion hat Wittgenstein ja bekanntlich auch in TLP 6.341 ff. für den Fall der Mechanik aufgenommen.

Die *Korrektur* besteht darin, daß die Bildrelation bei Hertz noch symmetrisch ist („Ist ein System Modell eines zweiten Systems, so ist auch umgekehrt das zweite System Modell des ersten."[3]). Dieser Fall wird bei Wittgenstein dadurch ausgeschlossen, daß „nach dieser Auffassung" (also nach Wittgensteins Auffassung im Unterschied zu anderen wie z.B. derjenigen Hertz') „zum Bild auch noch die abbildende Beziehung, die es zum Bild macht" (TLP 2.1513), gehört.

Von Hertzens Bildern gilt im übrigen wie von Wittgensteins, daß ihre Richtigkeit (Hertz) bzw. Wahrheit (Wittgenstein) in ihrer Übereinstimmung mit der Wirklichkeit besteht.

3) Gehen wir nun zum angekündigten doppelten Vergleich der Gedankentheorie Wittgensteins mit denen Russells und Freges über! Es bietet sich an, mit der Russells zu beginnen, weil diese im Tractatus wenigstens in Teilaspekten diskutiert wird, während Freges Gedankentheorie dort überhaupt nicht explizit vorkommt.

Bekanntlich wird der Wittgensteinsche Gedankenbegriff in TLP 3 mit folgender Definition eingeführt: „Das logische Bild der Tatsachen ist der Gedanke". Um zu verstehen, was das bedeutet, muß man offenbar wissen, was ein Bild im allgemeinen ist und, was es heißt, daß ein Bild „logisch" genannt wird. Wie man aus 2.1 ff. entnehmen kann, ist es notwendige Bedingung für Bilder, daß sie aus gewissen Elementen zusammengesetzt sind und daß diese Elemente in einer gewissen Relation zueinander stehen. Nach Wittgenstein gibt es nun bekanntlich die verschiedensten Arten von Bildern: räumliche Bilder von räumlichen Sachverhalten, farbige von farbigen etc. Wenn man nun davon abstrahiert, welche (nämlich räumliche, farbige etc.) Beschaffenheit die Bildelemente jeweils haben, erhält man sozusagen als mengentheoretischen Durchschnitt aller Bilder mit der gleichen Mannigfaltigkeit das logische Bild. Wie nun die Herstellung logischer Bilder im einzelnen vonstatten geht, braucht uns hier nicht weiter zu beschäftigen. Denn bereits daraus, daß Gedanken Bilder sind, folgt, daß sie zusammengesetzt sein müssen und darauf kommt es mir im Folgenden an.

Russell war die Vorstellung von der Zusammengesetztheit der Bilder offenbar nicht recht geheuer, denn er hatte Wittgenstein nach Erhalt einer Kopie des Traktats gefragt, woraus Gedanken bestehen, wenn sie denn zusammengesetzt sind. Wittgenstein reagiert auf diese Frage im Brief von 19. 8. 1919:

> Ich weiß zwar nicht, welches die Bestandteile eines Gedankens sind, aber ich weiß, daß er solche Bestandteile haben muß, die den Wörtern der Sprache entsprechen. Die Art der Beziehung zwischen den Bestandteilen des Gedankens und der abgebildeten Tatsache ist wieder irrelevant. Diese zu entdecken, wäre eine Sache der Psychologie.

Im selben Brief fährt er fort: „Besteht ein Gedanke aus Wörtern? Nein! Sondern aus psychischen Bestandteilen, die in einer gleichartigen Beziehung zur Wirklichkeit stehen wie die Wörter. Welches diese Bestandteile sind, weiß ich nicht".[4] Mir kommt es nun in diesem Zitat vor allem darauf an, daß die Bestandteile des Gedankens „psychische Bestandteile" genannt werden, denn dies zeigt, daß Gedanken und ihre Bestandteile Teile der Seele bzw. des Subjekts sind, wie Wittgenstein sich auch ausdrückt. Dieser Umstand läßt es geraten erscheinen, sich näher anzusehen, was Wittgenstein denn sonst zur Frage der Zusammengesetztheit der Seele mitzuteilen hat. Ich habe hier die stark komprimierten Bemerkungen im Auge, die Wittgenstein der Erkenntnistheorie Russells und Moores in TLP 5.54 ff. widmet. Sie lauten:

> 5.54 In der allgemeinen Satzform kommt der Satz im Satze nur als Basis der Wahrheitsoperationen vor.

5.541 Auf den ersten Blick scheint es, als könne ein Satz in einem anderen auch auf andere Weise vorkommen.
Besonders in gewissen Satzformen der Psychologie, wie ,,A glaubt, daß p der Fall ist", oder ,,A denkt p" etc. Hier scheint es nämlich oberflächlich, als stünde der Satz p zu einem Gegenstand A in einer Art von Relation. (Und in der modernen Erkenntnistheorie sind jene Sätze auch so aufgefaßt worden.)

5.542 Es ist aber klar, daß ,,A glaubt, daß p", ,,A denkt p", ,,A sagt p" von der Form ,,,,p" sagt p" sind: Und hier handelt es sich nicht um eine Zuordnung von einer Tatsache und einem Gegenstand, sondern um die Zuordnung von Tatsachen durch Zuordnung ihrer Gegenstände.

5.5421 Dies zeigt auch, daß die Seele — das Subjekt etc. — wie sie in der heutigen oberflächlichen Psychologie aufgefaßt wird, ein Unding ist.
Eine zusammengesetzte Seele wäre nämlich keine Seele mehr.

5.5422 Die richtige Erklärung der Form des Satzes ,,A urteilt p" muß zeigen, daß es unmöglich ist, einen Unsinn zu urteilen. (Russells Theorie genügt dieser Bedingung nicht.)

Meine Interpretation dieser Stelle versucht nun, folgende Fragen zu beantworten:

a) gegen welche Theorie richtet sich Wittgensteins Kritik?

b) Was ist seine eigene Theorie?

c) Wieso wird diese nicht durch die Einwände getroffen, die Russells Theorie inakzeptabel machen?

ad a) Wie schon aus der Einleitung Russells zur englischen Übersetzung des Tractatus zu entnehmen ist, bezieht sich Wittgensteins Kritik auf die sogenannte multiple-relation-theory of judgment, wie sie Russell in ,,On the Nature of Truth and Falsehood" 1907 vertreten hatte.

Russell hatte dort zwei mögliche Analysen der logischen Form von Sätzen, die propositional attitudes wie doubting, considering, desiring etc. enthalten, vorgestellt: ,,If I judge (say) that Charles I died on the scaffold, is that a relation between me and a single ''fact'', namely, Charles I's death on the scaffold, or ,,that Charles I died on the scaffold'', or is it a relation between me and Charles I and dying and the scaffold?'' [5]

Gegen die erste, von Russell sogenannte monistische Theorie, und gleichzeitig zugunsten der zweiten, der multiple-relation-Theorie, hatte er zwei Gründe geltend gemacht. Der erste, aber nicht entscheidende Grund, bestand darin, daß die erste Theorie zur Annahme von solch dubiosen Entitäten wie Propositionen zwingt, die Alternativtheorie dagegen nicht. Der entscheidende Einwand sollte aber darin bestehen, daß für falsche Urteile entweder von der monistischen Theorie ,,false objectives", also so etwas wie negative Sachverhalte, angenommen werden müßten oder aber überhaupt keine Sachverhalte, die den falschen Urteilen entsprechen könnten. Im ersten Fall würden dann aber zu den ohnehin schon unwillkommenen Propositionen, die wahren Urteilen entsprächen, noch weitere wesentlich unerwünschtere Entitäten, nämlich eben die negativen Sachverhalte, hinzukommen müssen, die den falschen entsprechen würden. Im zweiten Fall würde eine inakzeptable Asymmetrie zwischen wahren und falschen Urteilen auftreten: die wahren wären *wegen* ihrer (Übereinstimmungs-) Relation zu Tatsachen wahr, die falschen dagegen wären falsch, weil sie *keine* Relation zu irgendetwas Realem aufwiesen.

Auf die eigentlich naheliegende Alternative, Wahrheit und Falschheit von Sätzen als *verschiedene* Relationen (nämlich als Übereinstimmung oder als Nicht-Übereinstimmung mit ein- und demselben Sachverhalt) zu konstruieren, ist Russell damals noch nicht gekommen.[6]

Seine eigene Theorie wird so skizziert: ,, . . . Judgment is not a dual relation of the mind to a single objective, but a multiple relation of the mind to the various other terms with which the judgment is concerned".[7] Der Unterschied zwischen wahren und falschen Urteilen sieht

demnach so aus: ,,Every judgment is a relation of a mind to several objects, one of which is a relation; the judgment is true when the relation which is one of the objects relates the other objects, otherwise it is false".[8] Für den Fall asymmetrischer Relationen wird dann noch gefordert, daß die Relation die ,,richtige Richtung" aufweisen müsse, um unterscheiden zu können, ob in einem zu beurteilenden Komplex etwa die Person A die Person B liebt oder umgekehrt (was ja bekanntlich nicht stets zusammen wahr oder falsch sein muß). Es heißt dann noch: ,,The same account, mutatis mutandis, will apply to any other judgment".[9]

ad b) Wittgensteins Theorie unterscheidet sich von der Russellschen nun dadurch, daß sie das urteilende, denkende oder glaubende Subjekt A nicht als einfaches Relatum der Relation des Urteilens, Denkens und Glaubens, also als einen Gegenstand, ansieht, sondern als etwas Komplexes, genauer gesagt: als eine komplexe Tatsache. Nur so ist die etwas dunkle Stelle 5.542 überhaupt zu verstehen, daß es sich bei Satzformen wie ,,A glaubt, daß p" nicht um ,,eine Zuordnung von einer Tatsache und einem Gegenstand, sondern um die Zuordnung von Tatsachen durch Zuordnung ihrer Gegenstände" handelt. Mit anderen Worten: beim Urteilen, Denken und Glauben werden gewisse Seelenteile sozusagen portionsweise gewissen Bestandteilen der Welt zugeordnet.

ad c) Vermeidet aber nun Wittgensteins Theorie das, was er Russells Theorie vorwirft, nämlich, daß es nach letzterer möglich ist, einen Unsinn zu urteilen? Nach Wittgensteins Brief vom Januar 1913 an Russell ist es wahrscheinlich, daß mit ,,Unsinn" in diesem Kontext typentheoretischer Unsinn gemeint war, der entsteht, wenn ich, statt etwa Sterblichkeit von Sokrates auszusagen, Sokrates von Sterblichkeit aussagen wollte.[10] Für diesen Fall ist in der Tat in Russells Theorie keine Vorsorge getroffen, die ja ihrem bereits zitierten Anspruch nach ,,mutatis mutandis . . . to any other judgment" ausgedehnt werden sollte. Denn in dem Satz ,,Urteilen gilt von A hinsichtlich des Komplexes (Sokrates, sterblich)" kommt in dem zu beurteilenden Komplex überhaupt keine Relation vor, die sozusagen dafür sorgen könnte, daß die ,,several objects" ,,Sokrates" und ,,sterblich" so zueinander in Relation gesetzt werden könnten, daß typentheoretischer Unsinn wie ,,Sokrates gilt von Sterblichkeit" vermieden würde.

Wittgensteins Theorie vermeidet nun diesen Typ von Unsinn, indem sie den Bestandteilen des Subjekts jeweils mittels der gemeinsamen logischen Form eindeutig einen entsprechenden Bestandteil der Tatsache und des Satzes zuordnet. Dies ist möglich, weil in dieser Theorie die Gedanken des Subjekts *als Bilder* schon die erforderliche Mannigfaltigkeit aufweisen.

Damit zeigt sich im übrigen auch, daß häufig zu hörende Thesen, wie die, daß Wittgenstein sich im Tractatus nicht mit Erkenntnistheorie beschäftigt habe und der TLP erkenntnistheoretisch neutral sei, nicht zu halten sind. Denn Wittgenstein hat sich erstens sehr wohl mit gewissen Satzformen der Psychologie beschäftigt, also mit der Philosophie der Psychologie, und gerade die war von ihm in TLP 4.1121 mit Erkenntnistheorie gleichgesetzt worden. Wie sich weiterhin gezeigt hat, ist Wittgensteins Analyse solcher Satzformen der Psychologie nicht etwa neutral, sondern mit der multiple-relation-Theorie Russells (und im übrigen auch mit der monistischen Theorie, was hier nicht gezeigt werden konnte) nicht zu vereinbaren.

4) Wenden wir uns nun dem Vergleich von Wittgensteins und Freges Gedankentheorie zu! Hier liegen die Verhältnisse von der Textbasis her vergleichsweise verzwickter. Denn weder wird Freges Gedankentheorie im TLP explizit von Wittgenstein diskutiert, noch beschäftigt sich umgekehrt Frege in seinem berühmten Aufsatz ,,Der Gedanke" explizit mit Wittgensteins Bildtheorie des Gedankens. Das ist auch nicht weiter verwunderlich, da sich die Publikation von Freges ,,Der Gedanke" sozusagen mit der Fertigstellung von Wittgensteins Tractatus überkreuzt hat: Frege erhielt ein Manuskript des im August 1918 abgeschlossenen Tractatus kurz vor dem Dezember 1918, also zu einem Zeitpunkt, als ,,Der Gedanke" im ersten Heft der ,,Beiträge zur Philosophie des deutschen Idealismus" schon erschienen war. Wittgenstein bedankt sich erst mit Brief vom 16. 9. 1919 für die Übersendung

von Freges ,,Gedanke", sodaß man davon ausgehen muß, daß Freges Schrift auf die Abfassung des Tractatus ebenfalls keinen Einfluß mehr gehabt hat.[11]

Daß Wittgenstein als auch Frege mit den Arbeiten des jeweils anderen nicht besonders glücklich waren, ist ebenfalls bekannt. So ist überliefert, daß Wittgenstein im selben Brief, mit dem er sich für die Übersendung bedankt, gleichzeitig ,,kritische Bemerkungen" anbringt. Nach Wittgensteins Brief an Russell vom 19. 8. 1919 zu urteilen, muß umgekehrt Freges Reaktion auf den Tractatus ebenfalls kritisch bis verständnislos ausgefallen sein: ,,I gather that he (i.e.: Frege, der Verf.) doesn't understand a word of it all".[12] Was sie im einzelnen aneinander auszusetzen hatten, wissen wir nicht, da der Briefwechsel Wittgenstein/ Frege ja verloren gegangen ist. Der Dissens läßt sich jedoch durch einen Vergleich der beiden genannten Schriften einigermaßen konstruieren.

Daß Wittgenstein Freges gebräuchliche Ausdrücke ,,Sinn", ,,Bedeutung", ,,Gedanke" etc. ebenfalls benutzt, hat eine Reihe von Kommentatoren auf die Idee gebracht, daß ein Unterschied vielleicht darin zu sehen sei, daß mit *denselben* Begriffen *verschiedene* Thesen verbunden werden. So schreibt z.B. Anscombe:

> Wittgenstein's conception of "sense" may be called the same as Freges, if we are careful to add that Wittgenstein had different theses about it: for he held that names had no sense but only reference, and propositions no reference but only sense.[13]

In Wirklichkeit ist der Dissens aber viel weitgehender. Denn schon beim Begriff des *Satzsinns*, den sowohl Frege als auch Wittgenstein ,,Gedanken" nennen und nicht erst bei seiner Anwendung in verschiedenen Thesen gehen die Ansichten so weit auseinander, daß sie sich widersprechen.

Wittgenstein erklärt den ,,Gedanken" im Tractatus wie gesagt so:

> 3 Das logische Bild der Tatsachen ist der Gedanke.
>
> 3.001 ,,Ein Sachverhalt ist denkbar" heißt: Wir können uns ein Bild von ihm machen.

Wahrheit und Falschheit waren schon vorher (TLP 2.222) als Übereinstimmung des Bildsinns mit der Wirklichkeit definiert worden.

Ein schärferer Dissens zur Auffassug Freges ist kaum denkbar. Denn von Gedanken als *Bilder von Tatsachen*, die man sich zudem *macht* und deren *Wahrheit* und *Falschheit* in der *Übereinstimmung* bzw. *Nichtübereinstimmung* mit der Wirklichkeit *besteht*, wollte Frege jeweils explizit nichts wissen.

Seine Argumente gegen eine Bildkonzeption des Gedankens[14, 15] sind die folgenden:

a) Eine ,,Übereinstimmung eines Bildes mit dem Abgebildeten" kommt schon deshalb nicht zur Definition von ,,wahr" in Frage, weil dies Wort kein Beziehungs-, sondern ein Eigenschaftswort ist.

b) Man kann nicht ein Bild (oder auch eine Vorstellung) für sich, sondern nur zusammen mit einer Abbildungsintention wahr nennen.

c) Sodann besteht folgendes Dilemma: entweder die beiden auf Übereinstimmung zu prüfenden Objekte stimmen vollständig überein oder sie stimmen nicht vollständig überein. Stimmen sie vollständig überein, dann können sie auch gar nicht mehr miteinander verglichen werden, weil sie dann zusammenfallen. Stimmen sie nur unvollständig überein, dann ist ihre Wahrheit genausowenig wie ihre Übereinstimmung vollkommen. Wollte man aber unvollständige Übereinstimmung akzeptieren, um etwas ,,wahr" zu nennen, müßte man nicht nur angeben, *in welcher Hinsicht* diese Übereinstimmung bestehen solle, sondern auch, ,,ob es wahr wäre, daß — etwa eine Vorstellung und ein Wirkliches — in der festgesetzten Hinsicht übereinstimmten". Damit wiederhole sich ,,die Frage nach dem Wahrsein ins

Unendliche". Frege kommt schließlich zu dem Ergebnis: ,,Hiernach ist es wahrscheinlich, daß der Inhalt des Wortes ,,wahr" ganz einzigartig und undefinierbar ist".[16]

Dieser offensichtliche Unterschied zwischen Frege und Wittgenstein beim Wahrheitsbegriff überträgt sich nun aber auf den Begriff des Gedankens, bei dem nach Frege ,,überhaupt Wahrheit in Frage kommt". Denn wenn Wahrheit keine Übereinstimmung eines Bildes mit einem Abgebildeten sein kann, macht es auch keinen Sinn, einen Gedanken ein Bild zu nennen.

Die Verschiedenheit der Fregeschen und Wittgensteinschen Gedankenauffassung wird noch weiter dadurch gestützt, daß man sich nach Wittgenstein Bilder der Welt *macht*, während bei Frege Gedanken unabhängig existieren. Frege schreibt: ,,Beim Denken erzeugen wir nicht die Gedanken, wir fassen sie".[17]

Wie ferner ja schon der Vergleich Wittgenstein/Russell gezeigt hat, sind Gedanken nach Wittgenstein aus einzelnen *psychischen* Gedankenelemente bestehende Komplexe eines Subjekts. Für Frege dagegen sind Gedanken nicht ,,trägergebunden". Er hätte Wittgensteins ,,Gedanken" vermutlich ,,Vorstellungen" genannt.

Nach all dem halte ich es für wahrscheinlich, daß Wittgenstein überhaupt keine terminologische Anlehnung an Frege gesucht hat, wenn er das Wort ,,Gedanke" benutzt hat, sondern sich an den unter philosophierenden Physikern wie Hertz und Boltzmann damals völlig üblichen Wortgebrauch gehalten hat.

Trifft nun Freges Kritik an der Bildtheorie der Sprache auf Wittgensteins Tractatus zu? Ich meine nicht, denn:

a) Dadurch, daß Wittgenstein die Symmetrie des Bildbegriffs bei Hertz korrigiert hat, hat er gleichzeitig bereits dem Einwand Rechnung getragen, daß ein Bild auf das Abgebildete bezogen sein muß.

b) Die Wittgensteinsche Bildkonzeption verlangt ebensowenig wie die Hertzens, daß Bild und Abgebildetes vollkommen miteinander übereinstimmen müssen, um wahr zu sein, und vermeiden so das eine Horn des Fregeschen Dilemmas. Denn beide fordern nur Übereinstimmung in einer gewissen Hinsicht, nämlich bezüglich der gleichen Mannigfaltigkeit von Bild und Abgebildetem.

Das andere Horn des Fregeschen Dilemmas bestand in der Gefahr des unendlichen Regresses, die dadurch aufkommt, daß man bei jedem (angeblich) wahren Bild immer noch fragen kann: aber ist es denn *wahr*, daß hier eine Übereinstimmung besteht? Ich meine, daß diese Gefahr nicht besteht. Denn statt zu fragen: ,,Ist es wahr, daß eine Übereinstimmung besteht", reicht es völlig hin, einfach zu fragen: ,,Besteht die Übereinstimmung?" Frege hat in seinen ,,Grundlegenden logischen Einsichten" dies Gegenargument selbst quasi mitgeliefert, wenn er (im übrigen in Vorwegnahme der späteren Redundanztheorie der Wahrheit) sagt: ,,Wenn ich behaupte: es ist wahr, daß das Meerwasser salzig ist, so behaupte ich dasselbe wie wenn ich behaupte ,,das Meerwasser ist salzig" und fortfährt: . . ." daß das Wort ,,wahr" zum Sinne des ganzen Satzes, in dem es als Prädikat vorkommt, nichts beiträgt".[18] Folglich kann das Wort ,,wahr" in der Frage nach der Wahrheit der behaupteten Übereinstimmung von Bild und Realität auch ohne weiteres wieder eliminiert werden, wodurch gleichzeitig der infinite Regress und das zweite Horn des Fregeschen Dilemmas vermieden wird.

5) Ziehen wir ein kurzes Fazit der beiden vorgenommenen Vergleiche! Es hat sich ergeben, daß bei der Verheiratung der beiden prinzipiellen Traditionen, die in Wittgensteins Tractatus zusammengebracht worden sind, nämlich der Tradition der Bildtheorie, die in ihrer modernen Form von Hertz ausgeht, mit den logischen Einsichten Russells und Freges an einer entscheidenden Stelle die Hertz-Tradition gegenüber den anderen Zutaten dominant blieb, nämlich beim Gedankenbegriff. Die gleiche Tendenz ließe sich auch für den Gegenstandsbegriff belegen.

Bei einem Vergleich Wittgensteins spezifisch logischer Einsichten im Tractatus mit denen von Hertz und Boltzmann würde sich meines Erachtens sogar zeigen lassen, daß er dieser Tradition auch auf diesem Gebiet wesentlich mehr verdankt, als man bisher angenommen hat.

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ANMERKUNGEN

1 Siehe Griffin (1964); Hacker (1972); Janik/Toulmin (1973).
2 Siehe Hertz (1892), S. 21 ff. für die Elektrodynamik, Hertz (1895) für die Mechanik.
3 Hertz (1895), S. 197.
4 Wittgenstein (1980), S. 89 f.
5 Russell (1910), S. 150.
6 Aber später in Russell (1956), S. 187 und 208, sowie in Russell (1921), S. 272 mit ausdrücklichem Hinweis auf Wittgenstein.
7 Russell (1910), S. 155.
8 Russell (1910), S. 156.
9 Russell (1910), S. 158.
10 Wittgenstein (1980), S. 89 f.
11 Frege (1976), S. 266 ff. Siehe insbesondere die Anmerkungen des Herausgebers zu den Briefen XLV/11 und XLV/22.
12 Wittgenstein (1980), S. 25 f.
13 Anscombe (1959), S. 17.
14 Frege (1966), S. 31 ff.
15 Diese Argumente sind im übrigen schon sämtlich in unveröffentlichten Schriften Freges zwischen 1897 und 1918 zu finden (z.B. Frege (1969), S. 137, § 143, S. 138, § 145, S. 143, 145 f.), sind also keine Reaktionen auf den Gedankenaustausch mit Wittgenstein.
16 Frege (1966), S. 32.
17 Frege (1966), S. 50.
18 Frege (1969), S. 271.

LITERATUR

Anscombe, G. E. M., An Introduction to Wittgenstein's Tractatus (London 1959).
Frege, G., Der Gedanke: Eine logische Untersuchung, abgedruckt in: G. Patzig, Gottlob Frege: Logische Untersuchungen (Göttingen 1966).
Frege, G., Nachgelassene Schriften, hrsg. von H. Hermes, F. Kambartel und F. Kaulbach (Hamburg 1969).
Frege, G., Wissenschaftlicher Briefwechsel, hrsg. von H. Hermes, F. Kambartel und F. Kaulbach (Hamburg 1977).
Griffin, J., Wittgenstein's Logical Atomism (Oxford 1964).
Hacker, P. M. S., Insight and Illusion (Oxford 1972).
Hertz, H., Untersuchungen über die Ausbreitung der elektrischen Kraft (Leipzig 1892).
Hertz, H., Prinzipien der Mechanik, hrsg. von Ph. Lenard (Leipzig 1895).
Russell, B., On The Nature of Truth and Falsehood, in: B. Russell, Philosophical Essays (London 1910).
Russell, B., The Analysis of Mind (London 1921).
Russell, B., The Philosophy of Logical Atomism, in: B. Russell, Logic and Knowledge, hrsg. von R. C. Marsh (London 1956).
Toulmin, St. E. und Janik, A., Wittgenstein's Vienna (New York 1973).
Wittgenstein, L., Briefe (Frankfurt 1980).

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VOM UNSINN DER REDE VON EINER ‚ONTOLOGIE DER GEGENSTÄNDE'

Peter Bachmaier

Zahlreiche Richtungen der gegenwärtigen Philosophie versuchen die in Verruf gebrachte Metaphysik durch eine handfeste Ontologie zu umgehen. In dieser Bestrebung zeichnen sich insbesondere die von Heidegger sich herschreibenden Philosopheme aus, sowie die von der Physik und der mathematischen Logik herkommenden. Im diesjährigen Kirchberger Wittgenstein-Symposion ist eine Sektion dem Thema ‚Ontologie der Gegenstände' gewidmet, wobei sich zeigt, daß die angegebene Formulierung nicht so sehr in ihrer Problematik kritisiert wird, als vielmehr kritiklos angenommen wird. Die Gegenstandsontologien blühen.

Die Rede von einer ‚Ontologie der Gegenstände' impliziert einen Aufbau der Welt aus Gegenständen. Um für einen Aufbau der Welt aus Gegenständen eine ontologische Fundierung erreichen zu können, müßte man von Gegenständen als letzten Bestandteilen ausgehen können und dann die Zusammensetzung der Komplexe angeben können. Dieses ist nicht möglich, solange wir keine Urgegenstände gefunden haben. Es ist aber — und vor allem — nicht möglich, weil in der Rede von einer ‚Ontologie der Gegenstände' vergessen ist, daß schon der Begriff ‚Gegenstand' ein *Scheinbegriff* ist, was Wittgenstein bereits im Tractatus lehrt (TLP 4.1272). Es ist ferner nicht möglich, weil nicht aufweisbar ist — ja denkunmöglich —, wie x(Gegenstand) in gänzlicher ontologischer Bestimmtheit zu X(Bewußtsein) gelangen soll, ohne daß im Bewußtsein X die Möglichkeit des Vorkommens des Gegenstandes x bereits vorgedacht ist. Wittgenstein würde sagen, daß dieses Vorkommenkönnen sich in der Sprache zeigen muß.

Meine These ist, daß jegliche Rede von einer ‚Ontologie der Gegenstände' *Unsinn* ist, solange vergessen ist, daß wir in solchen Formulierungen nur das Netz beschreiben, das wir zur Weltbeschreibung in unserer Sprache angelegt haben. Solange wir an diesem *Vergessen* festhalten, handelt es sich bei der Formulierung ‚Ontologie der Gegenstände' schlichtweg um ein *impossibile dictum.*

Zur Begründung der These berufe ich mich insbesondere auf Wittgenstein, Platon und Kant.

Wittgenstein sagt in Satz 4.1272 TLP, daß der „variable Name ‚x' das eigentliche Zeichen des Scheinbegriffes *Gegenstand*" ist. Er meint damit, daß der Begriff ‚Gegenstand' eine Leerstelle in der Sprache bezeichnet, in die ein echtes oder „eigentliches Begriffswort" (ebd.) einzufügen ist. Gegenstand kann alles sein, mein Auto, meine Bücher, eine Aminosäure oder ein Lichtquantum. Ich kann aber nicht sagen, „Es gibt Gegenstände", sehr wohl aber kann ich sagen, „Es gibt Bücher". Was ist der Sinn dieser Unterscheidung? Die Unterscheidung bedeutet, daß Gegenstand eine Leerstelle bezeichnet, in die ein Konkretum einzufügen ist, z.B. Bücher. Wenn ich dies nicht sehe, gebrauche ich fälschlich den *formalen Begriff* Gegenstand als eigentliches Begriffswort und es „entstehen unsinnige Scheinsätze" (ebd.). Im Vergessen, daß das Wort ‚Gegenstand' nur und alleine ein formaler Begriff ist, werde ich von der Sprache irre geführt und lege Strukturschemata in eine erschlichene Außenwelt, während ich eigentlich nur meine Denk- bzw. Sprachstruktur offen lege. Dasselbe trifft auch für die formalen Begriffe ‚Komplex', ‚Tatsache', ‚Funktion', ‚Zahl' usw. zu, ebenso für Ding und Sache. ‚Gegenstand' ist das Zeichen dafür, daß in eine Funktion ein Begriffswort oder in der Mathematik eine Zahl einzufügen ist. ‚Gegenstand' ist damit auch das Zeichen dafür, daß eine Funktion nicht für sich alleine bestehen kann. Was soll auch eine Verbindung, die nichts verbindet? Es wäre wieder ein impossible dictum. Der Begriff der Kausalität wäre unsinnig, wenn nicht gesetzt wäre, daß Eines die Ursache von einem Anderen ist. Kant sagte deshalb bei seinen Kategorien, daß sie Begriffe von einem Gegenstande überhaupt sind. Eine Verbindung, die nicht zumindest Gegenstände über-

haupt als der Möglichkeit nach verbindbar setzt, kann überhaupt nicht als Verbindung gedacht werden. Wenn wir aber nun diesen Gegenstand überhaupt als denknotwendig annehmen müssen, können wir nicht zugleich hergehen und die ontologische Bestimmtheit dieses formalen Begriffes aufsuchen, denn dann würden wir das Formale der Setzung als vom Denken unabhängiges Reale mißverstehen und die ganze Denkanstrengung, die die Philosophie von Hume an über Kant und Fichte bis Wittgenstein auf sich nahm, zurücknehmen und uns der alten Metaphysik überantworten, die letztendlich bis zum Determinismus kommt und vor der Freiheit und dem selbstverantwortlichen Denken erschrickt. Wir würden in Scheinsätzen sprechen.

Wittgenstein kennzeichnet in seinen Ausführungen das Wort ‚Gegenstand' als Scheinbegriff. Platon kennt diese sprachliche Exaktheit noch nicht, er meint aber wesentlich dasselbe, wenn er im Theaitetos von der Erkenntnis spricht, die nicht nur Wahrnehmung ist und auch nicht nur richtige Vorstellung, sondern letztlich mit Erklärung verbundene richtige Vorstellung. Hier brauchen wir aber nicht die gesamte platonische Erkenntnislehre vorführen, sondern nur an das von Hesiod übernommene Beispiel „die hundert Hölzer des Wagens" (Platon, Theaitetos 207a) erinnern. Zum Erklären dessen, was ein Wagen ist, gehört nicht notwendig die Kenntnis der hundert Hölzer, sondern die klare Vorstellung von dem, was einen Wagen ausmacht, nämlich „Räder, Achsen, Obergestelle, Sitz, Joch" (ebd.). Wenn wir dieses Beispiel nun in bezug auf die Gegenstände etwas modifizieren, so können wir leicht sehen, daß mit einem Rückgang auf vielleicht letzte Gegenstände für die Erkenntnis nichts gewonnen ist. Denken wir uns den Wagen beladen mit Holz, so werden wir zuerst das Holz abladen, dann das Joch entfernen, den Sitz, die Obergestelle, die Räder und die Achsen. Nun haben wir die Einzelteile des Wagens mit Ladung. Wer eine Vorstellung von einem Wagen hat, wird ihn zusammensetzen können. Sind aber die Bestandteile nun die Gegenstände? Die Einzelteile sind aus verschiedenen Hölzern zusammengesetzt. Um möglicherweise zu Gegenständen zu kommen, werden wir also die Bestandteile weiter zerlegen. Wir werden das Holz in seine Fasern spalten und solange teilen, bis wir eine Teilung nicht mehr zuwege bringen. Nun haben wir einen Haufen Holzspäne, aber immer noch keine Urgegenstände, wir sehen aber den Holzspänen nicht mehr an, daß sie ein Wagen sind; im Gegenteil: ein jeder Schreiner oder Wagner, der eine klare Vorstellung von einem Wagen hat, würde bestreiten, aus dem vorliegenden Spänehaufen einen Wagen machen zu können.

Wir wissen in unserem naturwissenschaftlich-technischen Weltbild, wie weit wir Holz chemisch zerlegen können und wie weit physikalisch. Es wird aber wohl kein Chemiker bestreiten, daß es einem Schreiner unmöglich ist, einen Wagen aus den Milliarden chemischen Einzelteilen zusammenzubauen, die in unserem Spänehaufen enthalten sind. Ein Rückgang auf Gegenstände ohne durch die Vorstellung hinzugebrachte Denk- und Anschauungsformen ist also in bezug auf die Erkenntnis unsinnig. Die Denk- und Anschauungsformen aber sehen wir irgend einem unbenannt Begegnenden nicht an, sondern unser Bewußtsein trägt sie an den sogenannten Gegenstand heran, wobei letztendlich, was Fichte erst klar und deutlich gesehen hat, der Gegenstand als Außengegenstand in seiner Gegenständlichkeit wieder vom Bewußtsein abhängig ist. Das Nicht-Ich ist, wie Fichte in seinem zweiten Grundsatz deutlich vorführte, dem Gehalte nach bedingt.

Wir sind damit von Platons Beispiel direkt zur Transzendentalphilosophie gekommen, die uns seit Kant lehrt, daß die Vernunft als bestallter Richter an die sogenannte Außenwelt herantritt und die Natur — insofern sie empirisch erfahrbar sein soll — nötigt, auf ihre Fragen zu antworten. Der Gegenstand qua ontisch für sich existierendes Etwas ist für Kant noch ein Problem der Vernunft, nicht ein Reale, das man als Gegenposition einführen kann. Die Rede vom Ding an sich ist für Kant notwendig, weil sonst den Erscheinungen nichts zugrunde läge, sie ist nicht deshalb notwendig, weil es auch noch eine Welt an sich geben könnte, die anderen Gesetzen gehorchte als den unseren. Das Ding an sich ist Substrat der erscheinenden und benennbaren Sache, die in ihrer gänzlichen erkenntnistheoretischen Struktur vom Bewußtsein bestimmt ist.

Dies hat übrigens F. H. Jacobi schon nicht verstanden, als er sagte, er wäre ohne das

Ding an sich nicht in Kants System hineingekommen und hätte es wegen des Dinges an sich nicht darinnen ausgehalten. Das Ding an sich ist nur dann ein Hindernis für den Zugang zu Kant, wenn es mit einem ontisch für sich existierenden Gegenstand verwechselt wird. Und hier sagt Jacobi in seiner Schrift über David Hume schon mit Recht, daß mit der Annahme einer Außenwelt Glaube verbunden ist. Der ursprüngliche Idealismus hatte mit seinem gänzlichen Zweifel an einer Außenwelt nicht gänzlich unrecht, solange auf der Gegenseite nur eine deterministische Ontologie stand.

Die Transzendentalphilosophie redet nicht dem Idealismus Berkeleys das Wort, aber sie sagt mit aller Deutlichkeit, daß die sogenannte Außenwelt als eine gehaltvolle, sowohl was die Gegenständlichkeit, als auch die Struktur betrifft, vom Bewußtsein her bestimmt ist. Karl Leonhard Reinhold hat mit seinem Satz des Bewußtseins, der besagt, daß nichts in das Bewußtsein kommt, was nicht schon in ihm enthalten ist, in dem Sinne vollkommen recht, daß wir keine Bestimmtheit an einem Gegenstande wahrnehmen können, die wir nicht schon als eine mögliche an ihn herangetragen haben.

Erst Fichte aber hat die gänzliche logische und erkenntnistheoretische Bestimmtheit der Außenwelt in ihrer Gänze beschrieben, und er kann dann auch auf das Ding an sich als Problem verzichten, weil in seiner Philosophie durchschaubar wird, daß auch das Ding an sich als Problem in dieser seiner problematischen Bestimmtheit noch vom Bewußtsein abhängig ist, und er kann darüber hinaus aufweisen, daß Erkenntnissubjekt und das handelnde Subjekt nicht von einander zu trennen sind, ja es gelingt ihm vielmehr der bei Kant noch nicht immer stichhaltige Beweis, daß ein Zweck in der Natur nur angenommen werden kann, weil wir sittliche Wesen sind.

Eine weitere Ausführung der Kantischen und Fichteschen Lehre würde hier zu weit führen. Die angeführten Andeutungen aber sollten Hinweis genug sein, um eine Ontologie abzulehnen, denn schon Hume konnte nachweisen, daß wir durch bloße Sinneswahrnehmungen nicht einmal zur Kausalität kommen. Eine Ontologie kann philosophisch nicht befriedigen, aber sie kann auch keine Fundamente für eine Erfahrungswissenschaft, soferne diese empirisch überprüfbar sein soll, liefern. Wir werden uns in einem gründlichen Fichtestudium vergewissern müssen, daß jegliche Philosophie Transzendentalphilosophie ist oder bloßes gedankenloses Gerede. (Diesen letzten Gedanken verdanke ich Professor Lauth.)

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RICHARD MONTAGUE: FRÜHER WITTGENSTEIN 1971

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Wittgensteins Tractatus liegt wie eine Ruine in der philosophischen Landschaft. Man wohnt nicht in ihr. Man stürzt ab und verhungert. Aber ihre Steine finden sich in vielen umliegenden Gebäuden. Montagues ,,Universale Grammatik" dagegen ist wie eine gigantische Fabrik. Ein ausgeklügeltes System von Gebäuden und Maschinen, in dem angeblich alles, was zum Funktionieren einer wissenschaftlichen Linguistik notwendig ist, hergestellt werden kann. Die Gründe dafür, daß der Traktat eine Ruine ist und die Universale Grammatik gigantomane Züge aufweist, hängen untergründig miteinander zusammen. Wittgenstein wollte ursprünglich eine Fabrik bauen, die alle überhaupt möglichen Produkte herstellen kann. Dabei stürzte das Gebäude zusammen. Und Montague versteht es, diesen metaphysischen Überschwang zu vermeiden, deshalb steht seine Riesenfabrik. Aber um deutlicher zu werden, müssen wir aus der Welt der Bilder auf den solideren Boden der philosophischen Argumentation.

1. Der gemeinsame Boden

Vergleichbarkeit setzt gemeinsame Ansatzpunkte und gleichzeitig sachliche Differenzen voraus. Ich fasse das Gemeinsame und das Kontroverse in Wittgensteins und Montagues Sprachtheorien in jeweils drei Punkten zusammen. Zuerst die Punkte der Übereinstimmung.

a) Die logische Theorie der Sprache ist rekursiv aus deren elementarsten Ausdrücken aufzubauen. Dadurch wird alles, was man von der Sprache sagen kann, von vornherein erfaßt.

Diese Forderung ist für Montague so evident, daß er darüber kein Wort verliert; er erfüllt sie einfach. Bei Wittgenstein wird sie immerhin noch aufgestellt. Das Wesen aller Sätze muß sich von vornherein erfassen lassen, das gelingt durch ihre Rückführung auf die ,,allgemeine Form der Wahrheitsfunktion", die ,,die allgemeine Form des Satzes" ist (TLP 6) und nichts anderes besagt, ,,als daß jeder Satz ein Resultat der successiven Anwendung der Operation N' ( ) auf die Elementarsätze ist". (TLP 6.001)

b) Es besteht kein theoretischer Unterschied zwischen künstlichen und natürlichen Sprachen.

Diese Formulierung ist praktisch die Übersetzung von Montagues Diktum ,,I reject the contention that an important theoretical difference exists between formal and natural languages".[1] Wittgensteins Einsicht, ,,Alle Sätze unserer Umgangssprache sind tatsächlich, so wie sie sind, logisch vollkommen geordnet" (TLP 5.5563), kommt auf dasselbe hinaus. Der Schritt zu einer universalen rekursiven Sprachtheorie impliziert, daß es keine Enklave gibt, in der die Grammatik unserer Alltagssprache vor der Durchleuchtung ihrer logischen Struktur gesichert ist.

c) Die Integration der Syntax und Semantik in den zu entwickelnden Sprachtheorien erfolgt durch Isomorphie. Die logischen Zusammenhänge zwischen den Sätzen sind auf der Grundlage der Aufstellung wahrer Elementarsätze zu entwickeln.

Wittgensteins Abbildtheorie ist bekannt. ,,Einer bestimmten logischen Verbindung von Zeichen entspricht eine bestimmte logische Verbindung ihrer Bedeutungen". (TLP 4.466) Das ist zugleich die Kurzbeschreibung des Homomorphismus, den Montague als Bindeglied zwischen seiner syntaktischen und semantischen Algebra ansetzt. Und sein modelltheoretischer Gültigkeitsbegriff, aus dem er die Theorie der logischen Folgerung entwickelt, ist ebenfalls bei Wittgenstein vorgebildet.[2]

Die Aussicht auf eine jede Sprachform umfassende, mit logischer Abbildung operierende, rekursiv aufgebaute Theorie verbindet Wittgenstein mit Montague. Dennoch haben sie ganz unterschiedliche Auffassungen von dieser Theorie. Es bestehen schwerwiegende Differenzen, was die nähere Gestalt der Theorie angeht. Aber die sind nicht entscheidend. Ich nenne sie nur schlagwortartig:

a) Wittgenstein bleibt streng extensional, Montague arbeitet mit Intensionen;

b) Wittgenstein lehnt die Typentheorie ab, Montague verwendet eine Typenlogik;

c) Nach Wittgenstein sind Eigenschaften und Funktionen keine semantisch verwendbaren „Entitäten", Montague baut gerade mit ihnen seine Semantik auf.

Diese Punkte der Nicht-Übereinstimmung sind deshalb nicht entscheidend, weil sich Montagues Position in ihnen als natürliche Erweiterung der ursprünglich zu restriktiven Theorie Wittgensteins interpretieren läßt. Sie fällt nicht aus dem Rahmen, den wir mit den ersten drei Punkten abgesteckt haben. Die eigentliche Diskrepanz wird erst sichtbar, wenn wir uns auf das zentrale Problem des Traktates konzentrieren und zusehen, wie Montagues Theorie darauf reagiert.

2. Das Hauptproblem

„Das große Problem, um welches sich alles dreht, was ich schreibe, ist: Ist, a priori, eine Ordnung in der Welt, und wenn ja, worin besteht sie?" (Tagebücher 1. 6. 1915) Darin ist leicht das Problem synthetisch-a priorischer Sätze zu erkennen. Es soll sich von vornherein angeben lassen, nach welchen Gesetzmäßigkeiten die Welt, sofern sie die von uns erkannte Welt ist, überhaupt gebaut sein kann. Nicht die Naturgesetze, sondern die Bedingungen, unter denen wir welche haben können, sind gefragt. In Wittgensteins Fassung: „Meine *ganze* Aufgabe besteht darin, das Wesen des Satzes zu erklären. D.h. das Wesen aller Tatsachen anzugeben, deren Bild der Satz *ist*". (Tagebücher 22.1.1915) Das Wesen des Satzes ist in die allgemeine Satzform gefaßt. Die muß sich unabhängig von jeder nachträglichen Erfahrung angeben lassen, und damit beginnt der Zusammenbruch des Traktates.

Einerseits muß sich nämlich die logische Syntax aufstellen lassen, „ohne daß dabei von der *Bedeutung* eines Zeichens die Rede wäre" (TLP 3.33). Andererseits aber muß es zu „offenbarem Unsinn führen", die Formen der Elementarsätze a priori angeben zu wollen (vgl. TLP 5.5571). Wittgenstein hat sich in ein Dilemma manövriert. Wie will er die richtigen Zeichen einführen, wenn er dazu die Erfahrung braucht, welche wir zur Beschreibung der Welt notwendig haben? Die Form *der Welt* kann nicht ohne Kenntnis ihres Inhaltes so gefaßt werden, daß es gerade *ihre* Form ist. Wittgenstein kann an dieser Stelle nur an die Vorgegebenheit der logischen Form appellieren, aber „jede mögliche Satzform muß sich *voraussehen* LASSEN" (Tagebücher 21.11.1916), und wie er die Formen der Welt voraussehen *kann*, da wir nur das voraussehen können, was wir selber konstruieren (vgl. TLP 5.556), bleibt ein Rätsel.

Kurz gesagt: Der Traktat gibt keine Antwort auf die Frage, wie die weltumfassende Logik und die von der Logik umfaßte Welt zusammenstimmen können, ohne daß die Logik ihre Apriorität oder die Welt ihren Status als Erfahrungswelt verliert. Seine Versuche der Koordination von Syntax und Semantik sind dem doppelten Anspruch nicht gewachsen, die Untersuchung der Logik aus der Verkoppelung mit Welterfahrung zu nehmen und sie gleichzeitig als die Basisdisziplin jeder Welterforschung zu etablieren. Das ist der innere Grund für die bekannten Paradoxien, mit denen er ausklingt. Montague hat nichts dazu gesagt. Aber seine Theorie, die so viel mit jener Wittgensteins gemeinsam hat, muß mit den Schwierigkeiten, die zu deren Zusammenbruch führen, ihrerseits zurechtkommen.

3. Die Verschiebung

Die Möglichkeit, statt einer Ruine eine Fabrik zu bauen, beruht auf einer doppelten Verschiebung. Erstens rückt das *Problem* der Einheit von Syntax und Semantik aus dem Zentrum der Theorie und wird zur *Voraussetzung*, daß beide von vornherein, modelltheoretisch, aufeinander abgestimmt werden müssen. Und zweitens verwandelt sich der Status von „Welt". Während Wittgenstein am spannungsgeladenen Versuch festgehalten hatte, die Erfahrungswelt mit der formalen Betrachtung zusammen in eine Theorie zu bringen, *zerteilt* Montague diese Welt in einen formal-semantischen Aspekt, den er reibungslos der Syntax anpassen kann, und einen empirischen Rest, der seiner problemlos geschlossenen modelltheoretischen Struktur als unerforschtes Erfahrungsreservoir gegenübersteht. An die Stelle einer problematischen Universalität von Logik und Empirie tritt die unbedachte Universalität eines logischen Entwurfes, der einen Teil der Welt — ein Weltmodell — in sich aufnimmt und sich vom anderen Teil, der Empirie, Bestätigung erwartet.

Wittgenstein hatte sich zuviel erwartet. Seine Welt sollte völlig durchschaubar *und* obendrein empirisch sein. Das nimmt Montague auseinander. Er kommt damit zu einer einzelwissenschaftlich angelegten Theorie. Sie gibt nicht *ein* Modell *der* Welt, sie entwirft Modelle gewisser Weltausschnitte und versucht damit, soviel Phänomene wie möglich vorauszusagen. Die Theorie reibt sich nicht mehr *auf*, sie reibt sich *an* den Erfahrungen, denen sie gegenüberliegt. Nur eine *geteilte* Welt kann eine gedeihliche Theorie gewährleisten, der Anspruch, sie *ganz* in ihr zu erfassen, ruiniert die Theorie. Das scheint zumindest die Lehre zu sein, die in der Verschiebung enthalten ist. Die philosophisch-totalitären Strukturen, die ich zu Beginn aufzählte, bleiben als Gemeinsamkeit zwischen Wittgenstein und Montague erhalten. Aber im Rahmen der beschriebenen Veränderungen wird ganz unterschiedlich mit ihnen umgegangen.

Nun könnte man es sich als Philosoph so einfach machen, wie es sich Montague als Linguist gemacht hat, als er erklärte, woraus die Welt bestünde, zu deren formaler Erfassung er Weltmodelle baute, würde ihn überhaupt nichts angehen. Man könnte ihm entgegenhalten, es sei von vornherein lächerlich, für sein einzelwissenschaftliches Operieren mit trial and error den schönen Namen „Universale Grammatik" zu beanspruchen. So will ich die beiden Ansätze nicht auseinanderfallen lassen. Wittgensteins Dilemma zeigt ein echtes Problem der Philosophie. Ihr ist nicht geholfen, wenn sie die Verschiebungen nicht zur Kenntnis nimmt, die es entschärfen. Auch wenn die Verschiebungen von der Philosophie wegführen, sind sie philosophisch interessant. Damit haben wir das Gebiet erreicht, in dem die Konfrontation zwischen Wittgenstein und Montague am meisten hergibt.

4. Alles und Schauen zusammen. Alles zusammen und Schauen.

Der Titel „Richard Montague: Früher Wittgenstein 1971" will sagen, daß Montague für die gegenwärtige Philosophie den Anstoß wiederholt, den Wittgenstein in den Zwanzigerjahren gegeben hat. Dazu sind die Punkte der Übereinstimmung zu wenig und am strategischen Einsatz der Theorie kann es — das haben wir eben gesehen — auch nicht liegen. Es liegt daran, wie er mit den aus dem Traktat vertrauten Problemstellungen *anders* umgeht, sonst wäre es nur langweilig, nicht Wiederholung des Anstoßes. Der Knick vom philosophischen Entwurf zur linguistischen Theorie ist kein Bruch zwischen diesen beiden Disziplinen. Er zeigt viel eher denselben Strukturraster, nur seine Teile sind verrutscht. Im Traktat wollte Wittgenstein mit einem Blick das Wesen alles Erfahrbaren zusammen schauen. Die Universale Grammatik packt zunächst einmal alles für sie Erreichbare in eine Theorie zusammen, dann beginnt sie, um sich zu schauen. Der Traktat endet im Schweigen, die Universale Grammatik bei der Empirie. Was ist der Anstoß in dieser strukturellen Transformation?

Erfahrung, die systematisiert werden *soll*, endet damit, das System ins Paradoxe zu treiben. Erfahrung, die teilweise systematisiert *ist*, richtet das System auf Empirie aus. Dieser an der

Verschiebung von Wittgenstein zu Montague ablesbare Tatbestand gibt zu denken. Wir sind gewohnt, über die Reglementierung der Erfahrung im System zu klagen. Das ist vielleicht die falsche Perspektive. Die andere Möglichkeit wäre, auf die Reglementierung des Systems durch Erfahrung zu setzen. An die Stelle der Komplikationen, die man sich einhandelt, weil man sowohl die Herstellbarkeit, als auch die Unabschließbarkeit der Erfahrungswelt festhalten will, träte die Souveränität des Konstrukteurs über ein Weltmodell, die jedoch in Belehrbarkeit gegenüber der wirklichen Welt verankert ist. Das bräuchte kein Merkmal der Einzelwissenschaft zu bleiben. Man könnte auch Philosophie als ein Unternehmen fassen, in dem wir Modelle zur Anwendung auf die Welt der täglichen Erfahrung des Menschen konstruieren. Der Anstoß, der von Montagues „Universaler Grammatik" ausgeht, besteht darin, Philosophie als die Konstruktion anwendungsgebundener Weltmodelle sehen zu lassen.

Die Sache hat nur einen Haken. Ich habe schon angedeutet, daß Montague sich nicht um die Frage kümmert, wie es denn sein kann, daß sich seine Modelle auf die Welt anwenden *lassen*. Er führt „mögliche Welten" ein und weigert sich, ein Wort darüber zu sagen, woraus sie bestehen. Hier taucht sofort die altbekannte philosophische Frage auf, unter welchen Bedingungen die Erfahrungswelt stehen muß, damit sie zu unseren Theorien stimmt (und umgekehrt). Darauf zu antworten heißt, eine Überwindung der geteilten Welt versuchen. Damit haben wir uns aber im Zirkel bewegt. Wir sind von der Problematik der totalen Welterfassung zur Möglichkeit der Konstruktion von Weltmodellen gegangen, jetzt sind wir von da aus wieder zum Versuch der totalen Welterfassung zurück. Die reflektierende Frage, warum sich unsere Weltmodelle denn bewähren, bringt uns neuerlich vor die Schwierigkeit, sagen zu müssen, worin der Zusammenhang unserer logischen Entwürfe und ihrer empirischen Bestätigung liegt. Und die hat Wittgenstein in unnachahmlicher Klarheit gesehen: „Wenn es eine Logik gäbe, auch wenn es keine Welt gäbe, wie könnte es dann eine Logik geben, da es eine Welt gibt." (TLP 5.5521)

Ich habe stark schwarz-weiß gezeichnet. Die Beziehung zwischen Wittgenstein und Montague wurde zur Transformation eines Rasters stilisiert. Das Auftreten synthetisch-a priorischer Sätze wird normalerweise nicht als Paradoxie dargestellt. Die Modelltheorie sieht keineswegs so aus, als könnte sie die Basis zu einer neuen Konzeption der Philosophie abgeben. Alle diese Punkte wären weiter auszuführen. Stattdessen will ich nurmehr eine Doppelfrage stellen, die helfen kann, den Hintergrund der Bewegung von Wittgenstein zu Montague und wieder zurück zu erhellen. Läßt sich am Tractatus vorbei eine experimentelle Philosophie *entwickeln*? Und läßt sich umgekehrt von den Einzelwissenschaften her die Entwicklung einer transzendentalen philosophischen Perspektive *verhindern*? Zwischen dieser Sandwich-Frage liegt das Thema, das mich eigentlich interessiert. Treibt sich die Philosophie im Bereich der „Bedingungen der Möglichkeit" herum, oder hat sie, wie jede andere wissenschaftliche Betätigung, einen Bereich von Möglichkeiten zur Erprobung vor sich?

Hier wird man sofort mit Problemen überhäuft. Da ist wieder das Reich der Bilder an der Reihe. Man kann die Frage auch so stellen: Machen wir aus der Ruine des Tractatus eine Traumfabrik, oder gehen wir daran, die Fabrik der „Universalen Grammatik" für unsere Zwecke zu benutzen? Und zwar am Besten als Ruine.

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ANMERKUNGEN

1 Montague, Richard, English as a Formal Language, in: Linguaggi nella societa e nella tecnica (Milano 1970), S. 189. Alle wichtigen Arbeiten Montagues sind gesammelt in: R. H. Thomason (Hrsg.), Formal Philosophy (New Haven/London 1974).

2 „Folgt die Wahrheit eines Satzes aus der Wahrheit anderer, so drückt sich dies durch Beziehungen aus, in welchen die Formen jener Sätze zueinander stehen." (TLP 5.131)

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THE ONTOLOGICAL IMPLICATIONS OF WITTGENSTEIN'S 'PICTURE THEORY'

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In the *Tractatus* (*TLP* 4.113), Wittgenstein claimed that it was the task of philosophy to "set limits to the much disputed sphere of natural science". To this end, he tried to clarify *how* natural science renders our world intelligible by examining the nature of scientific description and explanation in terms of the relations between language and ontology. The focus of Wittgenstein's analysis derived from his recognition that the objects and relations addressed by the *theoretical laws* of science (i) result from our own logical construction and (ii) are fully determined in their formal properties. In his 'picture theory', he explored the implications of these features for the nature and symbolic requirements of the *correlative empirical propositions* of natural science—those subject to organization under such theoretical laws.

Wittgenstein (*TLP* 6.3—6.52) condensed his views on scientific explanation, treating scientific laws as ". . . *apriori* insights about the forms in which the [descriptive] propositions of science can be cast" (*TLP* 6.34). He maintained that each scientific theory "imposes a unified form on the description of the world" and that "the form is optional" in the sense that alternative schemes provide "different systems for describing the world" (*TLP* 6.341), though possibly "the world . . . can be described more simply with one system . . . than with another" (*TLP* 6.342).

While Wittgenstein thus identified the explanatory laws of science as the axioms of our scientific theories, he also sharply distinguished them from the descriptive propositions of natural science which directly confront empirical reality with precise assertions as to "how things stand" (*TLP* 4.11, 4.26, 4.022—4.023, 4.5). Theoretical laws serve as logically constructed models and are "about the net and not about what the net describes" (*TLP* 6.35): they provide the formal standards for the construction and unification of the descriptive propositions of natural science (*TLP* 6.34—6.341). While it is through theoretical laws that we impose "a unified form on the description of the world" (*TLP* 6.341), it is through the discrete empirical propositions that we measure exactly *how* reality is susceptible of each form of scientific description imposed (*TLP* 6.342b).

The ensemble of empirical propositions sharing the unifying form of a particular scientific theory provides a description of the world *focused through* the formal features incorporated in that theoretical perspective. On Wittgenstein's view, the ontology of natural science is neither absolute nor neutral, but theoretically perspectival. The essence of his position can be developed in terms of six major claims.

1. Through its theoretical pedigree, each descriptive proposition of natural science provides a logical picture of the situation it represents.

The foundations for Wittgenstein's position derive from his acute appreciation of what is inherent in the demand that the descriptive propositions of natural science be validated both theoretically and empirically: (i) insofar as scientific descriptions are to be organized under unifying theoretical laws, they must share the formal features of such constructions; (ii) insofar as they are to reflect "how things stand" they must also be *essentially connected* with reality. What integrates these demands is that the 'objects' mentioned in the theoretical laws are—like the laws themselves—logically constructed models or *schemata*; the syntactical dimensions of their symbols are completely defined by their roles within the axioms of the scientific theory (*TLP* 4.124, 6.341). Derivatively, the logical forms of the 'objects'

mentioned in the descriptive propositions of natural science must be patterned after those exhibited in the laws providing their theoretical pedigrees (*TLP* 6.34—6.35). In consequence, the descriptive propositions of natural science are thus *limited* to expressions of the existence and non-existence of configurations of 'objects' whose logical forms are completely foreseen within the organizing theoretical schemes imposed (*TLP* 2.20, 2.06, 4.05, 4.11, 5.556).

Each descriptive proposition exhibits the distinguishing structure of a situation whose possibility was delineated within the governing scientific theory (*TLP* 6.341—6.343, 6.362); the proposition thereby serves as the "logical picture" of what it represents (*TLP* 4.03); it provides "a model of reality as we construe it" (*TLP* 4.01). Wittgenstein's important claim that the propositions addressed by the 'picture theory' comprise "the whole corpus of the natural sciences" (*TLP* 4.11) derives from his demand that only an 'essential connection' between the proposition and the reality it depicts (*TLP* 4.03—4.04) can provide an adequate vehicle through which our scientific theories can measure empirical reality precisely (*TLP* 4.06, 4.015, 6.342).

2. The logical forms of objects constructed within a scientific theory determine the descriptive format which that theory imposes upon the world.

Wittgenstein's syntactical requirement for the descriptive propositions of natural science demands the derivability of their formal features from the theoretical laws which are to serve as explanatory axioms. This theoretical derivability of the propositional form *guarantees* the possibility of a scientific explanation of the fact described (*TLP* 6.34—6.341). In turn, it *limits* the facts which could be explained scientifically to those whose descriptions embody such formal features as can be subsumed under theoretical laws.

The pivotal conception in Wittgenstein's account is thus that of an 'object' whose logical form is completely delineated within the ensemble of theoretical laws. Thus Wittgenstein insisted both that "the possibility of propositions is based upon the principle that objects have signs as their representatives" (*TLP* 4.0312), and that it is "the logico-syntactical employment" of the sign which "determines a logical form" (*TLP* 3.327). The logical forms of such 'objects' provide the unified network of formal features which theoretical laws impose upon the scientific description of the world (*TLP* 6.34): they serve as logically constructed models for discernible features in our experience which might be *treated as* their empirical instantiations, thus enabling the theoretical laws to "speak . . . about the objects of the world" (*TLP* 6.341).

Importantly, the ensemble of formal properties which defines each scientific object is *known completely*: it results from our own construction and is manifest in the combinatory possibilities assigned to its theoretical symbol (*TLP* 2.0123, 3.326). The syntactical roles of signs within theoretical laws substantially serve as *implicit rules* for constructing appropriately licensed forms of descriptive scientific propositions (*TLP* 6.34—6.343).

3. The forms of scientific objects are constructed only within a logical space of theoretical possibilities.

The essence of Wittgenstein's position was that the possibility of scientific propositions is ultimately based on the principle of the representation of 'objects' by signs whose combinatory possibilities in the symbolism delineate the logical forms of the objects they can be used to represent (*TLP* 4.0312, 3.327, 3.34—3.3411, 3.344). But since each theoretical construction is *defined by* its combinatory possibilities, it is impossible to delineate the form of any one 'object' apart from the forms of all others with which it can be concatenated (*TLP* 2.0123, 2.0124). Scientific objects can only be constructed within the logical network of a symbolism which provides the description of *every* possible arrangement in which each can occur (*TLP* 2.0124, 5.524). Each such network demarcates a 'logical space' of possible configurations of 'objects' (*TLP* 2.013): each such configuration forms a 'state of affairs' (*TLP* 2.01) which provides a theoretically licensed structure for a possible fact (*TLP* 2.034). Relative to the 'logical space', each 'object' is 'irreducibly simple', each 'state of affairs'

is 'atomic' (*TLP* 2.02, 2.061—2.062). The existence and non-existence of 'states of affairs' can only be expressed by propositions with determinate sense (*TLP* 4.023, 4.2), eligible as scientific descriptions subject to theoretical unification (*TLP* 4.11). As the projection of a possible situation in 'logical space', the proposition cannot be understood apart from the whole language in which it is expressed (*TLP* 5.524, 3.4—3.42).

Further, if the descriptive propositions of natural science are to be unified under scientific laws relating logically constructed forms of objects, then the expression of every scientific theory requires a symbolism which delineates a 'logical space' (*TLP* 6.35). The notational scheme which underlies the expression of the scientific theory must provide the logical co-ordinates which demarcate a specific 'logical place' for each descriptive proposition which could be unified under that ensemble of theoretical laws (*TLP* 3.4—3.42). In consequence, the world thus subject to scientific description is comprised of the totality of formally determinate situations whose features reflect the imposed formats of our theoretical modes of description (*TLP* 1.13); and the discovery of particular scientific facts is thus constituted by our determinations of the existence and non-existence of 'states of affairs' whose possibilities derived from our theoretical constructions of the forms of their incorporated 'objects' (*TLP* 4.26).

4. The ontology of natural science is determinate in its formal features but not deterministic in a metaphysical sense.

Wittgenstein's *demand* for complete formal *determination* of scientific objects should not be confused with a *commitment* to a *deterministic* scientific ontology (*TLP* 5.156). Indeed, he thoroughly rejected belief in causal determinism as a "superstition" (*TLP* 5.1361), and maintained "there is no causal nexus . . . no compulsion making one thing happen because another has happened" (*TLP* 5.135—5.136, 6.37). Rather, he treated "causal laws" as "*apriori insights* about the forms in which the propositions of science can be cast" (*TLP* 6.32—6.34). More generally, Wittgenstein railed against "the whole modern conception of the world", that it was "founded upon the illusion that the so-called laws of nature are . . . something inviolable" (*TLP* 6.371—6.372). In contrast, he recognized them as theoretical axioms of our own construction (*TLP* 6.341).

While Wittgenstein argued against scientific *determinism*, he insisted that the logical form of every scientific object must be *completely defined*; this requires that the combinatory possibilities of our logical constructions be completely *decided* in advance (*TLP* 3.327), new possibilities cannot be admitted later without modifying the original constructions (*TLP* 2.0123). This is a methodological requirement for definiteness of sense (*TLP* 3.23) and involves no substantive ontological presuppositions.

5. The analysability of scientific facts is relative to the theoretical language in which they are described.

Wittgenstein was sensitive to the ways both syntactical and semantical features of a language fashion and restrict its descriptive capabilities, and he warned that "*the limits of my language* mean the limits of my world" (*TLP* 5.6). Each notational scheme is logically prior to its interpretation, and this determines the formal features of what *can* be expressed. Such algorithmic limits are imposed internally by the logical grammar of the symbolism (*TLP* 5.6—5.61, 6.341—6.35); but, as Wittgenstein had noted earlier, the notational scheme itself represents only a "logical stencil" until we establish a definite manner of "pinning it to the world" (*NB*, p. 53). While the combinatory freedom of its signs determines possible forms of 'objects' and 'states of affairs" (*TLP* 3.327, 3.344), the semantical interpretation of the symbolism determines the *content* of what it can express (*TLP* 4.063). Whether a symbol signifies something *as* simple or *as* complex, and if complex, whether *as* 'atomic' or *as* 'molecular', depends upon the logical grammar of the signifying sign (*TLP* 3.327), not upon empirical or ontological considerations. But while the simplicity or complexity of our linguistic references is imposed by our notational schemes, the *truth or falsity* of propositions

incorporating such references still depends upon what is found to be the case in the world (*TLP* 2.0231).

Where complexes are signified, their further analysability is relative to the language which provides their description. In particular, a proposition signifies its situational referent *as* 'molecular' wherever the language provides further propositional analyses of that expression (*TLP* 2.021); otherwise, what is signified is 'atomic' and its expression is given by an 'elementary proposition' (*TLP* 4.21). It would be as *nonsensical* to speak of 'atomic facts' in an absolute ontological sense as it would be to speak of 'elementary propositions' *except* with respect to a particular symbolism (*TLP* 6.341—6.342). On this account, it would be absurd to think that natural science might some day disclose the ultimate (atomic) facts into which the world divides.

6. Within scientific descriptions, the degree and forms of factual complexity are notationally derived.

Wittgenstein's argument concerning the logical priority of language to ontology runs counter to a deeply entrenched view that our language ought to *reflect* the ontological features evidenced by our empirical discoveries. The illogic which generates this apparent controversy derives from confusing the matter of the *truth* of propositions—which is empirically determined, with that of their *logical forms*—which is notationally imposed.

Nevertheless, the *possibility* of alternative modes of signification does yield a sense in which the world *could be* subsequently revealed as more and more complex: we could successively invent series of finer and finer networks for organizing the description of the world; but their *success* would depend upon whether appropriate combinations of items could be suitably coordinated with the licensed configurations of primitive symbols of the respective languages. The limits of such further differentiating symbolisms *cannot* be set *apriori*: "even if the world is [found to be] infinitely complex" the scientific description of its logically determinate features will still have to be given in terms of "objects and states of affairs" (*TLP* 4.2211). In general, 'scientific reality' is limited by the 'objects' and 'states of affairs' expressible in the theoretical languages we construct (*TLP* 5.5561); but since the irreducibility of the forms of 'objects' and the atomicity of the 'states of affairs' are relative to our symbolisms, no metaphysical theses of ontological irreducibility are warranted (*TLP* 5.634).

The degree and forms of factual complexity disclosed by any scientific account of the world are imposed by the mode of description employed; but the *facts disclosed* through the imposed network still *reveal* "the logical form of reality" (*TLP* 4.21): they show precisely *how* the world is susceptible of being described *through* that framework (*TLP* 4.06, 5.5423, 6.341—6.342). As Wittgenstein viewed the "limits to the much disputed sphere of natural science" (*TLP* 4.113), the world of scientific description encompasses the totality of determinate situations which can be disclosed by propositions unified under theoretical laws (*TLP* 1.1, 3.01, 6.341—6.342).

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REFERENCES

Wittgenstein, L., *Notebooks, 1914—1916* (New York/Oxford 1961).
Wittgenstein, L., *Tractatus Logico-Philosophicus* (New York/London 1961).

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WITTGENSTEIN'S LINGUISTIC ONTOLOGY AND REJECTION OF SUBSTANCE ONTOLOGY

Thomas T. Tominaga

In this paper my goal is to show that Wittgenstein can be viewed and supported as an advocate of "linguistic ontology" which argues for the rejection of the major claim of "substance ontology" that by referring to the world as the most inclusive nameable substance and subject whose attributes or predicates can be described, we are thereby committed to presupposing or affirming its existence.[1] In order to fulfill this goal, I will proceed as follows. First I will characterize and clarify Wittgenstein's "linguistic ontology" by comparing and contrasting it to the enterprise of "substance ontology" in an historical context. Second I will discuss why and how Wittgenstein can be understood to reject the conception of the world championed by "substance ontology". Finally I will end by drawing some conclusions concerning some methodological advantages that Wittgenstein's "linguistic ontology" would seem to have over "substance ontology" and concerning the legitimacy and effectiveness of the strategy that calls for the deduction of ontological conclusions about the world from Wittgenstein's theory of language which is an essential part of his ontology.[2] Methodologically I will let the ensuing discussion clear up what I mean by "linguistic ontology" and "substance ontology" in their context of use, instead of defining them at the outset.

In one way or another, philosophers such as Aristotle, Descartes, Spinoza, Leibniz, and Berkeley, to name a few, could be construed as outstanding advocates of the ontological enterprise called "substance ontology".[3] However what is characteristic of these concepts of substance is their common acceptance of the premise that the substance of the world can be referred to by a name, which as a nameable subject can bear certain attributes or predicates set forth by propositions of the subject-predicate form.[4]

Such concepts of substance are undoubtedly quite different from the *Tractatus* notion of substance. For example, the Aristotelian substance, contrary to a widely held but mistaken view, is not identical with the Wittgensteinian substance.[5] As is well known, the Aristotelian substance can be understood in the sense of primary substance as exemplified by concrete individuals with descriptive properties or in the sense of secondary substance understood as that to which no descriptive predicates are applicable and that which is predicable of everything else.[6] But the Wittgensteinian substance is said to have "neither shape nor colour, simply because these, and all other real [or material] properties have to do with the configurations of objects".[7] That is to say, the Wittgensteinian substance, unlike the Aristotelian substance, is immune from having any real or material properties assigned to it and from contributing such properties to the essential nature of concrete particulars. This is because the Wittgensteinian substance is independent of what is the case (*TLP* 2.024) due to its ability to determine a form (*TLP* 2.0231) and cannot generate real or material properties. The generation of such properties is made possible by the configurations sustained and displayed by simple objects.

In passing let us observe that, given this Wittgensteinian notion of substance, one can validly make the case that Wittgenstein can be shown to advocate a non-traditional "substance ontology" which is conceptually different from traditional "substance ontology", but is methodologically compatible with his advocacy of "linguistic ontology". Wittgenstein's version of the first type of ontology is based on the idea that the substance of the world is determined and formed by simple and propertyless objects (*TLP* 2.0231, 2.021) which are not the bearers of real or material properties, but which are the constituents whose changing configurations give rise to such properties. But viewed traditionally, the second

type of ontology requires that the substance of the world be treated as a nameable thing with assignable predicates.

So despite the diversity of concepts of substance, we can justifiably say that most of the advocates of substance ontology in the traditional sense would subscribe to at least two main tenets. One is the view that the universe or the world (any conceivable world) is "something that can be referred to by a name".[8] The other is the doctrine of essential predication according to which propositions of the subject-predicate form are intended to assert the essential properties of what things are that constitute the world regarded as a nameable referent. When these two tenets are combined, the net effect is that substance ontology in the traditional sense becomes the enterprise that adheres to the theory that the existence of the world comprised by what things essentially are is implied or presupposed by virtue of their being named or being referred to. That is to say, what is characteristic of traditional substance ontology is the firm conviction that the way we talk about or refer to what things essentially are unavoidably commits us to at least implying their individual existence or the existence of the world of which they are an integral part.

Against this traditional view of substance ontology, Wittgenstein presents a quasi-phenomenological version of "linguistic ontology"[9] derived from the reciprocal relation of two closely related theses. The first is a linguistic thesis[10] about the essential features of any possible language capable of representing or projecting any states of affairs. The second is an ontological thesis[11] about the substance of any conceivable world amenable to logical portrayal.

According to the first thesis, what is essential to any language suitable for logical portrayal of states of affairs is that its logical structure must display the sum-total of propositions (*TLP* 4.001, 4.021). As required by the process of analysis which goes from the complex to the simple,[12] the constituents of such propositions are simple symbols which must stand for simple objects if the propositions are to have and show definite sense. The existence of such simple objects is not established by empirical inference or verification, but is arrived at as the end-product of analysis.[13] Moreover, in order for such a language to display the totality of propositions, each proposition in its projective relation to the world is required to function as a logical picture of reality (*TLP* 4.01, 4.021). With its definite sense determined by understanding what is the case if it is true, the proposition can only show how things stand, but not what they are (*TLP* 3.221, 4.022). That the depicting proposition can only show how things stand, but not what they are, is not a matter of referring to the things themselves. Rather it is a matter of complying with the "type rules"[14] such as syntactical and formation rules that govern the shape, position, and arrangement of the linguistic constituents of the propositional sign (*TLP* 3.12).

As a theory of reality the ontological thesis makes the following points: (a) by making the logically describable world the totality of facts, not of things (*TLP* 1.1), we are in a position to eliminate the dichotomy between facts and things, which tends to reify the substance of the world; (b) a fact as such is not some one nameable thing, but is a state of affairs which is a combination of objects (*TLP* 2, 2.01); (c) such objects when they stand in relation to each other and by virtue of their simplicity and propertylessness are in principle free but constitutive of material properties, and consequently they can only be named by simple symbols (*TLP* 3.221); and (d) by virtue of their unalterable and subsistent form, these objects with their multiple combinations form and show the substance of the world (*TLP* 2.021, 2.0231).

Although the ontological thesis is presented at the beginning of the *Tractatus* and the linguistic thesis at about halfway through, it is not invalid to reverse the order of presentation and order of priority. Methodologically, doing so would make it possible to see more clearly the make-up of linguistic ontology. Such a reversal is a strategy consistent with the status of both theses as logical counterparts to each other, and with the *Tractatus* recognition of the reciprocal relation between language and the world.

On the basis of such reversal and reciprocal relation, we can now characterize Wittgenstein's linguistic ontology in two complementary senses. In the broad sense this ontology

is one that aims at showing how our dealing with the shape, position, and arrangement of signs can become a matter of following certain rules (formation, syntactics, projection, etc.) that govern their internal relation without implying or presupposing the existence of their referents. In the narrow sense this ontology sets forth a type of activity or mode of being that deals with the question of how it is possible for propositions expressed by their propositional signs to function as logical pictures of states of affairs projected into the world without the necessity of having prior knowledge of their truth or falsehood. Such propositions are possible by employing a phenomenological epoché which requires that we understand what a proposition asserts by understanding its sense independent of its truth or falsehood as well as its existence (actual or possible). Doing so is contrary to the preoccupation of substance ontology with the name-referent model inherent in and imposed by the categorical structure of subject-predicate propositions needed for expressing the underlying substance of the world.

Wittgenstein's linguistic ontology would reject substance ontology for three main reasons. First the latter is confronted with the problematic task of reducing the role of propositions from being logical pictures of states of affairs to being names of various constituents of the world. Such reduction would result in treating every proposition indiscriminately in the subject-predicate form which does not fit analytic and relational propositions. This problem is traceable to two main inadequacies of substance ontology. One is the confusion of classes named by subject and predicate terms with things that belong to such classes. The other is the failure to distinguish clearly between names which get their meaning from standing for certain objects and propositions which have sense by depicting states of affairs. Second the range covered by the latter is somewhat limited by restricting propositions to assertions that have existing counterparts in the world. This limitation would make it virtually impossible for propositions to represent, present, or project conceivable or possible states of affairs that may not as yet have concrete or actual existence. And third substance ontology is forced to advocate the view that the world is a nameable entity with describable features by confusing two types of names. Characteristic of one type of names are proper names which are usually used to refer to nameable individuals with describable features. But characteristic of another type of names are simple names (simple symbols) which can stand for simple objects with no describable material features. Whether the world is a nameable substance by means of a proper or simple name is not always clear in the approach of substance ontology.

One of the most effective ways of dismantling the enterprise of substance ontology and of strengthening Wittgenstein's linguistic ontology is provided by Wittgenstein's crucial distinction between "concepts proper" and "formal concepts" (*TLP* 4.126, 4.1271, 4.1272, 4.12721—4.1274). According to this distinction, concepts proper are those which can be understood in the ordinary sense and can be represented by descriptive predicates assigned to individuals.[15] Fox example, when we apply a concept proper represented by "cat" or "star" to an individual and say of it that it is a cat or it is a star, what we are saying is not only informative but can also be taken as a true or false proposition.

On the other hand, formal concepts are those which involve neither the use of descriptive predicates nor the informative use of language about something. Formal concepts are those which involve the prescribed way of using signs within a certain framework and with respect to certain rules of use.[16] For example, concepts represented by "object", "fact", "function", "number", "complex", etc. are all formal concepts which pertain to special types of variables and the specific uses into which they are put. However formal concepts can also function as pseudoconcepts when one uses them with the understanding that they cannot be informative or descriptive of any existing particulars. It is therefore instructive and helpful to keep in mind that it is nonsensical to say that "There are objects", as one might say, "There are books"; and it is just as impossible and misleading to say that "There are 100 objects", as one might say, "There are 100 oranges".

On the basis of this distinction, Wittgenstein's linguistic ontology and its rejection of

substance ontology can now be strengthened. What is becoming clear is that this ontology can be validly grounded on formal concepts but not on concepts proper. How so? Because involved in the ontological and linguistic thesis are formal concepts whose sensicality and applicability would depend on how the constituents of the propositional sign are used in expressing the proposition, but not on what they are supposed to refer to. Consequently concepts such as "world", "object", "substance", etc. must be understood as formal concepts in their proper context of use. For what these concepts purport to represent can only be shown by the manner in which they are juxtaposed and employed in a particular system, but not by virtue of some one all-pervading thing which substance ontology can only refer to ambiguously by confusing proper names with simple names and unjustifiably by reducing all propositions to the subject-predicate form. It wouldn't make too much sense for substance ontology to say that the way we talk about the formal concepts of linguistic ontology would commit us to imply or presuppose the existence of their referents. No existence of any referents would be implied or presupposed, since the task for linguistic ontology is to determine and show the definite sense of each proposition prior to and independent of the truth-value of the proposition and of the existence of the depicted state of affairs.

Based on the preceding discussion, I wish to draw three conclusions. My first conclusion is that Wittgenstein's linguistic ontology seems to have at least three methodological advantages over substance ontology. First, unlike the latter, the former doesn't presuppose or postulate the existence of the world. This is made possible by the reciprocal relation between the lingustic and ontological thesis, which enables us to deduce the possibility of saying what is the case if it is true. Second, unlike the latter which resorts to ambiguous naming of the constituents of the world, the former relies on the rule-governed, syntactical, and projective behavior of propositional signs to show with definite sense how things are or stand in relation to each other, which calls for the employment of relational propositions, instead of subject-predicate propositions, as being more appropriate to the logical depiction of states of affairs constitutive of the world. And third, unlike the latter which tends to allow itself to be conceptually overburdened with a pantheistic or monistic model of the world, the former is equipped with a trans-personal, projective demonstration device by means of which non-Cartesian but rulefollowing practitioners are urged to show the distinctive uses of formal concepts associated with the configurations of simple objects and the logical structure of depictable states of affairs.

My second conclusion is that the rejection of the enterprise of substance ontology is justified. For, we have discovered that substance ontology stands on the unwarranted assumption that whatever is nameable exists necessarily for no other reason than to be a referent for the name, as it is the case with the world as a nameable thing. But what substance ontology has failed to see in this assumption is that names (simple symbols) by themselves can't refer to the world unless they (names) are internally related constituents of the propositional sign, as Wittgenstein's linguistic ontology has indicated. Moreover, even if the world for substance ontology can be referred to by a name, it would be conceptually problematic to know how subject-predicate propositions can be legitimately used to ascribe any predicates to the world as a nameable entity.

And my third and last conclusion is that Wittgenstein's linguistic ontology is realistic[17] rather than nominalistic as some critics would be inclined to say. That this is the case can be demonstrated by the reciprocal relation between the linguistic and ontological thesis. On the one hand, the linguistic thesis gives Wittgenstein's linguistic ontology a realistic flavor by treating descriptive propositions as logical pictures of actual or possible states of affairs. In doing so descriptive propositions are not just a medley of unconnected and uninformative names, which, if left without their projective relation to the world, could give them a nominalistic status. Instead, by functioning as logical pictures of states of affairs projected into the world, descriptive propositions have thereby achieved a realistic status, since they aren't self-referential when they say something about something else

(Russell's theory of types). On the other hand, the ontological thesis makes Wittgenstein's linguistic ontology more realistic by insisting that the depicted or depictable states of affairs, if obtainable, must be facts constituted by configurations of objects which constitute the substance of the world. Such depicted or depictable states of affairs are not general and abstract, which, if so, could give Wittgenstein's linguistic ontology a nominalistic status. But since such depicted or depictable states of affairs must be specific and concrete as required by the definiteness of propositional sense and by the simplicity of objects, the counterparts to the constituents of descriptive propositions can only be atomic facts, which give Wittgenstein's linguistic ontology a kind of defensible scientific realism.

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NOTES

1 Geach, P. T., "Symposium: On What There Is", *Aristotelian Society*, Supplementary Vol. 25 (1951), pp. 125—127.
2 Ahumada, R., *A History of Western Ontology* (Washington 1978), p. 204. Cf. D. Pears, "The Ontology of the *Tractatus*", *Teorema Monologue* (1972), p. 51. S. R. Stripling, *The Picture Theory of Meaning* (Washington 1978), pp. 81—82.
3 Ahumada (1978), pp. 226—227, p. 231. Cf. B. Russell, *A Critical Exposition of the Philosophy of Leibniz* (London 1937), p. 41. M. Black, *A Companion to Wittgenstein's Tractatus* (Ithaca 1964), p. 27. M. K. Munitz, *Existence and Logic* (New York 1974), pp. 63—65.
4 Russell (1937), p. 12, p. 41, p. 43.
5 Griffin, *Wittgenstein's Logical Atomism* (Seattle/London 1964), p. 71. Cf. J. Moran, *Toward the World and Wisdom of Wittgenstein's 'Tractatus'* (The Hague/Paris 1973), p. 85.
6 Munitz (1974), p. 65.
7 Griffin, J. (1964), p. 71.
8 Black (1964), p. 28.
9 Ihde, D., cf., *Sense and Significance*, Ch. 12, "Wittgenstein's 'Phenomenological Reduction'" (Pittsburgh 1973), p. 154. R. Goedecke, "Linguistic Ontology", *Philosophy Today*, Vol. 20 (1976), pp. 157—166. Note: Although both of these authors mentioned "linguistic ontology" in their discussions, the former's approach centers on reflexivity and intentionality implicit in the subject recognized by Husserlian phenomenology while the latter's approach focuses on the identification of things and words, which is intended to overcome the gap between things and words.
10 Pears (1972), pp. 51—52, 56—57. Cf. D. Pears, *Ludwig Wittgenstein* (New York 1969/1970), pp. 44—45, 46—47. C. A. van Peursen, *Ludwig Wittgenstein* (New York 1970), p. 32.
11 Pears (1972), p. 49, p. 51. Cf. Pears (1969/1970), pp. 48—49. van Peursen (1970), p. 32.
12 Wittgenstein, L., *Notebooks, 1914—1916* (New York/Evanston 1969), p. 46e, p. 50e, p. 62e.
13 Wittgenstein (1969), p. 50e.
14 Allaire, E. B., "Existence, Independence, and Universals", *Essays in Ontology* (Iowa City/The Hague 1963), p. 8.
15 Munitz (1974), p. 195.
16 Munitz (1974), p. 195.
17 Pears (1972), p. 55. Cf. Allaire, E. B., "The *Tractatus*: Nominalistic or Realistic?", in: Allaire (1963), pp. 148—165.

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ANALYSIS, INDISCERNIBLES, AND THE 'AUGUSTINIAN PICTURE' OF LANGUAGE

William Godwin

In the discussion period following my paper some unclarities were raised which I should like now to try to remove. My paper tried to show how the *Tractatus* 'picture' theory of meaning led to an incoherence whose significance I then tried to outline; I should now like to expand on the argument in one crucial place, and also on my account of the significance of the incoherence.

I

At several places in the *Tractatus* and *Notebooks* Wittgenstein insists that every ordinary proposition must in principle be analysable into a truth-function of elementary propositions (*TLP* 4.211, 3.251, 3.2—3.201, 2.0201; *NB*, pp. 63(b), 62). The possibility of propositions or sense required the possibility of elementary propositions, since sense had to be completely determinate (*TLP* 3.14, 3.23; *NB*, pp. 23(e), 61(f)), and elementary propositions simply expressed this determinacy explicitly; only with them did the objects meant by every proposition stand in a one-to-one relation with propositional elements; no other type of proposition consisted solely of terms themselves meaning the extra-linguistic meanings of every proposition (*TLP* 3.2—3.211, 4.21—4.22, 4.23—4.24). Inasmuch as the sense of every proposition was therefore identical with that of some truth-function of elementary propositions (*TLP* 4.51, 4.52), every proposition was in principle analysable into or expressible as such a truth-function (*TLP* 4.221, 3.2—3.201, 3.25, 3.3442, *NB*, p. 60(c)).

Although sense had to be absolutely determinate, ordinary or non-elementary propositions were thus in a sense indeterminate: not being composed of 'names', they did not themselves reveal which particular configurations of objects they meant. This too is identified with their generality and their possibility of expression as generalisations (*TLP* 5.526, 3.24, 2.0201; *NB*, pp. 69, 46, 43; *Notes on Logic* II(L); *LRKM*, pp. 43—44; *PG*, p. 211). Analysis then culminates in an inference from some such general proposition to a particular truth-function of elementary propositions (see above references, but especially *TLP* 5.526(b)).

II

The possibility of inference of truth-function of elementary propositions from general propositions—required if analysis is even in principle completable—evidently entails a certain proviso. It requires that, for any given state of affairs S, and for any pair of objects *a* and *b* such that *a* is a constituent of S, it must be impossible to replace *a* by *b* in S; that is, *b* cannot combine in just the same way in S as *a* can. For consider an existential generalisation with a uniqueness clause (call it 'A'), which is to be taken as the penultimate stage in the (unique) complete analysis of a natural-language sentence of which a certain truth-function of elementary propositions ('B'), depicting a possible state of affairs S, is the complete analysis. Since any two stages in an analysis must be logically equivalent, A must entail B, that is, it must be impossible for A to be true and B false. But if A is to entail B, then A must uniquely determine B, that is, to the structural description contained in A only one state of affairs —B— can correspond. For if A does not uniquely determine B,

i.e., S, it will be possible for there to be a truth-function of elementary propositions C, depicting a state of affairs S′ (≠S), which has the same structure as B. Then A will be true in a possible world in which B holds, and also in a possible world in which C holds, for in both worlds the structure revealed by A will be instantiated—in both worlds A will hold. But states of affairs (*Sachverhalte*) are contingent combinations of objects independent of each other. (Note that this does not correspond to the requirement that all elementary propositions be independent of each other, only to the requirement that all true ones are, which seems consequent on the contingency of *Sachverhalte*). Hence it is possible for there to be a world in which B is false and C is true. But in this world A will be true, since C instantiates A. So there will be a possible world in which A is true and B false, that is, it will be possible that A is true and B is false. But A's entailing B requires that it be impossible that A be true and B false, i.e., that there be no possible world in which A is true and B is false.

So we must abandon the assumption that A does not uniquely determine B. But this is precisely to embrace the assumption that, for any state of affairs S, such that *a* is a constituent of S, there can be no object *b* such that *b* can combine with the other components of S to produce a state of affairs S′ otherwise identical with S: which is just the proviso I articulated above.

This proviso clearly entails (though is not entailed by) the identity of indiscernibles, for if no two objects can configure in just the same way then no two objects can have all their properties in common. But the principle is explicitly rejected by Wittgenstein at 5.5302. He there insists that 'two objects have all their properties in common' expresses a proposition with sense; and this means, for him, that the issue is an empirical or contingent one, and not a matter of any sort of necessity, since only contingent or empirical propositions have sense or are 'propositions' in the strict sense of the word (*TLP* 2.1—3.1). Still another way of putting it is to say that only what is empirical or contingent can be said, that what is 'logical' or 'formal' is unsayable.

III

Indeed it must for Wittgenstein be sayable, or contingent, that two objects have all their properties in common (or, correspondingly, that they do not), for at least the following reason. First, some of an object's properties naturally relate to its actual concatenations with other objects (their 'material properties'—*TLP* 2.0231), and on the picture theory these actual concatenations are precisely the senses of propositions, rendering their 'sayability' or contingency internal to that theory; but, secondly, if it is thus sayable that such-and-such objects are so-and-so configured, if, that is, this is a fact, or state of affairs (*Sachverhalt*—*TLP* 2.0272, 2.034—2.04) then surely it is equally sayable, equally a fact, that such-and-such objects are actually configured in different ways or have different properties from such-and-such other objects (or that they are identically configured). But if this is a fact, if it is sayable, or has sense, then the identity of indiscernibles must be rejected; it can only have an empirical analogue—'no two objects have all their properties in common'—where there is no implicit 'can'.[1]

IV

So there seems to be an incoherence at the heart of the *Tractatus*, in the 'picture theory' itself. The theory requires the possibility of analytically arriving at (required) elementary propositions which entails a proviso which in turn entails the identity of indiscernibles; but the identity of indiscernibles must be rejected on the theory because the theory requires

that 'no two objects have all their properties in common' express a contingent or empirical proposition, and not any kind of necessity.

The importance of the incoherence seems to be twofold. First of all, it constitutes a refutation of perhaps the most rigorous development of a certain at least historically important conception of language. Wittgenstein in his later work is well known to have repudiated his *Tractatus* conception of meaning as false or misleading; it is now possible to repudiate it as actually incoherent. But secondly, it ought to prompt us into searching out and revealing those features of the underlying conception which produce the incoherence.

These features appear to relate to the core of the conception, to the fundamental equation of meaning with reference; that is, the equation of the meaning of a sentence with that of some set of sentences composed entirely of terms each of which derives its meaning solely from 'directly designating' or standing for some entity. This corresponds to the so-called 'Augustinian' picture of language which Wittgenstein sketches in the opening passage of the *Investigations*; on that 'picture', or *Urbild*, a sentence is essentially a combination of names, each of which derives its meaning entirely from standing for some entity. Note that there is no requirement here that the object, the referent, actually constitute the meaning of the term, but only the somewhat weaker requirement that it is only in virtue of standing for an object that a term has meaning. This enables someone making the above meaning-reference equation, accepting the 'Augustinian picture', to hold onto his undifferentiated notion of meaning or sense without abandoning the view that meaning consists essentially in some relation between 'signs' and things, that meanings cannot embrace things themselves but only certain sorts of relations between things ('signs' and other things).

It seems clear that it is the equation of meaning with reference which produces the incoherence, at least if we can assume that not all an object's properties are necessary to it. For it is really only if we deny this assumption that we shall have to admit the identity of indiscernibles; if we make the assumption we can reject it, and there will only be an incoherence if we also have to accept something which entails it: for Wittgenstein, or anyone, such as Russell, accepting what I have called the meaning-reference equation, this something is indeed precisely that equation, the 'Augustinian picture'. Given the kind of conception of the relation between signs and things embodied in this 'picture'—and Professor Ayer in his lecture outlines the argument—we are compelled to admit a class of 'simple' entities which then become the meanings of terms making up the so-called elementary or atomic sentences into which every sentence is reducible. And, as we saw, given the possibility of expressing non-elementary sentences as generalisations, plus the requirement of logical equivalence between *analysans* and *analysandum*, we have to accept a proviso entailing the identity of indiscernibles. But, again, the identity of indiscernibles need only be accepted on the assumption that every property of an object (and here 'object' needn't just mean 'Gegenstand') is necessary or internal to it: rejecting the assumption we can, and must, reject the identity. And, as we saw, it is clear that rejecting the assumption lies at the heart of the atomist account of picturing: for on that account precisely what is pictured, or said, are contingent properties of things—in particular, for Wittgenstein, actual combinations of objects. These are their 'material properties', contingent just in the sense that any one object could have stood in different actual relations or combinations with other objects. This is the empirical or factual stuff of the world, this alone can properly be *said*, in Wittgenstein's special sense.

So take again our two objects a and b such that a is combined with another object c in a way different from that in which b is combined with an object d. If a's combining with c and b's combining with d are contingent in the first place, then so will be the proposition that a is combined with an object (c) in a way different from that in which b is combined with an object (d); and hence it will be contingent that a has a property—that of combining in a certain way with another object—which b does not have. But since this is a contingent property of a, it is a contingent or factual matter that b doesn't share this property, and of course if b doesn't share it then b doesn't have all its properties in common with a: so,

since a consequence of a contingent truth is itself contingent, it must be contingent that *b* doesn't have all its properties in common with *a*. But if that is contingent, then so must be the proposition that *b* does have all its properties in common with *a*, on the principle that the negation of a contingent statement is itself contingent.

The only way to avoid this is to treat descriptions or picturings of an object's actual combinations with or relations to other objects (including universals) as sentences which, if true, are necessarily true, for then it won't be contingent that *a* has a property *b* does not have, and hence, ultimately, it won't be contingent that *a* doesn't have all its properties in common with *b*—and here we have the identity of indiscernibles. But we have just seen that Wittgenstein or any atomist cannot accept this very strong and apparently warrantless assumption, hence cannot accept the identity. Perhaps someone desperate to cling onto the Augustinian picture would want to embrace the assumption, but this would be to depart completely from any of the attempts to develop the *Urbild* in any rigorous fashion, and it is hard to see what account of picturing or its corresponding ontology such a person could possibly present.

V

I should like to conclude with two brief remarks. The first is that even if it is contingent whether two objects have all their properties in common, this does not of course mean that any theory about the identity of objects, say of persons, must either eschew formulating identity-criteria in terms of objects' properties (*per impossibile*!) or make the strong assumption about properties mentioned earlier: the issue of criteria is the issue of justification, and we could perfectly well suppose that identity claims can only be justified by reference to objects' properties without also supposing that to any given Leibnizian individual concept only one thing can correspond.

The second thing is whether we can find philosophies of language, other than earlier Wittgenstein's or Russell's, which exemplify the Augustinian picture; for if we can then clearly the results of the above discussion will bear directly on them. Hacker and Baker, for example, in their recent commentary on the *Investigations*, try to make out that Frege's whole philosophy of language consists in a tortuous attempt at 'salvaging' the Augustinian picture; their argument seems to rest on some serious misunderstandings, but I cannot go into them here.

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NOTE

1 We must not suppose that the above point is at all comparable with allowing that it can be said of an object *a* that it occurs equally in the *sense* of 'fa' and 'ga' (cf. *TLP* 4.1211). To allow this would be to allow that a logical property of *a* can be described; but no such thing is allowed when we allow that the *fact* that *a* is combined with *f* in the same way as *a* is combined with *g* (if it is a fact) can be described. This must be a fact if *a*'s combining with *f* is a fact in the first place, just as *a*'s occurring in the senses of both 'fa' and 'ga' cannot be a fact if *a*'s occurring in the sense of 'fa' is not itself a fact. It is necessarily only internal or logical features of objects which are shown and unsayable; but whether *a* is actually configured with *b* in the same way as (say) *c* is configured with *d* is clearly not an internal property of these objects, and can be said.

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9. Die späte Philosophie Wittgensteins

9. Wittgenstein's Late Philosoc hy

BEMERKUNGEN ÜBER WITTGENSTEINS GRAMMATIK DER HYPOTHESEN

Rosaria Egidi

Die Analyse jener eigentümlichen logischen Gebilde, die Wittgenstein „Hypothesen" bzw. „wissenschaftliche Hypothesen" genannt hat, gehört zum Gedankenkreis der sogenannten „mittleren Phase" seines Denkens (1929—1934), die besonders die Kritik der Logik der Wahrheitsfunktionen und des Anwendungsgebietes des Verifikationsprinzips umfaßt.[1] Im folgenden möchte ich nicht eine Rekonstruktion der ganzen Wissenschaftstheorie Wittgensteins versuchen, sondern das beschränkte Ziel verfolgen, die „Grammatik" einiger wissenschaftstheoretischer Begriffe klar zu machen und sie in Zusammenhang mit den Thesen zu bringen, die den Bruch des monolithischen theoretischen Schemas des „Tractatus" und den Übergang zu der unterschiedlichen, problematischen Auffassung der wissenschaftlichen Sprache in den „Untersuchungen" ausdrücken.

Von der Erörterung der Argumente ausgehend, die sich in den „Philosophischen Bemerkungen", in der „Philosophischen Grammatik" und in den Wiener Gesprächen mit Schlick und Waismann (die von 1929 bis 1932 stattfanden[2]) finden, wird hier versucht, *erstens*, die Dichotomie Satz-Hypothese und, im Gegensatz zu den Aussagen der unmittelbaren Erfahrung, den *sui generis* Status der logischen Gebilde, zu denen die Hypothesen gehören, hervorzuheben, *zweitens*, das Verhältnis der Hypothesen zu einigen „phänomenologischen" Begriffen der oben zitierten Werke, wie „Wahrscheinlichkeit" und „Erwartung", die die „unzähligen verschiedenen" Arten von Aussagen bilden, zu erörtern, und *zum Schluß* die Formulierung der Grammatik der Hypothesen als eine wichtige aber nicht endgültige Etappe auf dem Wege, der von dem ursprünglichen logischen Atomismus zur pragmatisch-grammatikalischen Sicht der Spätphilosophie Wittgensteins führt, zu diskutieren.

Das Problem der Natur der Hypothesen kommt zum ersten Mal in den „Phil. Bemerkungen" vor und wird auch in den der mittleren Phase nahestehenden Werken systematisch entfaltet; man kann sagen, daß es gewissermaßen schon in das grosse Programm eingeschaltet wird, das seit dem „Tractatus" den problematischen Status der nicht-elementaren Sätze betrifft. Obwohl die Abbildungstheorie des „Tractatus" den Sinn der Elementarsätze und die Logik der Wahrheitsfunktionen als Methode ihrer Analyse betrifft, ist die eigentliche Aufgabe des Werkes, die Struktur der zusammengesetzten Sätze auf die Struktur der sie konstituierenden Elementarsätze zu reduzieren und sie durch die erklärenden Schemata der Abbildungstheorie zu rechtfertigen.

Welches sind aber die Sätze, deren Analyse sich im „Tractatus" als mangelhaft ergab? Von der Problematik dieses Werkes ausgehend kann man eine große Anzahl von Aussagen sammeln, die nicht als Elementarsätze gelten können und deren Erklärung sich im Rahmen der Abbildungstheorie nicht rechtfertigen läßt. Es handelt sich um Sätze der Logik und der Mathematik, um Modalsätze („Es ist notwendig, möglich, daß . . ."), um intentionale Sätze („A glaubt, intendiert, weiß, daß p"), um Farbsätze, um Sätze über Wahrscheinlichkeit, um Naturgesetze, um Sätze über Ethik, Ästhetik, sowie über Gott, die Welt als ein Ganzes und über den Sinn des Lebens. In Bezug auf die Zielsetzungen unserer Diskussion spielen unter den in dieser Gruppe enthaltenen Sätzen die Farbsätze eine erhebliche Rolle und sie ergeben, zusammen mit den Naturgesetzen, den Ausgangspunkt der Wittgensteinschen späteren Analyse des Hypothesenbegriffes.

Als Wittgenstein den „Tractatus" schrieb, vertrat er die Meinung, daß die meisten Fragen, die in den oben zitierten Sätzen auftauchen, endgültig gelöst waren. Einige Sätze schrieb er dem Gebiet des Mystischen, andere dem der Sinnlosigkeit zu; in Bezug auf einen großen

Teil der Sätze versuchte er eine Lösung im Rahmen der Wahrheitsfunktionen anzubieten (als Beispiel mögen die Grenzfälle der Logik und der Mathematik genügen). Der Wittgensteinsche Versuch, mit der Entdeckung neuer Methoden zu einer Ergänzung der Logik der Wahrheitsfunktionen zu gelangen, um die Sätze der unmittelbaren Erfahrung zu analysieren, gehört zum Standpunkt, der sich schon in „Some Remarks on Logical Form" ankündigt, und der sich in den Werken der mittleren Phase entfaltet. Solch eine Ergänzung ist, würde ich sagen, mit der „phänomenologischen Täuschung" verbunden, die den Schwierigkeiten der Farbsätze-Frage im „Tractatus" entsprang und die zur phänomenologischen Farbenlehre in den „Phil. Bemerkungen" führt (§§ 76—86, 218—224). Im Kontext der Argumente, die mit dem Fall dieser Täuschung verbunden sind, findet sich die Wittgensteinsche Betrachtung des Hypothesenbegriffes und der Eigenschaften, die die physikalische Sprache kennzeichnen. Die Entwicklung des Wittgensteinschen Denkens ist sehr kompliziert: die Problematik, aus der die Analyse der Hypothesen auftaucht, ergibt ohne Zweifel eines der interessantesten Argumente, will man ein wichtiges Problem beleuchten, nämlich die erhebliche Rolle der phänomenologischen Phase als Höhepunkt der Verwandtschaft zwischen Wittgenstein und dem Wiener Kreis und den Übergang zur späteren Auffassung der philosophischen Grammatik als Höhepunkt ihres Unterschiedes.

In den Werken der mittleren Phase kommt der Begriff „Hypothese" in verschiedenen Deutungen vor. Im folgenden möchte ich die Analyse derjenigen wichtigsten und systematisch entfalteten Verwendungsweisen liefern, die den Begriff der Hypothese aus der Physik übernehmen. Die Hypothese taucht aus dem Kontext derjenigen Überlegungen auf, die von Wittgenstein dem Unterschied zwischen Phänomenologie und Physik gewidmet worden waren, d.h. dem Unterschied zwischen der primären oder phänomenologischen Sprache, deren Aussagen sich auf das unmittelbar Gegebene beziehen, und der sekundären oder physikalischen Sprache, deren Aussagen nicht durch direkte Erfahrung gewonnen werden, sondern einen theoretischen und physikalischen Sinn haben. Zu dieser letzten Gruppe von logischen Gebilden gehören die Hypothesen. Die Unterscheidung zwischen phänomenologischen und physikalischen Sätzen bringt also den Kern der wissenschaftstheoretischen Auffassung Wittgensteins und den polemischen Charakter seiner These zum Ausdruck: „die ärgsten philosophischen Irrtümer entstehen immer" — schreibt er in den „Phil. Bemerkungen" — „wenn man unsere gewöhnliche — physikalische — Sprache im Gebiet des unmittelbar Gegebenen anwenden will" (§ 57).

Es lohnt sich nun zu erwähnen, daß auch Neurath und Carnap in den von ihnen 1932 veröffentlichten Aufsätzen den Vorschlag zu einer physikalistischen Lösung derjenigen Probleme der Wissenschaft machten, die von Carnap im „Logischen Aufbau" phänomenologisch betrachtet worden waren. Carnaps Ablehnung der Phänomenologie, d.h. der Annahme einer phänomenologischen Basis der Begriffe und Gesetze der Wissenschaft, sowie seine Entscheidung für eine physikalistische Basis zeigen eine enge Verwandtschaft zu dem Unterschied zwischen Phänomenologie und Physik und ziehen vor allem die gleichen Argumente heran, mit welchen Wittgenstein die Angehörigkeit der Hypothesen zum Kontext der phänomenologischen Sprache verneint hatte. Um diese Argumente klar zu machen, möchte ich versuchen, diejenigen Probleme zu erläutern, zu deren Lösung Wittgenstein durch die Konstruktion einer phänomenologischen Sprache zu gelangen beabsichtigte.

Die Analyse der Farbsätze bietet, wie schon gesagt, den Ausgangspunkt an, um die Logik der Wahrheitsfunktionen zu kritisieren und auf die Möglichkeit neuer Methoden für die „Analyse der Phänomene" zu verweisen. Ein Farbsatz wie „Dies ist gelb" kann nicht als Elementarsatz bezeichnet werden. Die Eigentümlichkeiten der Elementarsätze, die Wittgenstein im „Tractatus" für grundlegend hält, sind die *Unabhängigkeit* — „aus einem Elementarsatz läßt sich kein anderer folgern" (TLP 5.134) — und die *Widerspruchslosigkeit* zweier Elementarsätze: „ein Zeichen des Elementarsatzes ist es, daß kein Elementarsatz mit ihm in Widerspruch stehen kann" (TLP 4.211). Außerdem ist die Konjunktion zweier durch die logische Konstante „und" verbundenen Farbsätze kein logisches Produkt: „Ich kann z.B. nicht sagen", sagt Wittgenstein in den Wiener Gesprächen,

> An einem und demselben Punkt ist rot und blau zugleich. Hier ist das logische Produkt unvollziehbar. Die Regel für die logischen Konstanten bilden vielmehr nur einen Teil einer umfassenden Syntax, von der ich damals noch nichts wußte.[3]

Die von Wittgenstein erwähnte ,,umfassende Syntax" ist ohne Zweifel ein Synonym für jene ,,ganze Grammatik" der ,,Phil. Bemerkungen" (§ 83), von welcher die Logik der Wahrheitsfunktionen nur ,,ein Teil" ist und dessen Ergänzung sich als das Hauptziel der Analyse der nicht-elementaren Sätze ergibt.

Die Farbsätze-Analyse betont, daß es mindestens ein logisches Gebilde gibt, das die trügerische Struktur eines Elementarsatzes hat, aber das nicht die oben erwähnten Kennzeichen besitzt und ,,nicht mit Hilfe der Wahrheitsfunktionen arbeitet".[4] Wittgenstein leitet die Argumente seiner Revision der Wahrheitsfunktionen als einziger Methode der Satzanalyse folgendermaßen ein:

> Der erste Gedanke ist, daß es unverträglich ist, daß zwei Farben an *einem* Ort zugleich sein sollten. Der nächste ist, daß zwei Farben an *einem* Ort sich eben zu einer resultierenden Farbe ergänzen. Der dritte aber ist der Einwand: wie verhält es sich mit Komplementärfarben? Wie ist es mit Mischfarben, z.B. von Rot und Blau? . . . Und verschiedene Grade von Rot sind miteinander verträglich?[5]

An der Betrachtung der Komplementärfarben oder einer Mischung von Farben ist das Entscheidende, daß zwei Elementarsätze ,,einander widersprechen" können:

> Wenn verschiedene Grade einander ausschließen, so folgt aus dem Vorhandensein des einen, daß der andere nicht vorhanden ist. Dann können zwei Elementarsätze einander widersprechen.[6]

Außerdem können wir aus dem vierten ,,Anhang" der ,,Philosophischen Grammatik" entnehmen, daß die Farbsätze nicht dem Prinzip der Unabhängigkeit der Elementarsätze gehorchen.

> Aus ‚*a* ist jetzt rot' folgt aber ‚*a* ist jetzt nicht grün' und die Elementarsätze in diesem Sinne sind also nicht von einander abhängig, wie die Elementarsätze in meinem seinerzeit beschriebenen Kalkül . . . (PG, S. 210—11).

Man kann zum Schluß sagen, daß die Farbsätze zu einer weiteren Klasse von phänomenologischen Aussagen gehören, die weder Elementarsätze noch Wahrheitsfunktionen von Elementarsätzen umfaßt; die Methode ihrer Analyse kann deshalb nicht die extensionale Logik des ,,Tractatus" sein.

In Bezug auf die phänomenologischen Sätze führt Wittgenstein das Prinzip ein, daß ihr Sinn die Methode ihrer Verifikation ist. Solch ein Prinzip kann auf die phänomenologischen Sätze angewandt werden, weil sie sich auf die Sinnesdaten der unmittelbaren Erfahrung, wie Farben, Töne usw. beziehen. Das führt zur Wittgensteinschen These, daß die phänomenologische Sprache eine *hypothesenfreie* Basis hat. In anderen Worten: es beziehen sich die phänomenologischen Begriffe auf die sinnlichen und unmittelbar gewissen Gegebenheiten der Erfahrung und nicht auf physikalische Gegenstände wie Wellen, Atome usw., die als theoretische und von der Erfahrung unabhängige Konstruktionen gelten. Die Eigentümlichkeit der direkten Relation, die die phänomenologischen Sätze zur Wirklichkeit haben, liegt der beschreibenden Funktion der Phänomenologie zugrunde. Nur auf dem Gebiet einer Darstellung des unmittelbar Gegebenen kann man von einer Verifikation der Sätze sprechen. Es hat hingegen keinen Sinn zu sagen, daß die Sätze der physikalischen Sprache verifiziert werden können. Da sie keinen empirischen sondern einen theoretischen, hypothetischen Charakter haben, garantieren sie vielmehr jenen eigentümlichen Bezug zur Zukunft, der die wesentliche Rolle der wissenschaftlichen Hypothesen, sowie der Naturgesetze, ausdrückt, d.h. die Möglichkeit der Voraussage, der Prädiktion. Außerdem liegen die hypothetischen Aspekte der physikalischen Sprache, d.h. ihre Unabhängigkeit von der unmittelbaren Erfahrung dem kategorialen Unterschied zugrunde, den Wittgenstein als den Unterschied zwischen

Physik und Geschichte in die von Waismann aufgezeichneten Wiener Gesprächen eingeführt und erörtert hat.

Die Thesen, durch welche Wittgenstein die Grammatik der Hypothese aufgebaut und ihren Status festgestellt hat, können wir in den folgenden Punkten zusammenfassen: 1. Die Hypothesen erhalten nicht den Status von Sätzen sondern funktionieren als Gesetze zur Bildung von Sätzen; 2. Sie haben zur Realität eine andere formelle Relation als die der Verifikation; 3. Sie haben keine beschreibende, sondern eine vorschreibende (normative) Funktion; 4. Sie haben keinen „geschichtlichen" Charakter; 5. Sie sind mit den Begriffen von „Wahrscheinlichkeit" und „Erwartung" verbunden.

Die Wittgensteinsche Behauptung, daß die Hypothesen nicht als Sätze, sondern als Gesetze funktionieren, bringt die theoretische Wendung zum Ausdruck, die nach dem „Tractatus" die Betrachtung der Nicht-Elementarsätze kennzeichnet. Im Zusammenhang der mittleren Phase sind die Sätze, die Wittgenstein „eigentliche Sätze" nennt, die phänomenologischen Sätze, d.h. diejenigen, die eine unmittelbare Relation zur Realität haben. Im Gegensatz dazu ist ein hypothetisches Gebilde „von der Realität gänzlich detachiert und funktioniert nicht mehr als Satz".[7]

Aber welche Struktur haben die Hypothesen? Wie sieht die Relation, die sie zur Realität haben, aus? Welche Rolle spielen sie in der pyhsikalischen Sprache und überhaupt in der Wissenschaft? Die endgültige Beantwortung dieser Fragen ist mit der Erörterung des Verhältnisses der Hypothesen zu den phänomenologischen Sätzen eng verbunden und bezieht sich auf die These, daß die Hypothesen als Gesetze zur Bildung von Sätzen gelten.[8]

Die Erkenntnis, daß die Hypothesen als Gesetze betrachtet werden müssen, führt zum großen Thema der Allsätze, deren Struktur nicht im Rahmen der Wahrheitsfunktionen analysiert werden kann, da sie keine endliche Anzahl von Elementarsätzen enthalten, sondern auf die Möglichkeit einer unbeschränkten Anzahl von Elementen verweisen.[9] Die Allgemeingültigkeit der Allsätze, sowie der Naturgesetze und der Hypothesen, hängt davon ab, daß sie scheinbar die Struktur von zusammengesetzten Sätzen haben, und als Hinweise für die Anwendung oder als Regel für die Bildung von Sätzen behandelt werden können. Aus diesem Grund kann man sagen, daß die Hypothesen, im Gegensatz zu der beschreibenden Funktion der phänomenologischen Sätze, einen vorschreibenden, normativen Charakter haben. In bezug auf einen solchen normativen Charakter hat es keinen Sinn über die Wahrheit und Falschheit der Naturgesetze und der Hypothesen zu sprechen: „ein Naturgesetz läßt sich nicht verifizieren und nicht falsifizieren".[10] Verifizierbar sind nur die „einzelnen Schnitte" durch die Hypothesen, d.h. die beobachteten oder empirischen Tatsachen, deren Vielfältigkeit durch die Hypothesen vereinigt wird:

> Die Hypothese ist dasjenige, was alle diese verschiedenen Schnitte miteinander verbindet . . . Die Hypothesen der Physik sind so gebaut, daß sie eine sehr große Anzahl von Erfahrungen verschiedener Art miteinander in Beziehung setzen. Dieses Verbindende ist die Hypothese.[11]

Das erklärt auch, daß die verschiedenen Arten der Verifikation der Möglichkeit entsprechen, die verschiedenen empirischen Aspekte der Erfahrung zu verifizieren. Nur die Hypothese bietet jene Einheitsfunktion an, die nicht nur die wissenschaftliche Sprache sondern auch die Umgangssprache benötigt. In diesem Zusammenhang fällt das glänzende Gleichnis, in dem Wittgenstein die Funktion einer Hypothese mit der Rekonstruktion eines archäologischen Befundes verglichen hat:

> Auf einem Ruinenfeld werden Bruchstücke von Säulen, Kapitälen, Giebeln ausgegraben, und man sagt: Das war ein Tempel. Man ergänzt die Bruchstücke, füllt in Gedanken die Lücken aus, zieht die Linien nach. Das ist ein Gleichnis der Hypothese.[12]

Im Lichte dieser eigentümlichen, von der Erfahrung unabhängigen Kennzeichen kann man sagen, daß die hypothetischen Gebilde einer ganz anderen Grammatik als der der Sätze gehorchen: diese können endgültig verifiziert oder falsifiziert werden, jene sind niemals „aufgeschlossen":

> Die Hypothese hat gleichsam ein leerlaufendes Rad: solange keine weiteren Erfahrungen auftreten, bleibt das Rad unbenützt, und es tritt erst in Aktion, sobald es gilt, weitere Erfahrungen miteinzubeziehen.[13]

Das hängt davon ab, daß die Hypothesen eine ,,lose" Verbindung mit der Wirklichkeit haben: Satz und Hypothese gehören dann zu ganz verschiedenen logischen Konstruktionen und drücken ganz andere grammatische Gebilde aus.

Die Dichotomie Satz-Hypothese hat eine gewisse Verwandtschaft mit dem Unterschied zwischen Wahrheit und Wahrscheinlichkeit.[14] Die Wahrscheinlichkeit bedeutet keine Annäherung an die Wahrheit. Man kann sie nicht mit einer unvollendeten Verifikation vergleichen, da sie, so wie die Naturgesetze, eine logische Konstruktion ist, deren wesentliches Charakteristikum die Gültigkeit für unendliche Bereiche ist. Wie wir schon gesehen haben, stehen die Hypothesen sozusagen in Beziehung zur Zukunft, in dem Sinne, daß sie immer neue Konstruktionen nach Gesetzen ermöglichen. Von dieser These ausgehend betont Wittgenstein, daß die physikalischen Sätze Werkzeuge der Prädiktion, der Voraussage sind..

Dem Standpunkt gemäß, den Wittgenstein in der mittleren Phase entwickelt, stellt er die Physik der Geschichte gegenüber:

> *Physik ist nicht Geschichte.* Sie prophezeit. Wollte man die Physik lediglich als einen Bericht über die bisher beobachteten Tatsachen auffassen, so würde ihr das Wesentlichste fehlen, die Beziehung auf die Zukunft.[15]

Es ist bemerkenswert, daß der sozusagen prophetische Charakter der hypothetischen Gebilde der Physik dieselbe Funktion hat wie der Begriff der ,,Erwartung" im Zusammenhang des Hypothesenbegriffes. Diese These fällt im Zusammenhang der ,,Phil. Bemerkungen", wo Wittgenstein zum ersten Mal die grammatische und nicht-physische/psychische Natur der intentionalen Sätze, d.h. der Sätze, in deren Kontext die Wörter für psychische Vorgänge angewendet werden, bewiesen hat.[16] Das hat eine stärkere Unterstreichung des grammatischen Charakters aller Sätze, die nicht aus der unmittelbaren Erfahrung entnommen werden, sondern die als Gesetze oder Modelle für die Bildung von Sätzen gelten müssen, zur Folge.

In diesem Sinne kommt die Möglichkeit einer neuen Beziehung zwischen Hypothesen und phänomenologischen Sätzen zum Vorschein:

> Dann wäre also die Phänomenologie die Grammatik der Beschreibung derjenigen Tatsachen, auf denen die Physik ihre Theorien aufbaut. Erklären ist mehr als Beschreiben. Aber jede Erklärung enthält eine Beschreibung.[17]

Das hypothetische Moment ist nun mit dem phänomenologischen, das erklärende mit dem beschreibenden Moment verwoben; ohne Hypothesen hätten die Naturgesetze der empirischen Wissenschaften keine erklärende und vorschreibende Funktion, aber ohne einen Bezug auf die Erfahrung wären die Hypothesen, wie Wittgenstein sagt, ,,die Erzählung eines Traumes".[18]

Die Grammatik der Hypothesen, die Wittgenstein in der mittleren Phase seines Denkens entwickelte, hat ihren Kern in der dialektischen Beziehung zwischen Phänomenologie und Physik, und in den damit verbundenen Fragen der grundlegenden Strukturen der wissenschaftlichen Sprache. In diesem Sinne drückt sie einen vorläufigen Lösungsversuch auf dem Wege, der von der Früh- zur Spätphilosophie Wittgensteins führt, aus. Das in der mittleren Phase grundlegende Verhältnis der Physik zur Phänomenologie erfährt, wie wir auch den 1950—1951 entstandenen ,,Bemerkungen über Farben"[19] entnehmen können, eine radikale Wendung, indem das Verhältnis der Physik zur Grammatik zum eigentlichen Kern der späteren Wissenschaftstheorie Wittgensteins wird.

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ANMERKUNGEN

1 Wittgenstein, L., Philosophische Bemerkungen (Oxford 1964); Philosophische Grammatik (Oxford 1969).
2 Waismann, F., Wittgenstein und der Wiener Kreis (= WWK) (Oxford 1967).
3 WWK, S. 74.
4 PB, § 76.
5 PB, § 76.
6 PB, § 76.
7 PB, § 225.
8 PB, §§ 225, 228; PG, S. 219.
9 PB, §§ 87—98.
10 WWK, S. 100.
11 WWK, S. 159—161, S. 258.
12 WWK, S. 210.
13 WWK, S. 160.
14 PB, §§ 227—237; PG, S. 224—235.
15 WWK, S. 101.
16 PB, § 237.
17 PB, § 1.
18 WWK, S. 101.
19 Wittgenstein, L., Remarks on Color (Berkeley/Los Angeles 1978).

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NEGATION AND CONTRADICTION IN WITTGENSTEIN

R. Routley and V. Plumwood

In the earlier work, especially the *Tractatus*, the classical explosion model of negation is adopted; negation is represented as total exclusion. There has, of course, to be more to the account of negation than this. In particular, logical constants such as negation, since they would otherwise raise serious difficulties for the picture theory of meaning, call for special treatment, which they obtain through the theory of math-functions. Negation is simply such a classical function; nothing in reality corresponds to it.

In his later work this hard classical view is softened in several respects:—

1. Negation is not one thing, or one function. Wittgenstein rejects 'the idea (of earlier work) that there is something common to all negation . . ., that negation always has "the same meaning"'.[1] Wittgenstein now wants to insist that the meaning of negation is not an object, and not an essence. Rather, what the meaning of negation is is shown by 'the way it *works*—the way it is used in the game' (*PG*, p. 55). The exclusion model is not abandoned: rather it is assimilated as one among many (partial) models of negation. So it is also with contradiction (which, along with negation, receives considerable attention in Wittgenstein's later work):

> '. . . contradiction isn't the *unique* thing people think it is. It isn't the *only* logically inadmissible form and it is, under certain circumstances, admissible' (*LRKM*, p. 177).

The no-one-thing theme concerning negation (and derivatively, contradiction) can evidently be assimilated under the determinable theory of negation.[2] There is not a single negation determinate—and in this sense, no essence—but *many*, with classical and connexive negations as (depauperate, hardly ideal) limiting cases. The determinable theory handles well Wittgenstein's comparison of $\sim(\sim p) = p$ with $(\sim\sim)p = \sim p$, where he says both that the meaning of negation is not different and that there is some truth in our inclination to say that ,$\sim$' must mean something different in the two cases (*LFM*, p. 81).

2. Much of the remainder of Wittgenstein's apparently diffuse, and sometimes incoherent, material on negation and contradiction can similarly be coherently organized within a wide relevant theory of negation, a theory which has a classical core but allows for a wide variety of nonclassical language-games or situations. The key correspondence in so reorganizing is that between language-games on the one side and situations or worlds or—a bit differently—theories on the other, language-games can play a quite analogous semantical role to that played by situations in world semantics (and pragmatics), and indeed, semantical analyses in terms of worlds can be recast in terms of games.[3]

Among the normal worlds, comprising class K, of relevant logic, there is a distinguished world T, the factual world, which (on more orthodox accounts) is exclusive and exhaustive, i.e. the classical negation rule is satisfied at *T*, as it is at the subclass, P of K, the complete possible worlds (of modal theory). P does not exhaust K, since K also contains incomplete worlds, which may or may not be possible, and inconsistent worlds. Normal worlds do not of course exhaust worlds (i.e., class W), they only exhaust the worlds required for the assessment of such notions as deducibility and entailment; but for semantical assessment of more highly intensional functors *and* of connexive logic, abnormal worlds are also needed. A precisely analogous picture holds good, in principle,[4] for language games; and we shall simply indicate corresponding languages-games and classes of such games by a bar superscripting of corresponding worlds. Thus, for instance, corresponding to T is the true-false language-game $\overline{T}$. Also, most important, corresponding to inconsistent and very incomplete (and so

nontrivial) theories in K are fragementary language-games of $\overline{K}$ in the form of inconsistent calculi (Wittgenstein equates calculi with language-games). Through the difference between $\overline{T}$ and other elements of $\overline{K}$ we can account for such facts as that Wittgenstein does not (in the *Lectures*, for instance) really get beyond a classical truth-table account of negation (good for elements of $\overline{P}$), yet says enough to make it clear that that is inadequate, because we can allow contradictions in systems (*LFM*, p. 138) and not admit that everything follows (*LFM*, p. 243); so contradictions which occur need not trivialise a calculus in the way that they do classically.

The distinction between $\overline{T}$ and inconsistent calculi in $\overline{K}$ appears in (unnecessarily) accentuated form in Wittgenstein's transitional work (especially *WWK*). There Wittgenstein separates pure calculi where discourse is not really propositional from the true-false game, which does involve semantical matters such as truth and falsity, and where discourse is propositional.[5] He even seems inclined to suggest that, contrary to appearances, a single notion of contradiction does not bridge these distinct areas. Contradiction proper is proportional; 'The idea of contradiction . . . is that of logical contradiction, and this can occur only in the *true-false game*, that is where we make statements' (*WWK*, p. 126). What is *forbidden* in calculi, certain configurations such as Hilbert's $0 \neq 0$, sometimes called 'contradictions', should be represented by 'entirely new sign(s) . . . the sign $\not\exists$, say' (*WWK*, pp. 175—6). This doubtful distinction is in danger of disappearing even where it occurs.[6] For Wittgenstein also emphasizes that 'a contradiction (proper) and a tautology do not *say* anything' (*WWK*, p. 631), i.e. even in the true-false game contradictions have no content, a claim Wittgenstein often equates with the claims he also makes that they have no sense, and do not express propositions, but are only sentences (*LFM*, pp. 185—6). In this way a propositional role for contradictions which distinguishes them from symbols like $0 \neq 0$ in perhaps inconsistent calculi is undermined. Of course, a residual distinction could be retained by saying that in one area the signs are associated with propositions (e.g. their parts express them), in the other area not. But it would not be worth much. And in any case the effect of such a nonpropositional line on logic, and elsewhere, is devastating. For example, things that figure in proofs, arguments (such as from p and $\sim$p), beliefs, etc., can no longer figure because they are not duly propositional. In particular, proofs using *reductio* methods are fouled up.

In later work Wittgenstein abandoned the distinction between types of "contradiction" (but by no means entirely the theme that contradictions do not make sense), and speaks of configurations in calculi as contradictions. It is calculi with such configurations (members of $\overline{W}$—$\overline{P}$), and their mathematical investigation that afford the *limited* emancipation from the requirement of consistency predicted by Wittgenstein (*RFM*, p. 332). There is said to be point in developing systems in which contradictions can be generated (*LFM*, pp. 188—9), and situations, language-games, where there is such point are outlined.

There are then different (sorts of) language-games with respect to contradictions, some such as $\overline{T}$ where they would be very damaging if they occurred, and some such as calculi games where they do occur but without damage. By way of different language-games, different procedures in the face of contradictions can be allowed for. Thus around the theme of different language-games, many of the pictures and suggestions tried out, often rather inconclusively, in Wittgenstein's later work, can be organized. The reversal pictures of negation (*LFM*, p. 180), for example, fit immediately into the wider relevant framework.

Among the pictures tried out are elements that echo Hegel, for instance the sickness presentation of contradictions, the rejection (later on, e.g. *RFM*, p. 130) of the unthinkability of contradictions.[7] But Hegel's progressive transcendence of contradictions (which are supposed to appear almost everywhere) is not repeated in Wittgenstein, who would, for the most part, have us stop at contradictions or carefully skirt around them. The sickness presented is filled out in the *germ* (but not a disease) *image* of a contradiction (*LFM*, pp. 138, 211). A contradiction is like a germ in a system, but it does not show that the whole system is diseased. In short, a contradiction in a system is generally a bad thing and to be avoided, but does not reveal triviality. In this connection we are offered something like Kreisel's story regarding Wittgenstein

on contradiction:—according to Kreisel, Wittgenstein's rule is: On encountering a contradiction, Stop! There are manifold troubles with this connexive-style rule, and it should be rejected.[8] Nor is it so clear that Wittgenstein would have accepted it. What Wittgenstein does say concerning finding a contradiction in a system is that 'the contradiction does not even falsify anything. Let it lie. Do not go there' (*LFM*, p. 138). This approach is unsatisfactory. For—contrary to Wittgenstein, who assumes that usefulness implies no contradictions (*RFM*, p. 104), that where a calculus has a use contradiction has to be forestalled[9]—we may want to *use* the contradiction to show significant things about a system. And we *won't* want to persist with a system which proves trivial (as Wittgenstein occasionally admits, *LFM*, p. 274).

3. A cancellation view, incompatible with the classical model of the *Tractatus*, is infiltrated in subsequent work. A cancellation picture is already deployed in transitional work, e.g. 'the rules of Euclidean geometry don't contradict one another, i.e. no rule occurs which cancels out an earlier one (p and ~ p), , ,' (*PG*, p. 345). It is a cancellation picture, where contradictions have no content and say nothing (and so are useless), that lies behind Wittgenstein's assumption that one should not draw *any* conclusions from a contradiction (*LFM*, p. 220), or better, that a way should be found of not proceeding from a contradiction (*LFM*, p. 223).[10] Furthermore, many of the pictures and images of negation Wittgenstein later considers are of a cancellation type or can be adjusted to fit a cancellation model. Although Wittgenstein repeatedly alludes to such images, at the same time he depreciates them (*e.g.* all attempts to explain why a contradiction "won't work" are spurious, *LFM*, p. xviii): they are all said to convert to no more than substitution of one symbolism for another. Even so, such things can have an explanatory and modelling role. Wittgenstein suggests not, because all that is offered is symbolism and figure, so the question of 'how one is going to use it?' (*LFM*, p. 181) remains, since any picture can be used in several ways. He goes on to advance the even more dubious description theme that 'anything which we give and conceive to be an explanation of *why* a contradiction does not work is always just another way of saying that we do not want it to work' (*LFM*, p. 187).

The assumption that contradictions don't, or won't, work and associated themes, e.g. that contradictions are useless, and associated images, e.g. the jamming picture (*LFM*, p. 178—9, ascribed to Moore, p. 190), are all connexivist in cast. With a contradiction, as when the cogs join, nothing emerges, 'we cannot do anything with it' (*LFM*, p. 191). It is from the same cancellation model that the no-content thesis, which jamming depicts, derives, that contradictions do not say anything, a thesis also equivalently (but misleadingly) expressed in 'contradictions don't make sense'.

The cancellation view can be included in the relevant synthesis by appeal to abnormal worlds or language-games, games where contradictions do stop proceedings, and where A & ~A may have no content. But in assuming, as he often appears to, that games are restricted to those that are classical (effectively, in $\overline{P}$) or those that are of a cancellation type (in a subclass of $\overline{W}$-$\overline{K}$), Wittgenstein much too drastically delimits the games, or worlds, needed in giving a full account of negation. And in assuming that abnormal cancellation-type games are characteristic—'*that* we exclude the contradiction and don't normally give it a meaning is characteristic of our whole use of language' (*LXM*, p. 179)—Wittgenstein goes curiously astray. Commonly we do not treat contradictions in this way. We reason on the basis of them (*e.g.* in *reductio* arguments), we act on the basis of inconsistent information (cf. the general who acts, and succeeds, on the basis of contradictory reports, *LFM*, p. 105), and we exploit paradoxes when we can.

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NOTES

1 See G. Hallett, *A Companion to Wittgenstein's 'Philosophical Investigations'* (Ithaca 1977), p. 540.
2 See L. Goddard and R. Routley, *The Logic of Significance and Context* (Edinburgh 1973), § 4.3; and R. Routley, R. K. Meyer, *et. al.*, *Relevant Logics and their Rivals* (forthcoming 1982), § 2.9.
3 See Goddard and Routley (1973), § 7.2.
4 There are some (hardly insuperable) problems in describing maximally consistent language games.
5 This sharp contrast, and double role for contradictions, is repeated in Hallett (p. 221), again based partly on transitional work. Where propositions *say* something, describe something (R. Routley, *Exploring Meinong's Jungle and Beyond* (Canberra 1979), p. 106), a contradiction is alarming. 'For there can be no contradiction in reality [i.e. T]; our description must be wrong'. By contrast, contradictions need not be alarming in mathematics (in K-P). 'But mathematics is always a machine, a calculus. The calculus describes nothing. It can be applied to that to which it can be applied.'
6 As Waisman's puzzlement about Wittgenstein's position (in Routley 1979) helps reveal.
7 Wittgenstein was also aware of, and not entirely unsympathetic to, the Hegel-Parmenidean thesis that an adequate description of motion involves contradictions.
8 See Routley (1979), pp. 171—180.
9 Hallett (1977), p. 272.
10 Both assumptions are inadequate, because often one needs, or wants, to proceed from a contradiction: some contradictions are very useful.

* * *

WITTGENSTEIN'S *ON CERTAINTY* POSITION: AN ELABORATION

Lorraine B. Code

A line of thought central to Wittgenstein's *On Certainty* position is captured in the observation:[1]

> "It may be for example that *all enquiry on our part* is set so as to exempt certain propositions from doubt, if they are ever formulated. They lie apart from the route travelled by enquiry". (*OC*, 88)

A system of basic certainties comprises the fabric which makes it possible for the everyday activities of human life to take place, ". . . the inherited background against which I distinguish between true and false". (*OC*, 94) It forms the foundations of knowledge and of philosophical enquiry, and stands as a bastion against the attacks of the sceptic.

The suggestion that Wittgenstein is designating foundations of knowledge may initially seem to do violence to the spirit of this work and the challenge it offers to Moore's attempt to present paradigmatic cases of certain knowledge. But I think the pivotal, bed-rock, context-providing propositions to which Wittgenstein constantly draws the reader's attention *are* foundations of a sort. In proposing that these be recognized as the foundations of knowledge, he is saying *both* that the quest for foundations traditionally construed is misguided, *and* that these are the only foundations there can be.

Wittgenstein's foundations are not *wholly* at odds, though, with traditional foundations. He claims, for example, to know or be certain ". . . that there is a chair over there, or a door, and so on". (*OC*, 7) He is convinced ". . . that the sun is not a hole in the vault of heaven". (*OC*, 104) He asserts ". . . that everyone knows his name with the greatest certainty" (*OC*, 579) and that he ". . . cannot be making a mistake about 12×12 being 144". (*OC*, 651) Propositions of this sort *are* foundational in the traditional sense that they do not need and cannot have justification. They formulate an experiential basis epistemically prior to all other knowledge and belief: in this, too, they are foundational in the traditional sense. But they are not foundational, traditionally speaking, in that they do not, and cannot, stand as the *justification* of all other knowledge.

This is a curious sort of foundation, then, whose acceptance requires a revision of what philosophers have long been accustomed to expect of foundations in theory of knowledge. The certainty it allows is neither the deductive certainty of the Platonic or Cartesian system where (at least for Plato) the certainty at the top of the pyramid of knowledge allows the knower to deduce all the rest. Nor is it the constructive certainty which Moore and other sense-data theorists are after, where the pyramid can be built upon a base of sensory, privileged access certainty. ("I *know* that I bathed each day and I do not derive that from some other immediate datum." (*OC*, 417)) Wittgenstein's foundational truths are not self-evident; they are neither tautologies nor are they known by direct intuition. They come gradually to be known in experience and, conversely and paradoxically, they are *pre-supposed* in experience and in language. Philosophers are urged to face these persistent paradoxes rather than to seek solutions which simply by-pass them.

Moore's alleged paradigms of certain knowledge are one such solution. Moore has chosen the circumstances of his examples in such a way as to make doubt seem impossible. But in different examples, in different language-games, doubt could still arise: the idealist would insist that there is "a further doubt *behind*" the practical doubt which Moore dismisses. (*OC*, 19) Hence Moore's is a poor paradigm: it does not fill the role he intends it should. Moreover, the fact that he continues to assert his claims so forcefully, with such conviction, adds nothing to their

strength or weakness as exemplifications of knowledge. The degree of assurance with which a knowledge claim is made is irrelevant to its paradigmatic (or other) status, and to the certainty of the knowledge itself. It reveals only the claimant's certainty about it (cf. *OC*, 66). Hence

> "The wrong use made by Moore of the proposition 'I know' lies in his regarding it as an utterance as little subject to doubt as 'I am in pain'." (*OC*, 178)

This is a central reason, for Wittgenstein, why Moore's putative paradigms are, in fact, not paradigms at all. They rest upon an illegitimate appeal to privileged access criteria which are not criteria of anything except Moore's own state of mind: a "mental state of conviction [which] may be the same whether it is knowledge or false belief". (*OC*, 42)[2] This is not where we must look for the foundations of our knowledge.

In suggesting that a foundational system of knowledge can, nonetheless, be drawn out of Wittgenstein's *On Certainty* position, I do not mean to ignore or to minimize the importance of one of the central claims of the work: "The difficulty is to realize the groundlessness of our believing". (*OC*, 166) It is a problem to reconcile this with the view that there is a form of foundationalism in *On Certainty*, but I think it can be done. Our believing is indeed groundless if we will allow only transcendental, absolute foundations to count as grounds. It is not groundless if we allow for the way in which it forms a system, pinned down more or less tightly at numerous points.

It is the system as a whole which determines the meaning and validity of knowledge claims, not single, atomic propositions nor incorrigible, isolated "knowns" epistemically prior to belief, not foundations traditionally construed. Nevertheless the parts of the system are not homogeneous, as is clear from Wittgenstein's distinction between "methodological propositions and propositions within a method" (*OC*, 318). Methodological propositions, in the way in which they stand as conceptual conditions for further belief, knowledge, and experience, determine the form of propositions within the method. In this, admittedly non-traditional, sense they fulfill the role of foundations, hinges, pivotal points.

The system is best construed as a network of interlocking, mutually-inferential knowledge and belief "a nest of propositions". (*OC*, 225) And it is central to Wittgenstein's position that "[Experience] does not teach us [these propositions] in isolation; rather it teaches us a host of interdependent propositions". (*OC*, 274) Knowledge acquisition is a process of organic growth, where some parts are more crucial for the existence and continued growth of the whole than others: where there are vital organs and peripheral ones. Thus,

> "Bit by bit there forms a system of what is believed, and in that system some things stand unchangeably fast and some are more or less liable to shift. What stands fast . . . is . . . held fast by what lies around it." (*OC*, 144)

Just as, for a biological organism, there is a point beyond which organs cannot be removed if the organism is to continue to function effectively, so it is, too, with the language-game. In this organic, open-ended, and ever-growing whole, some propositions, those which are exempt from doubt and are seldom, if ever, formulated, are functionally similar to vital organs. They form the foundation but, paradoxically, the ". . . foundation walls [which] are carried by the whole house". (*OC*, 248)

The paradox is like the problem of understanding emergence in evolutionary development, where systems arise from systems which are both stable and self-regulating. In view of their stability, it is surprising that the new should be accommodated at all; yet it is. Likewise, for Wittgenstein, systems of knowledge seem to evolve organically, and are also more or less stable. Like all organisms, it seems that they can always be improved, even though it may not always be possible to recognize the improvement for what it is or to predict it.

This holistic, organic view of knowledge shows a strong affinity with Jean Piaget's genetic epistemology.[3] Biological genesis, the gradual acquisition of cognitive structure in active exploration of the world, this is Piaget's response to the (in his view misguided) quest for absolute beginnings. There are no special, initial steps to knowledge-acquisition; there is

rather a gradual progression through cognitive stages to increasingly adequate assimilation of the world and accommodation of one's activity to it. Such a response is well attuned to the importance Wittgenstein is prepared to accord childhood knowledge-acquisition in his efforts to understand the function, structure, and conditions of knowledge in general. He believes, for example, that the questions children naturally come to ask, contrasted with those they would never ask, are importantly illuminating for philosophical puzzles about the foundations of knowledge. "Children do not learn that books exist, that armchairs exist, etc. etc.—they learn to fetch books, sit on armchairs, etc. etc." (*OC*, 476) These are instances of basic knowledge unadulterated by the mystification of philosophy. If we observe how knowledge is acquired, and the questions to which its gradual acquisition does and does not naturally give rise, we understand something about the nature of knowledge as such.[4] This is clearly the view underlying Piaget's research too.

The two accounts are reciprocally enlightening. Piaget's empirical investigations show quite clearly that Wittgenstein's observations accord well with actual conditions for the genesis and growth of knowledge. Wittgenstein's reflections enable the Piagetian to be clearer about the epistemological status of the knowledge whose development he investigates, and about the ultimate unanswerability of many of the questions his account implicitly poses. "It is as if 'I know' did not tolerate metaphysical emphasis". (*OC*, 482)

Wittgenstein would not, however, wholly endorse Piaget's account of knowledge. Consider the following:

> "The child, I should like to say, learns to react in such-and-such a way; and in so reacting it doesn't so far know anything. Knowing only begins at a later level." (*OC*, 538)

Piaget would likely say, depending upon *how* the child has learned to react, that this is an instance of prelinguistic, sensory-motor *knowledge*. Wittgenstein is unwilling to call it knowledge; for him, that designation awaits the development of language. I take this to be a weakness in Wittgenstein rather than in Piaget. If, with Piaget, we allow all knowledgeable activity (i.e. all activity that indicates that something, however minimal, has been *learned*) to be called knowledge, we avoid postulating arbitrary starting points within a gradually emergent process. Otherwise we are faced with the question as to when we are to postulate the beginning of language: at the first word, the first sentence? There seems to be no real basis for decision. Since so much pre-linguistic activity is clearly knowledgeable, it is indefensible to reserve the title 'knowledge' for what is stateable in language.

Still more important is the recognition that granting the existence of pre-linguistic (or extra-linguistic) knowledge emphasizes the importance of *praxis* as the basis of all knowledge. This, again, is a strength of Piaget's position and a point which Wittgenstein minimizes, to the detriment of his position. Evidence from the *On Certainty* text is heavily weighted toward the view that foundational certainty is *propositional* certainty rather than certainty in action: "But why *am* I so certain that this is my hand? Doesn't the whole language-game rest on this kind of certainty?" (*OC*, 446) ". . . the possibility of a language-game must show the facts" (*OC*, 618). I think this emphasis upon language is a mistaken emphasis, giving rise to a picture of foundational knowledge which is *less* basic, *less* fundamental than Wittgenstein's own terms could allow. It is not merely, or even primarily, the ability to participate effectively in a language-game which gives evidence of a basis of doubt-free knowledge. It is, more importantly, the capacity to act reasonably, appropriately, in accordance with the nature of things in the world.

If Wittgenstein were consistently at fault in this respect, this would be a less viable approach to human knowledge than in fact I think it is. His concessions to the active establishment of practices are sufficiently frequent to justify the conclusion that his views are somewhat equivocal on this matter. He allows that ". . . the end [of giving grounds] is not an ungrounded proposition: it is an ungrounded way of acting" (*OC*, 110); and that ". . . it is our acting which lies at the bottom of the language-game" (*OC*, 204). And he urges trying to find the

meaning of expressions by "always thinking of the practice" (*OC*, 601). On the basis of this kind of evidence, von Wright claims that the basic framework of knowledge, which makes up a sort of "*Vor-Wissen*", is *not* propositional knowledge. For Wittgenstein it is, rather, a *praxis*.[5] Thomas Morawetz, by contrast, claims that "empirical and non-empirical propositions are the foundations of practices",[6] not *vice versa*, as would, I think, correspond more closely with human cognitive experience. Evidence can be brought from the text to support each interpretation. I think the best compromise, at this point, is to see *On Certainty* as a transitional work, moving away from the insistence upon the primacy of language of the *Tractatus* and the *Philosophical Investigations* toward a position which might have come to recognize the primacy of action in human knowledge.

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NOTES

1 All numbered passages quoted or referred to in the text are from L. Wittgenstein, *On Certainty* (New York 1973).
2 This could presumably, on Wittgenstein's terms, be said also of Descartes' clear and distinct ideas.
3 For a basic account of Piaget's views see, for example: J. Piaget, *Six Psychological Studies* (New York 1967); J. Piaget, *Genetic Epistemology* (New York 1971); J. Piaget, *Psychology and Epistemology* (Harmondsworth 1977).
4 I do not think that Wittgenstein can reasonably be charged with committing a genetic fallacy here. It is not his view that the onus of epistemological explanation can be fully borne by a genetic account. Rather, he indicates that to understand something about its genesis is simply to understand *more* about knowledge as such.
5 See G. H. von Wright, "Wittgenstein on Certainty", in: G. H. von Wright (ed.), *Problems in the Theory of Knowledge* (The Hague 1972).
6 Morawetz, Thomas, *Wittgenstein and Knowledge* (Amherst 1978), p. 17.

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WAHRHEIT, GRAMMATISCHER SATZ UND LEBENSFORM: DER EPISTEMOLOGISCHE ASPEKT IN WITTGENSTEINS PRIVATSPRACHENARGUMENTATION

Hans Rudi Fischer

Die Privatsprachenargumentation läßt sich einerseits als Applikation von Wittgensteins Sprachspielkonzeption verstehen, andererseits bietet sie eine vollständige Beschreibung der Funktion der Sprache über unsere ,,inneren Zustände". Ich versuche über eine Interpretation des epistemologischen Aspektes der Privatsprachenargumentation (PU, § 245—252) den Nachweis zu führen, daß der Satz ,,Ich weiß, daß ich Schmerzen habe" als Beispielsatz von φ-Zuständen 1. ein grammatischer Satz ist, 2. daß grammatische Sätze selbst sinnlos, dennoch aber ,,wahr" sind, 3. daß grammatische Sätze den Sprachspielen *transzendental* sind, und 4. daß grammatische Sätze die *Nahtstellen* zwischen Lebensform und Sprachspielen bilden. W. gibt in seinem fiktiven Dialog mit dem Privatsprachenverteidiger (PSV) eine genaue Definition dessen, was er unter Privatsprache (PS) verstehen wird: ,,Die Wörter dieser Sprache sollen sich auf das beziehen, wovon nur der Sprechende wissen kann; auf seine unmittelbaren, privaten Empfindungen. Ein Anderer kann diese Sprache also nicht verstehen." W. fragt nun in PU, § 246, inwiefern diese Empfindung wirklich ,,privat" sei. Der Privatsprachenverteidiger (PSV) antwortet nun sozusagen aus seiner eigenen Erfahrung: (A) ,,Nun, nur ich kann wissen, ob ich wirklich Schmerzen habe; der Andere kann es nur vermuten." Von (A) behauptet W. nun, daß dieser Satz in einer Weise falsch, in einer anderen unsinnig sei. Um zu einer konsistenten Interpretation dieser Aussage zu gelangen, führe ich eine Perspektivierung in der Betrachtung dieses Satzes ein: Nämlich, ob er unter umgangssprachlicher oder privatsprachlicher Perspektive betrachtet wird. Andernfalls geriete man in den Widerspruch, daß (A) falsch und unsinnig zugleich wäre. W. insistiert in der sich an (A) anschließenden Diskussion auf den epistemologischen Aspekt der Bedeutung von ,,privat": nämlich, daß ich hinsichtlich meiner eigenen Empfindungen einen privilegierten Zugang vor den anderen habe, daß also *nur ich* von ihnen *wissen kann*, ein anderer deshalb meine Empfindung *nur* vermuten könne. Unter umgangssprachlicher Perspektive ist (A) nun deswegen falsch, weil ein anderer häufig wissen kann, daß ich Schmerzen habe, bspw. wenn er sieht, wie ich mir die Finger verbrenne und schreie. Hier wäre es unsinnig daran zu zweifeln, ob ich wirklich Schmerzen habe, und d.h. der Andere würde im normalen Sprachspiel das Verb ,,wissen" regelgerecht gebrauchen können, und jeder würde ihn verstehen. D.h., daß der Satz (A) empirisch widerlegbar und damit falsch ist. In welcher Weise ist (A) nun unsinnig? Betrachten wir (A) als Satz der postulierten Privatsprache, dann ist die Intersubjektivität des Verbs ,,wissen" hinsichtlich meiner Zustände a priori ausgeschlossen. Ist es dann überhaupt sinnvoll von ,,wissen" zu reden? W. argumentiert nun folgendermaßen: Wenn der Satz (A) im Kontext einer Sprache sinnvoll wäre, müßte ein Zweifel logisch möglich sein, dies hieße zugleich, daß die Negation dieses Satzes denkbar sein müßte, andernfalls wäre es sinnlos von ,,wissen" zu reden. Doch dieser Zweifel ist hier gerade logisch ausgeschlossen, ,,jener Ausdruck des Zweifels gehört nicht zu diesem Sprachspiel" (PU, § 288), denn die Negation dieses Satzes ist in der Privatsprache nicht denkbar, andernfalls müßte der Satz: $\sim$(A) Nicht nur ich kann wissen, daß ich Schmerzen habe . . . in dieser Sprache möglich sein, das hieße, daß der Andere (,,Nicht nur ich") wissen kann, daß . . . und genau das ist ja per definitionem durch den PSV ausgeschlossen. Sätze wie (A) haben für W. einen besonderen Status, den er dadurch deutlich macht, daß er sie als ,,grammatische Sätze" faßt. (PU, § 251) Bleiben wir weiter am Text um Bedeutung und Funktion der grammatischen Sätze herauszuarbeiten. Auf W.s Beweis, daß (A) in der Umgangssprache eben falsch ist,

antwortet der PSV, daß der Andere aber doch nicht mit *der* Sicherheit von meinen Schmerzen wissen könne, wie ich selbst. Hier nimmt W. nun einen Paradigmawechsel von Satz (A) zu Satz (B) vor: (PU, § 246) (B) ,,Ich weiß, daß ich Schmerzen habe.'' Die Antwort des PSV: ,,aber doch nicht mit der Sicherheit'' ist einerseits schon ein Abrücken von seiner widerlegten Ausgangsthese (A), andererseits wird das ursprüngliche Argument dahingehend modifiziert, daß das Wort ,,wissen'' für mich eben eine andere Bedeutung (weil andere Sicherheit) im Hinblick auf meine φ-Zustände hat, als wenn ich es zur Beschreibung der φ-Zustände von anderen gebrauche. Die Folgen dieses Arguments sind natürlich die, daß das Wort ,,wissen'' eine doppelte Semantik haben müßte: eine intersubjektiv funktionierende und eine private. Diesen ,,gemäßigten'' privatsprachlichen Ansatz wird W. ab PU, § 272ff. ausführlich destruieren; darauf gehe ich hier nicht ein. W. nimmt nun deswegen den Paradigmawechsel berechtigt vor, weil auf der einen Seite die Ausgangsthese des PSV nicht mehr haltbar ist und auf der anderen Seite seine Modifikation (,, . . . nicht mit *der* Sicherheit'') es erforderlich macht, die Grammatik des Wortes ,,wissen'' in der Umgangssprache zu analysieren, denn der umgangssprachliche Gebrauch ist ja in der Modifikation bereits zugestanden. Für W. ist in Satz (B) das Wort ,,wissen'' im diskutierten Kontext redundant. Es fügt dem Satz keine neue Information hinzu, deswegen kann W. auch sagen: ,,Von mir kann man überhaupt nicht sagen (außer etwa im Spaß), ich *wisse*, daß ich Schmerzen *habe*.'' (PU, § 246) Das Verb ,,wissen'' ist im Satz (B) redundant, weil im Sprachspiel der 1. Pers. Sing. mit ,,Schmerzen haben'' Voraussetzung ist, daß 1. *ich* sie *habe* und notwendig 2. ich dann auch *weiß, daß* ich sie habe. Hier zeigt sich deutlich, wie der Differenzierung in die ontologische Kategorie des ,,Habens'' und die epistemologische des ,,Wissens'' von Empfindungen im Sprachspiel der 1. Pers. Sing. ein gravierendes Mißverständnis der Grammatik unserer Empfindungsworte zugrundeliegt. Der Trugschluß des PSV liegt in der Annahme, daß Empfindungen ontologisch ,,privat'' sind und daß deswegen der Andere nicht *meine* Empfindungen haben kann; weil er sie nicht haben kann, kann er demzufolge auch nicht von ihnen wissen. Das Wort ,,wissen'' wird in diesem Satz nicht richtig gebraucht. Was W. hier sagt, ist folgendes: Wenn es also hinsichtlich meiner φ-Zustände sinnlos ist von ,,wissen'' (lat. novi) zu reden, denn dies schließt einen Erkenntnisprozeß ein, der hier nicht statt hat, kann ich auch nicht von ,,ich lerne kennen'' (lat. nosco) reden, denn ,,ich *habe sie*'' (PU, § 246) und es ist im normalen Sprachspiel nicht denkbar, daß ich das nicht weiß. Der Präteritopräsenscharakter des Verbs ,,wissen'' täuscht leicht über diesen implizierten (d.h. in der Semantik von ,,wissen'' enthaltenen) Erkenntnisprozeß hinweg, der gerade bei meinen φ-Zuständen nicht vorkommt. In PU, § 251 hatte W. den Satz (A) als grammatischen Satz entlarvt, der die Form eines empirischen Satzes vortäuscht, aber eben in dieser Privatsprache nichts aussagen kann. Nun zeigt W., daß (B) denselben Status in der Umgangssprache hat wie (A) in der Privatsprache, nämlich daß auch (B) ein grammatischer Satz ist. W. bringt in PU, § 251 ein Beispiel eines grammatischen Satzes: ,,Jeder Stab hat eine Länge.'' Mit diesem Bsp. macht er deutlich, daß wir uns nicht vorstellen können, was ein grammatischer Satz aussagen können sollte: ,,kann ich mir nun vorstellen, jeder Stab hat eine Länge? Nun ich stelle mir eben einen Stab vor''. (PU, § 251) Ein Bild eines grammatischen Satzes kann nur *zeigen*, was man ,,Länge eines Stabes'' nennt. ,,Was sollte das Gegenteil davon sein?'' (PU, § 251) Der Satz: ,,Ich kann mir das Gegenteil nicht vorstellen'', den der PSV vorbringt, um (A) bzw. (B) zu verteidigen, ist ebenfalls ein grammatischer Satz. Deshalb heißt für W. die richtige Antwort: ,,Ich kann mir, was du sagst, nicht vorstellen.'' Die Sinnlosigkeit im Zusammenhang von φ-Zuständen von ,,wissen'' zu reden, wird im Kontext von PU, § 50 besonders deutlich: ,,Man kann von einem Ding nicht aussagen, es sei ein Meter lang, noch es sei nicht ein Meter lang, und das ist der Urmeter von Paris.'' Parallelisiert man dies mit PU, § 246, so heißt dies: Man kann von einem nicht aussagen, er wisse, daß er Schmerzen habe, noch er wisse nicht, daß er Schmerzen habe und das bin ich. Damit schreiben wir diesem Ich nicht eine merkwürdige Rolle im Spiel des Messens mit dem Meterstab zu, sondern kennzeichnen seine eigenartige Rolle im Spiel des Messens mit dem Meterstab. ,,Es ist in diesem Spiel nicht Dargestelltes, sondern Mittel der Darstellung''. (PU, § 59) Analoges gilt für den grammatischen Satz. Ein

grammatischer Satz bringt für W. die Eigenschaften der betreffenden Sprache bzw. des betreffenden Sprachspiels zum Ausdruck, d.h. gibt uns die *Mittel der Darstellung* und Beschreibung von Wirklichkeit *in* Sprache an die Hand. So wie sich die Verneinung eines apriorischen Satzes als Unsinn erweist, so ergibt die Verneinung eines grammatischen Satzes Unsinn. Die Möglichkeit der Verneinung eines Aussagesatzes (proposition) ist damit auch die Voraussetzung für seine Sinnhaftigkeit. Daß W. die „Ich weiß . . .“-Sätze in Bezug auf Bewußtseinszustände generell als grammatische Sätze faßt, die nicht der wahr/falsch-Notation unterliegen, belegt eine Stelle aus „Über Gewißheit“ (ÜG, S. 58): „‚Wird „Ich weiß etc.“ als grammatischer Satz aufgefaßt, so kann natürlich das „Ich“ nicht wichtig sein. Und es heißt eigentlich „es gibt in diesem Falle keinen Zweifel“ oder‘ „Das Wort „Ich weiß nicht“ hat in diesem Falle keinen Sinn“‘. Und daraus folgt freilich auch, daß „ich weiß“ keinen hat.‘“ Daß bei dieser Auffassung grammatische Sätze selbst unsinnig bzw. sinnlos sind, ergibt insofern keinen Widerspruch, als W. dieses „unsinnig“ nur darauf bezieht, grammatische Sätze als Erfahrungssätze mißzuverstehen. Dieses Mißverständnis liegt ja gerade der Privatsprachentheorie zugrunde und aus solchen sprachlichen Mißverständnissen entstehen Probleme, „deren die Philosophie voll ist“, „Man glaubt wieder und wieder der Natur nachzufahren, und fährt nur der Form entlang, durch die wir sie betrachten.“ (PU, § 114) Grammatische Sätze sind also einerseits sinnlos, weil sie über die Wirklichkeit nichts aussagen können, sie sind *keine deskriptiven Sätze* und unterliegen somit auch der wahr/falsch-Notation nicht, andererseits sind sie aber nicht unsinnig, weil sie die Bedingung der Möglichkeit sinnvoller Sätze überhaupt darstellen. So sind grammatische Sätze als den Sprachspielen *transzendental* aufzufassen.

Es läßt sich über eine interessante Textstelle in der „Philosophischen Grammatik“ eine Brücke zur Tractat-Philosophie schlagen, die diese Interpretation bestätigt. In PG, S. 129, vergleicht W. grammatische Sätze mit Tautologien: „Man sieht den unsinnigen Satz (z.B. „dieser Stab hat eine Länge“) als eine Tautologie an.“ Nach TLP 4.464 ist die Wahrheit der Tautologie gewiß. So gelangen wir einerseits nur hierhin, daß grammatische Sätze die Bedingung der Möglichkeit (a priori) von sinnvollen Sätzen sind, aber selbst in diesem Sinne nicht „wahr“ sein können, andererseits aber als Tautologien dennoch „wahr“ sind. Dies ist so zu verstehen, daß die „Wahrheit“ der grammatischen Sätze auf einer anderen Ebene liegt als die Wahrheit/Falschheit der deskriptiven Sätze der Sprachspiele. Grammatische Sätze bilden die Voraussetzung dieser Sprachspiele selbst und sind zugleich deren Grenze. In der Philosophie des TLP waren alle Sätze der Logik Tautologien und sagen nichts aus, weil sie analytisch sind. Sie lassen sich damit analog der Funktion des grammatischen Satzes im Sprachspiel verstehen. Doch die Analogie geht tiefer: „Daß die Sätze der Logik Tautologien sind, das *zeigt* die formalen-logischen Eigenschaften der Sprache, der Welt.“ Bedeutung und Funktion der grammatischen Sätze in den Sprachspielen lassen sich aufgrund dieser Analogie ähnlich verstehen, nämlich auch die grammatischen Sätze sagen nichts, aber sie *zeigen* etwas, sie *zeigen* die grammatischen Eigenschaften unserer Sprache, die auf unserer Lebensform basieren. So wie die logischen Sätze des TLP selbst nicht mehr zu rechtfertigen bzw. zu beweisen sind, (TLP 6.1263/64) so sind grammatische Sätze nicht zu beweisen, ihre Wahrheit *zeigt* sich als Lebensform in den Urteilen der Menschen, die auf diesen grammatischen Sätzen ruhen. Diese Wahrheit der grammatischen Sätze kann nicht bezweifelt werden, ohne nicht alles Urteilen überhaupt aufzugeben (ÜG, S. 494). Die Wahrheit der grammatischen Sätze ist so eine apriorische. In dieser Form von „Wahrheit“ kommt für W. die Rückbindung an die Lebensform zum Ausdruck und diese Lebensform ist für W. die unhintergehbare Basis unserer Sprache und der dazugehörigen Handlungen. Um den Zusammenhang zwischen grammatischem Satz und Lebensform deutlich zu machen, ziehe ich einige Stellen aus „Über Gewißheit“ heran. In ÜG, S. 356 beschreibt W. den „Seelenzustand“ des „Wissens“ so, daß ich nicht verstünde, wo ein Zweifel ansetzen könnte. Dies gilt für unsere φ-Zustände. Auf den Hinweis, daß man sagen könnte „Ich weiß“ drücke die *beruhigte* Sicherheit aus, nicht die noch kämpfende, entgegnet Wittgenstein, daß er diese Sicherheit als eine *Lebensform* ansehen wolle: „Das heißt doch, ich will sie als etwas auffassen, was jenseits von berechtigt und

unberechtigt liegt; also gleichsam als etwas Animalisches." (ÜG, S. 359) Hier zeigt sich, daß für W. die Wahrheit der grammatischen/apriorischen Sätze als Ausdruck unserer Lebensform in unsere Sprachspiele hineinwirkt. Diese Lebensform ist für W. ein Gegebenes, das *in* der Sprache nicht hintergehbar ist. Und das bedeutet auch das, was W. schon im TLP formulierte: Die Grenzen der Sprache sind die Grenzen meiner Welt. Aufgrund dieser Interpretation lassen sich grammatische Sätze als *Nahtstellen* zwischen Lebensform und Sprachspielen verstehen; grammatische Sätze *zeigen* die Lebensform in den Sprachspielen, drücken sie unmittelbar im Sprachspiel aus. Der Satz ,,Ich weiß, daß ich Schmerzen habe" ist als Aussagesatz zweifellos sinnlos, als grammatischer Satz sagt er nichts aus, er *zeigt* nur, daß es für uns eine Lebensform ist, daß für uns ,,Schmerzen haben" immer zugleich ein ,,Wissen" ist, daß wir es sind, die Schmerzen haben. Für Wittgensteins Sprachauffassung im TLP galt: ,,Die Logik ist keine Lehre, sondern ein Spiegelbild der Welt" (TLP 6.13). Für Wittgensteins in den ,,Philosophischen Untersuchungen" voll entfaltete Sprachspielkonzeption läßt sich aufgrund der vorgeschlagenen Interpretation nun sagen: *Die Grammatik ist keine Lehre, sondern ein Spiegelbild der Lebensform.*[1]

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ANMERKUNG

[1] Vgl. zu meiner Interpretation der Sätze (A) und (B): Hans Billing, Wittgensteins Sprachspielkonzeption (Bonn 1980). Hans Billings Interpretation von (A) und (B) unterscheidet sich von meiner eigenen radikal. Billings Interpretation gründet sich vor allem auf eine Textstelle in PU II, S. 356: ,,Ich kann wissen, was der Andere denkt, nicht was ich denke. Es ist richtig zu sagen ,,Ich weiß, was du denkst" und falsch ,,ich weiß, was ich denke". Satz (A) und (B) wären damit nicht unsinnig, sondern falsch. Der Widerspruch findet sich hier allerdings nicht bei den Interpreten, sondern bei W. selbst. Es findet sich in *ÜG* noch eine analoge Stelle (*ÜG*, S. 41). Angesichts der Fülle von Textstellen, die für meine Interpretation sprechen, und der Tatsache, daß bei Billings Interpretation die eigentliche Pointe der ganzen Privatsprachenargumentation verloren ginge (denn der Privatsprachenverteidiger könnte ja falsche Sätze und damit sinnvolle, denkbare (!) Sätze äußern und genau diese Denkbarkeit einer PS wollte und konnte W. ja widerlegen), halte ich meine Interpretation für schlüssiger.

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WITTGENSTEIN AND THE PROBLEMS OF TEACHING AND LEARNING

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The basic points to be made in this paper are: (1) that Wittgenstein's concern for teaching and learning is not to be interpreted as a teacher's concern for the psychology of learning or the theory of pedagogy.[1] This is the negative point. (2) That his concerns, when he makes the "pedagogical turn" form discussions of the meanings of concepts or words to how they are taught or learned, are philosophical or even—in his terms—"grammatical", and that the pedagogical turn connects up with Wittgenstein's life-long concern with the problem of the connection of language and reality,[2] this is the positive point, which will be more demonstrated than argued.

The importance of teaching and learning in Wittgenstein's later work is universally recognized. The notions of criteria, paradigms, and meaning are all tied together in the pedagogical context—the context in which one would learn a language game, a concept, or the meaning of a word. It seems a natural move when Wittgenstein switches from talking about what it is to follow a rule, for example, to how one would learn to follow the rule; there is no explicit logical gap between a discussion of the meaning of a word like 'red' or 'pain' and a discussion of how those words are taught or learned.

To an outsider this might seem strange. It seems a purely contingent matter that a particular person learns how to talk in a particular sort of context, or that someone learns how to use the word 'good' as an interjection (see *L & C*, p. 2). Meanings are there in the language, it would seem, and how they are learned is merely a matter for investigation by educationists or psychologists. For Wittgenstein, though, it is not a matter of mere empirical or accidental connection; indeed, at one point he states that he is trying to draw the concepts of teaching and meaning into a union (*Verbindung*) (*Z*, 412). But it is not clear on the face of it what this union (or "connexion" as the English translation has it) amounts to, or why it would be important. It is this that is the focus of my interests here.

There are two related but not identical forms of the pedagogical turn: first, "How would or did one learn this concept?" second, "How would one teach this concept?" As one might expect, the two forms have different uses in Wittgenstein's philosophical discussions.

Almost always when he asks the first (learning) question, Wittgenstein is searching for the many different uses that the concept or word in question has. For an example, see *PI*, 77, about the learning of the meaning of 'good' through many contexts. It is not as an exercise in psychology that Wittgenstein raises the issue. Rather it is in search of the nature of the concept or term; because the word 'good' is learned in a variety of games, in a variety of contexts and examples, it must be more loosely understood than if it had been learned from a single kind of example.

But this still sounds like a contingent feature of the learning of concepts: the particular persons who learned the concept must see it as having a family of meanings since they learned it in such a variety of ways. But this interpretation would miss the point: the concept must be learned in the variety of ways if it is to have the meaning or uses that it has. What makes this different from the "contingency" view is that Wittgenstein is calling our attention to the language games of which the concepts are a part. The fact of learning is a given rather than the center of attention. The learning question is meant to emphasize the complexities of the concepts and language games which all people must learn.

A second use of the learning question underscores this point: the limiting case of the concept or form of words which one *could not* learn. (For examples, see *PI*, 36 and *Z*, 339.) This use of the question does not make a point about our psychological limitations, but rather about concepts used in peculiar ways: when concepts are incoherently connected (as in "Red is complex" or "What is the image of this color?") the game which uses them could not be learned *in principle*, by anybody.

What is not implied by the learning question is that teaching has taken place. This is as it should be, since learning and teaching are quite different sorts of concepts. While a question, "Who taught you that?" might seem relevant in any case where a learning claim has been made, it is not always so; its relevance can be rejected by appeals to self-teaching, to experience, or to some other things. And as Wittgenstein points out (*PI*, part II, p. 227), there are some things (e.g., expert judgment about the genuineness of expressions of feeling) that are learned but for which teaching is either irrelevant or takes unusual forms.

We see there—and throughout Wittgenstein's later work—that teaching can be many different kinds of activity. And in most of Wittgenstein's discussion of the learning of language games and concepts, *teaching* is the important notion, not *learning*. The question for him becomes how one could teach or explain the meaning of a word to another. This in turn raises different questions.

Some discussion of pedagogical reasoning is necessary to clarify the nature of the teaching question used by Wittgenstein. When one asks, "How would you teach this?" the first question in response is, "To whom?" For how one proceeds to teach depends very much upon the nature of the learner. But this second question has various possible kinds of answer: the name of a particular person, his social class, nationality, etc., would all be possible answers. But all of these miss the important point—perhaps the point that makes them relevant —that what one must know in order to teach another is the learner's state of knowledge or belief with regard to the thing being taught. One cannot, for example, teach something to someone who already knows it (this is a conceptual point). Similarly, one does not use higher mathematics in the teaching of nuclear physics to six-year-olds ignorant of the mathematics; if the subject must be taught, the teacher must find the beginning in the student rather than in the subject matter.

Different modes of teaching are appropriate, given different backgrounds of the student. The word 'mode' is used advisedly here, to distinguish the "modes" from the "methods" of teaching: the latter (e.g., discussion, lectures, seminars), could be used in any of the modes (e.g., training, instructing, imparting, explaining). If one wants to learn methods of teaching, he probably should study psychology, pedagogy and sociology, to determine what method is most likely to succeed with what types of students under what sorts of circumstances. But to decide upon a mode of teaching, one needs only to look at the student's knowledge in relation to the subject which is to be taught him.

Wittgenstein is notably sensitive to the different modes of teaching and their appropriate location in the teaching of concepts and language games. (As a language, Wittgenstein's German may be more capable of expressing the subtleties here than is English.) Wittgenstein's every discussion of teaching has to do with the epistemological and semantic dimensions of teaching: the relationship between what the student knows, believes or is able to do and what the teacher then must do to promote his learning of the concept or language game in question. In Wittgenstein's use of the teaching question, a pattern develops, based upon the subject to be learned and upon the student's background.

Th famous discussion of "ostensive teaching" provides a good beginning-place. After introducing the slab-game (*PI*, 2), Wittgenstein says,

> A child uses such primitive forms of language when it learns to talk. Here the teaching of language is not explanation [*Erklären*] but training [*Abrichten*] (*PI*, 5).

The term translated as 'training' is used to refer to the kind of training given to animals. (In the *BRB*, p. 77, Wittgenstein makes this explicit.)

Training is contrasted with the *use* of words in the game:

> In the practice of the use of language (2) [i.e., the slab-game] one party calls out the words, the other acts on them. In instruction [*Unterricht*] in the language the following process will occur: the learner *names* the objects; that is, he utters the word when the teacher points to the stone.—And there will be this still simpler exercise: the pupil repeats the words after the teacher—both of these being processes resembling language (*PI*, 7).

Ostensive teaching in such cases, Wittgenstein says, "can be said to establish an association between the word and the thing." (*PI*, 6)

What is not established by such training is *understanding*. Words are not defined or explained in this way. Before anything resembling understanding could come about—whether that be defined as having a mental image or as being able to follow the instructions in the slab game, further instruction is necessary:

> Doubtless the ostensive teaching helped to bring this [the further understanding] about; but only together with a particular training [*Unterricht*]. With a different training [*Unterricht*] the same ostensive teaching of these words would have effected a quite different understanding. (*PI*, 6)

The standard translation covers the difference between training and instruction that Wittgenstein emphasizes here, but the important point is that the training does not by itself impart meaning or give the learner understanding. Training provides merely an association of words and things.

Another mode of teaching that plays an important part in the learning of language is captured by Wittgenstein with the word '*beibringen*', which seems to have no direct English counterpart, but which I shall translate 'impart'. (The same word is used in discussions of the inflicting of blows, allowing some interesting possibilities for puns in either language. But that is beyond my translating capacity.) The most notable use of this mode of teaching is with pain language:

> How is the connexion between the name and the thing set up? This question is the same as: how does a human being learn the meaning of the names of sensations?—of the word 'pain' for example. Here is one possibility: words are connected with the primitive, the natural expressions of the sensation and used in their place. A child has hurt himself and he cries; and then adults talk to him and teach [*beibringen*] him exclamations and, later, sentences. They teach [*lehren*] the child new pain behaviour (*PI*, 244).

The impartation of exclamations seems equivalent to the development of associations between word and object in training: the child learns to use the language, but understanding is not necessarily present—it is the beginning of a new language game, one which might take as long to learn as do such games as giving the correct color-names for objects. But the beginning is not the end.

The end, pedagogically speaking, is explanation, *Erklären*; here teaching reaches its apex. Another pedagogical aside on the concept of teaching: Recent discussions of the concept of teaching have emphasized the ways in which "intellectual verbs" like 'explain', 'describe', 'prove', 'report', and so forth (it is an open ended list of verbs, the conditions for whose use are quite complex) are ultimately the constituents of 'teach'.[3] That is, when the verb 'teach' (and in German, *lehren*, I suspect) is appropriate, the description of the acts of the teacher in terms of one or more of the intellectual verbs is also appropriate, or else the acts so described must be the goal at which the teacher is aiming. Although there are minor problems with this analysis, it seems to hold under fairly stringent criticism.[4]

With this in the background, we can see why Wittgenstein was always concerned about moving to explanation and definition, contrasting these with training. For here the point of teaching is reached: that the student come to understand whatever is being taught. Explanation is the highest mode of teaching.

We see how this works in Wittgenstein's lengthy discussion of explaining the chess pieces to different kinds of learners in *PI*, 31. Throughout this paragraph, the language is that of teaching and explaining, although this is often lost in the translation.

> When one shews someone the king in chess and says: "this is the king", one does not explain to him the use of this piece—unless he already knows the rules of the game up to this last point: the shape of the king (*PI*, 31). [Note: the standard translation reads, "This does not tell him the use of the piece".]

Of a player who has learned chess, "without ever learning or formulating the rules", Wittgenstein says,

> He too might be given the explanation "This is the king", if, for instance, he were being shown chessmen of a shape he was not used to. This explanation again only tells [*lehren*] him the use of the piece because, as we might say, the place for it was already prepared (*PI*, 31).

Later Wittgenstein imagines explaining chess to another learner, pointing to the pieces, giving their names and moves:

> In this case we shall say: the words "This is the king" . . . are a definition [*Worterklärung*] only if the learner already 'knows what a piece in a game is' . . . Further, only under these conditions will he be able to ask relevantly in the course of learning the game: "What do you call this?"—that is, this piece in a game (*PI*, 31).

We see in this passage the importance of *Z*, 419: "Any explanation has its foundation in training. (Educators ought to remember this.)" Explanations are grounded in training because the learner without the ability to ask the relevant question is in no position to learn the meaning of the material being taught. And this begins with training.

To summarize, I have tried here to show that Wittgenstein's concern with pedagogical problems stems from his life-long concern with the problem of the relations of language and reality and that the different modes of teaching he portrays in his later work are carefully chosen to exemplify different issues within this relationship. The sloganistic answer to the question of language-reality relations is: It is found in the teaching of language.

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NOTES

[1] See W. W. Bartley, "Theory of Language and Philosophy of Science as Instruments of Educational Reform: Wittgenstein and Popper as Austrian Schoolteachers", *Boston Studies in the Philosophy of Science,* Vol. 14 (1974), pp. 307—377; and J. Findlay, "The Teaching of Meaning", *Logique et Analyse*, Vol. 5 (1962), pp. 169—172, for versions of this thesis.

[2] See J. Hintikka, "Language-Games", *Acta Philosophica Fennica*, Vol. 28 (1976), pp. 105—125; J. Hintikka and M. Provence, "Wittgenstein on Privacy and Publicity", in Elisabeth Leinfellner *et. al.* (eds.), *Wittgenstein and His Impact on Contemporary Thought: Proceedings of the Second International Wittgenstein Symposium* (Vienna 1978); M. P. Hintikka and J. Hintikka, "Different Language-Games in Wittgenstein", in: R. Haller and W. Grassl (eds.), *Language, Logic and Philosophy: Proceedings of the Fourth International Wittgenstein Symposium* (Vienna 1980); and P. M. S. Hacker, *Insight and Illusion* (Oxford 1972).

[3] See B. P. Komisar, "Teaching: Act and Enterprise", in C. J. B. Macmillan and Thomas W. Nelson (eds.), *Concepts of Teaching: Philosophical Essays* (Chicago 1968); T. F. Green, *The Activities of Teaching* (New York 1971); and J. E. McCleellan, *Philosophy of Education* (Englewood Cliffs 1976).

[4] C. J. B. Macmillan and J. Garrison, "Questions and Teaching", presented at the Southeast Philosophy of Education Society (forthcoming 1981).

* * *

THE NOTION OF CONVENTION IN WITTGENSTEIN'S *REMARKS ON THE FOUNDATIONS OF MATHEMATICS*

Pieranna Garavaso

The definition of the notion of convention in Wittgenstein's later philosophy is interesting for the relevance it has regarding the problem of the foundation and justification of criteria like 'logical necessity', 'correctness', and 'truth'.

In effect, if a convention actually is nothing but an intentional, explicit, and fully arbitrary decision on some unique correct way of interpreting the symbols of the language and their combinations, it looks as if a search for any foundation of correctness and truth should be definitely ruled out as meaningless and misleading. A convention does not allow for any further justification than itself. Moreover, in this case, the viable criticisms to Wittgenstein's conventionalism could be the classic ones against radical conventionalism, e.g. those which Michael Dummet successfully raises in his well-known review of Wittgenstein's *RFM.*[1]

However, if Wittgenstein's conception of convention cannot be labelled as a 'full-blooded' conventionalism, but is to be regarded as a more complex and less sharply characterizable type of conventionalism, as Barry Stroud suggests in his reply to Dummet's article,[2] then two closely connected problems can be raised.

On one hand, there is the problem of justifying the existence of a convention as the origin of our linguistic agreement and mutual communicative understanding. On the other hand, there is the problem of the analysis of the particular kind of conventions which actually rule our language-games. This is the attempt to answer questions like: "Why just *this* particular way of inferring, or counting?", "Why just these peculiar syntactic rules?".

Both Dummet and Stroud focus their discussion on the *Remarks* on the examples Wittgenstein gives of possible ways of inferring, counting, and measuring which differ from our actual ones. The assessment of these examples as 'thin and unconvincing', as Dummet states, or the acknowledgment, even taking their unintelligibility for granted, of the function they have, namely that of stressing the contingency of our notions of logical necessity, correctness, and truth, as, on the other side, Stroud proposes, are very different starting points for the definition of convention itself.

For Dummet, Wittgenstein's attempt to give examples of various different ways of counting, measuring, and inferring is unsuccessful due to the unintelligibility of the described procedures themselves, and since for Dummet (as well as for Stroud) "the main target of Wittgenstein's writings on necessity is the Platonism of Frege and the early Russell".[3] Therefore, Dummet claims, Wittgenstein did not succeed in proposing a new account of logical necessity, supported by constructivism, instead of reflecting an *a priori* ontological framework of the world. Instead, says Dummet, he ended up reinforcing the position he wanted to criticize.

Notice, moreover, that if these attempts were successful and the examples intelligible, Wittgenstein's theory, according to Dummet, could be identified with a radical conventionalism, wherein "the logical necessity of any statement is always the *direct* expression of a linguistic convention".[4] The difficulty of supporting such an extreme version of conventionalism, particularly with regard to the complex and widely articulated proofs of mathematics, is obvious.

Stroud's point is that of avoiding so sharp a dichotomy in the conclusion of the argument. Suppose we assume that, for Wittgenstein, the Platonist justification was an undesirable account of logical necessity. Suppose we assume also, that the above-mentioned examples

actually are unintelligible (if meant as concrete models, alternative to our ways of performing certain rational procedures). Nonetheless, they can still give us a hint for unterstanding what logical necessity presently is, without equating it to an innate or metaphysical set of laws.

Consider the claim that every necessary statement or step of a proof is replaceable by a different one if and only if each of them directly expresses a linguistic convention. This seems to me a poor interpretation of Wittgenstein's notion of convention. From the incapability or the capability of imagining plausible alternative ways of performing those rational procedures characterized by that compulsion we call logical necessity, we can derive no valid conclusion as to whether the character of rationality has to be ascribed to only one way of inferring, or to members of a set of conceived ways of inferring.

The procedures we actually use are compelling to us as necessary not because they are the only conceivable ones in all the possible worlds, but because they are those which in *this* world we as human beings regarded as necessarily compelling throughout all our natural history.

Wittgenstein's examples succeed in rejecting the Platonist account of necessity, as much as they stress the contingency of our model of rationality. But just because our actual model is not merely the result of an arbitrary, direct decision that could be replaced by any different new agreement at every moment, they succeed also in rejecting an interpretation of convention which does not take into account its flowing from inside the form of life. The "hardness of the logical *must*",[5] the inexorability of logic is nothing else than the actual fact that *we* are inexorable in applying these laws (*RFM* I, 118). But these conventions are not abstract decisions, or theoretical agreements as a rule for an invented game or pastime could be (*RFM* I, 4). The 'social' character of this activity of ours, its inner relation with a form of life in which, besides many other aspects, we share also a language-game with other human beings is essential here (*RFM* I, 66, 67).

Are we, with this, also justifying convention as origin of logical necessity, and of the notions of truth and correctness?

There are passages in the *Remarks* and in other of Wittgenstein's later writings, such as *Philosophical Investigations* or *On Certainty*, which seem to suggest the impossibility of finding a justification for the convention itself: "I thought of the model as a justification, but here it is not a justification. The pattern (x) . fx ∴ fa does not justify the conclusion. If we want to talk about a justification of the conclusion, it lies outside this schema of signs" (*RFM* II, 41).

A distinction can help in clarifying this issue. No justification of an empirical kind can be found: an empirical justification should be again another fact, something knowable through experience, and fully expressible in some language-game.

But has the absence of a justification of this kind to be considered as the inexistence of a justification at all? If we limit ourselves to regard as foundations only those phenomena or entities which are expressible within the language-games, we must agree with Wittgenstein on the fact that no foundation of this kind, *i.e.* no justification, can be given for the conventions ruling our use of language, and the necessity of our inferring, or the truth of our assertions. But if we allow for the possibility of the existence of a foundation which nonetheless is not a justification, as this latter has been characterized, then many of Wittgenstein's puzzling assertions seem to agree in a more consistent view.

The deep root of convention cannot be explained or justified: at most it can be described, but in doing so language cannot aim to express reasons, since there aren't any (*OC*, 77, 78, 307).

Questioning the explanation of this relation is misleading, since the 'action' in which our rational and pragmatic habits intermingle, is itself something not reducible to linguistic expression. The 'action', which is the form of life, cannot be translated into language without losing some of its characteristic features.

If we produce a description of the form of life as a justification of the conventions, we make the very common mistake of confusing different fields of expressions, and reducing

all of them to only one, namely to the range of empirical explanation. Because the ultimate foundation is our 'acting' (*OC*, 204), the denial of the possibility of a linguistic explanation of it becomes clear: "As if giving grounds did not come to an end sometime. But the end is not an ungrounded presupposition: it is an ungrounded way of acting" (*OC*, 110).

Through the mentioned distinction, it looks possible to find an ultimate foundation of the conventions on which our notions of truth, correctness, and logical necessity rely, without claiming to have found a fully expressible justification of it.

Finally, I would like to present some remarks which tend to support this kind of solution:

First of all, the distinction between expressible justification and unexplainable foundation is not an unconceivable approach on behalf of a thinker like Wittgenstein who was convinced, for a long part of his speculative activity, of the existence of some more or less extended field of the 'unsayable'. Hence, this argument would further support the thesis of the continuity of certain trends in Wittgenstein's speculation.

Secondly, the notion of convention, as above analyzed, does not allow for a completely self-founding solution; the link to the form of life is constitutive: "But as for *why* I accept this as *correct* inferring the reasons for that lie outside the proof" (*RFM* II, 41).

Thirdly, Wittgenstein's treatment of the problem of justification did not give rise only to radically conventionalist readings of it, but on the opposite side it induced also the now widespread Kantian interpretation. Indeed, there are passages in which Wittgenstein appeals to the notions of human rationality and natural procedures of thought in order to justify correctness, truth, and logical necessity (cf. *RFM* I, 116, 131, 133).

Nonetheless, a big gap seperates Kant's notion of the transcendental reason and Wittgenstein's notions of inferring and thinking. These supposedly common rational procedures of the human beings are for Wittgenstein the result of the natural history of *this* world and form of life: therefore, something rather far from an innate universal feature of the human thought.

Finally, the property of being called true or false cannot be ascribed to the foundation, that is, to the unfounded way of acting. In attributing truth or falsity to an expression which describes a fact, we implicitly recognize the possibility of the fact being also otherwise. The foundation, the form of life from which our notions of truth and falsity derive, are before this, and therefore neither true nor false.

This background on which only any reasonable and understandable doubt can be raised, is necessarily out of the range of our calling into doubt, since it is just the pre-condition of the doubt itself. On this level the question for truth is unanswerable, since once again it is an unexpressible question. On the other hand, truth and falsity are fully understandable and correctly questionable qualities of our beliefs.

The conventions play their main role just on this latter level, *i.e.* within the system of our beliefs. But, as for what allows the existence itself of a system of beliefs, for what generates those conventions that presently rule the use we make of language, and of the definitions of truth and falsity inside it, its more faithful representation is still a silent pointing at the form of life.

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NOTES

[1] Dummet, M., "Wittgenstein's Philosophy of Mathematics", in George Pitcher (ed.), *Wittgenstein: The Philosophical Investigations* (New York 1966), p. 420ff.
[2] Stroud, B., "Wittgenstein and Logical Necessity", in Pitcher (1966), p. 477ff.
[3] Stroud (1966), p. 479.
[4] Dummet (1966), p. 425.
[5] Wittgenstein, L., *Remarks on the Foundations of Mathematics* (London 1975), I, 121.

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PARADIGMS AND IDEALS

Jesse Pieter Bohl

Wittgenstein's account of how we make our philosophical confusions is complex. On one hand, there are certain ends which motivate our philosophical activity, such as simple, i.e., general and graspable, accounts of "the world" and a more or less unified account of "everything". On the other, there are certain features of our linguistic practice which can or have supported the possibility of those ends and which are focused on our pursuit of those ends. Most important, our ends and some of our linguistic practices by their mutual support help us mis-take and fail to see other of our linguistic practices of which the first set are special cases. For example, the search for graspable accounts of certain phenomena and the practice of specifying necessary and sufficient conditions in some situations together help us fail to see that in many cases we cannot give such conditions without distortion of our language, that instead of such conditions we actually use criteria which are neither necessary nor sufficient. The motive and practice mutually support one another to the extent that we move from thinking "This can be done here." to thinking "This must be done everywhere (or at least where I'm now looking)". Our motives also support and are supported by other practices which in their turn reinforce our tunnel vision; thus our confusions become deeper and more difficult to disentangle. Here I want to show how one of our practices, that of using ideals, together with the end of simplicity in the sense above, helps us misunderstand another of our practices: the use of things, situations, objects, events as paradigms. One reason I want to work at this mis-take is that it seems basic in the sense that it speaks to relations between language and world. Some other mis-takes, including the one mentioned above, can be seen as at least parallel to if not derived from the mis-taking of paradigms. But to spell this basicness out is beyond my present scope restrictions.

It is interesting that Wittgenstein often uses examples involving measurement when he talks about paradigms. One reason is that measurement is a particularly familiar example of paradigmatic use. A more subtle reason is that measurement is a sort of paradigmatic use which involves in any specific case an ideal, but which also shows our use of ideals as very special cases of paradigmatic use. When, for example, we want to measure the length of a piece of cloth, we usually, though not always, use a measuring stick; we might also use a tape measure or a length of string. Our measuring stick will be marked in some unit or other, say centimeters; measuring the cloth will amount to seeing how many centimeters long the cloth is. The first thing to notice is that we expect that we would get the same results using another centimeter-stick or a tape measure marked in centimeters. This is of course because a centimeter is a centimeter is a centimeter: our stick is backed by or is an instantiation of an ideal; that is, we use our stick as a presentation of a single standard of comparison. It is the uniqueness of the standard in the context that is our use of an ideal. But, of course, we might have used a yard stick marked in inches instead. Had we done so, we would still have been using another ideal, because of the uniqueness of our standard in that context.

The uniqueness of our standard of comparison is what makes measurement a special case. When we use standards of comparison in situations like explaining the meaning of a word, we don't usually use a single standard. When we are explaining 'dog' to a child, we use many different dogs and/or pictures of them and/or descriptions of them. What we are doing if we are successful is giving the child a collection of standards of comparison. When the child is confronted with an animal not among the ones we have used, he can use those we have given him as standards against which to compare this new animal. The difference between the cases is the number of the standards we have for comparison; the similarity is that we are using things as standards of comparison.

This similarity is the crucial point: we *use* things paradigmatically; things are not paradigms. Ideals are special for their uniqueness, but not special insofar as we *use* them as standards of comparison. Recalling our measurement, we notice again that we might have used either a centimeter stick as a yard stick: the uniqueness is in our use, not in the thing. We share many of our ideal uses; we use many of the same things as ideals, quarts or liters, grams or ounces. This is our sharing of practices, not the uniqueness of what we use. So, too, we often use the same things paradigmatically, because we use such things in a shared practice. Our shared practice, our similar use of similar things, makes it easy for us to see these as the only things we can use; the move from shared use to a disciplinary 'must' is very easy for us. And so we go from paradigmatic use to paradigm-things, to thinking of the things we use paradigmatically as in and of themselves paradigms. Blinded by our end of simplicity, we find it easy to move from paradigm-things to an ideal. Why live in the "confusion" of many paradigm-things when we can find a single paradigm-thing? By now we will have dug ourselves in very deeply: confronted by the diversity and complexity of the world, we insist on our ideal and struggle desperately to find or make one.

If we are to avoid one element that leads us to philosophical confusion and dispute, we must not think of particular pictures, most especially those we make in our languages, as being in and of themselves paradigms. An example of doing something like this, I think, is the current way of understanding what is called the cluster theory of names. Particularly when we see it as an alternative to the causal theory of names, we have turned certain pictures in our language, the so-called associated descriptions, into paradigm-things. A person uses these description-pictures paradigmatically in order to explain to another person what has the name rather as we use photographs, word-pictures, and so on in order to explain to our child what things are dogs. But we forget this, turn the descriptions into paradigm-things, and take them as intermediaries between names and things; somehow they are doing the work that names can't do themselves. This is not the only confusion we have here of course. Thinking we are answering a single question 'How do names refer?', we have given one answer, the causal one, that says something right about how a thing comes to have a name and another, the cluster theory, that says something right about how we explain to someone what thing has a name. But I think the latter confusion is supported by and supports the former because we can think of paradigm-things as being already there in somewhat the way causes might be thought of being already there. This mutual support in turn further supports and is supported by the picture of linguistic ability as being explained or made possible by something in the head of the speaker. Then it is easy to see the associated descriptions as mental-picture-paradigm-things lurking in the wings of the mind awaiting their cues. Once again, it is important to remember that we use things like words, mental pictures, tape measures and so on paradigmatically, but that there are not things that are, in and of themselves, paradigms.

Although many philosophers are uneasy with the notion that people who speak the same language have or in a particular situation are using different concepts, I think the cluster-theory/causal-theory pseudo-dispute is an example of using different concepts, or of using the same word, namely 'name', in different ways. One of the things that has happened here is that the disputants are using different situations paradigmatically. The causal theorist is using the situation of conferring a name, as in baptizing or signing a birth certificate, as his paradigm of 'name'. The cluster theorist is using paradigmatically the situation of explaining who a person is, *i.e.*, what person has a name. Moreover, they are both right, because both of these situations are connected to our use of 'name'. But they are also both wrong as shown by the counter-examples each raises for the other. Where they are wrong is in their succumbing to the temptation to the ideal, to the insistence that the situation each is using is the ideal for names, the unique standard of comparison for deciding if something is a name. We can see a similar pattern in the interminable discussions about the real nature of love or about the justification of punishment. The possibility of such discussions arises because words for the most part are not tied to situations, objects and so on in the nice,

neat way we philosophers wish they were, or sometimes insist they are. Except for some particular cases where we have made it otherwise for particular purposes, words don't collect things with the density and precision of sets. Words for the most part and some words more than others are rather like the figures we can draw that encompass a bunch of points on a sheet of paper: there is always more than one such figure we may draw; and which figure we draw will depend in part on which points or groups of points we take at the moment to be most important to us. It is when we have fixated on a point or group of points that we have given in to the ideal and likely will move from discussion to dispute, from exploration to altercation.

The picture I've just used of the points and encompassing figures is one I find useful in thinking about words and situations, because it helps me avoid my philosophical bent towards getting fixated on certain points. The picture is even more useful to me if I complicate it somewhat by adding some color. Picture now the paper with blue and green points, the points toward the edges being for the most part very blue and clusters of very green points irregularly placed over the surface. There are also some points in varying shades of blue-green amongst the very blue and the very green points. Now imagine being given the task of drawing the one right figure that captures just the green points. I would suggest that we often try to accomplish such a feat when we construct our philosophical theories. Of course, we aren't always so simpleminded; when we are subtle, we pick out one cluster of green and talk about analyzing love or punishment "in this particular sense". That way we avoid the obvious difficulty of different clusters and the equally obvious question of why this group in particular is worth encircling so carefully. The picture in color helps me see the pointlessness of attempting such a feat. To draw any particular line is to make things more exact, more cut and dried than they are in our usual use of language, and usually for no particular purpose except perhaps for philosophical dispute. It is not that such sharp lines are always bad or misleading, but rather that they are misleading when we haven't any point in doing so besides grasping for an illusory ideal of simplicity. Surely our philosophical anxiety over fuzzy borderlines and multiplicity isn't deep enough or common enough to justify the resources we expend combatting the anxiety. Moreover, drawing such lines gives the false, not to say self-deceptive, sense of security that everything—at least at the level of our line—is all settled. For then we have deceived ourselves, or hidden from ourselves, how easy it is for the whole picture to change. All we need do is invent or discover a new point or cluster of points, and we are faced with a new or different picture. So, too, all we need do is invent or discover a new situation for some concept or other to have changed, and changed because we are using the word in a new way.

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WITTGENSTEINS ,,LOGIK DER FARBBEGRIFFE" UND DIE GEOMETRIE DES FARBRAUMS

Wolfgang Wenning

Auf die Semantik von Farbbegriffen kommt Wittgenstein in seinen Schriften häufig zu sprechen. Dabei geht es ihm insbesondere um das, was er die ,,Logik der Farbbegriffe" nennt, die er mit der Geometrie des Farbraums in direkten Zusammenhang bringt. Da erstere mit der Sprache und letztere mit der Farbwahrnehmung zu tun hat, ist nach dem Verhältnis von Sprache und Wahrnehmung zu fragen. Das geschieht hier unter drei Aspekten: (1) in Verbindung mit der Ethnosemantik von Farbwortfeldern unterschiedlicher Sprachen, (2) im Rahmen von Wittgensteins älterer Grammatikauffassung der Bildtheorie und (3) ausgehend von Wittgensteins ,,Bemerkungen über die Farben", in denen es (S. 27) heißt: ,,Was macht Grau zu einer neutralen Farbe? Ist es etwas Physiologisches oder etwas Logisches?"

(1) Zur Abgrenzung seiner ,,Logik der Farbbegriffe" von empirischen Farbtheorien verwendet Wittgenstein die Unterscheidung zwischen externen und internen Eigenschaften bzw. Relationen. Die Psychophysik hat es mit externen Relationen zu tun, die Erlebtes auf etwas Physisches beziehen. Dagegen verbindet die ,,Logik der Farbbegriffe" Erlebtes mit Erlebtem. Solche internen Beziehungen können nach dem ,,Traktatus" durch Sätze nicht ausgesagt werden, sondern sie zeigen sich dadurch, daß deren Negation unmöglich oder undenkbar ist. Der Grenze zwischen dem, was ausgesagt werden kann, und dem, was sich nur zeigt, entsprechen in den ,,Philosophischen Untersuchungen" Argumente für die Unmöglichkeit einer privaten Sprache. Was Wittgenstein damit beseitigen will, ist eine doppelte Semantik, in der sich z.B. ‚rot' einerseits auf das Wahrgenommene bezieht und andererseits auf die Wahrnehmung davon. Auf die Frage, ob man sicher sei, daß etwas rot ist, soll nach Wittgenstein ,,ohne Seitenblick auf eine Empfindung" geantwortet werden können, man spreche doch Deutsch. Das ist so zu verstehen: Wer Farbbegriffe in einer Sprachgemeinschaft zu gebrauchen gelernt hat, dessen ,,Empfindungswelt" wird durch den Sprachgebrauch eine Struktur aufgeprägt, in der Farbbegriffe mit Farbempfindungen verschmolzen sind. Auf diese Weise steht Sprache dann nicht in semantischer Beziehung zur Empfindungswelt, sondern allein zur Außenwelt. Das kann am Beispiel eines Spektrums veranschaulicht werden, welches phänomenologisch aus Streifen unterschiedlicher Qualität besteht, die kontinuierlich ineinander übergehen. Den so gegebenen perceptuellen Einheiten entsprechen im Deutschen die Farbwörter ‚rot', ‚orange', ‚gelb' etc. Nun gibt es Sprachen, in denen z.B. blau und grün durch ein Farbwort bezeichnet werden. Wenn es nun der Sprachgebrauch ist, der der Empfindungswelt eine Struktur aufprägt, dann ergibt sich, daß die Sprecher solcher Sprachen Farben anders wahrnehmen: Wo wir zwei Streifen sehen, sähen jene nur einen. Das voranstehende Argument zeigt die Verwandtschaft von Wittgensteins These der Unmöglichkeit einer privaten Sprache mit der in der Linguistik als ,,Sapir-Whorf'sche These" bezeichneten Auffassung, daß Sprecher unterschiedlicher Sprachen die Welt auf unterschiedliche Weise wahrnehmen. Dieser Gedanke geht bekanntlich auf W. v. Humboldt zurück. Das semantische Feld der Farbwörter unterschiedlicher Sprachen galt bisher als Paradigma für den Humboldt-Sapir-Whorf'schen Sprachrelativismus. Neuere Untersuchungen im Anschluß an Berlin und Kay, ,,Basic Color Terms" (1969), deuten jedoch darauf hin, daß es im Bereich der Farben Universalien gibt: Im Bereich von 98 verglichenen Sprachen variieren die Grenzen von Grundfarbwortkategorien (,,basic color categories") zwar ganz erheblich, jedoch sind die als ,,Foki" bezeichneten optimalen Stimuli für Grundfarbwörter in etwa gleich und

liegen in keinem Fall auf der Grenze von Farbkategorien. Die universellen „Foki" von Grundfarbwortkategorien stehen nach neueren Erkenntnissen mit Resultaten der Psychophysik und Neurobiologie in direktem Zusammenhang.[1] Nach diesen Ergebnissen muß gefolgert werden, daß es im Bereich der Farben auch umgekehrt die „Empfindungswelt" ist, die dem Sprachgebrauch eine Struktur aufprägt. Wittgenstein hat einen solchen Gedanken erwogen, denn er schreibt in den „Bemerkungen über die Farben": „Ich habe doch immer wieder gesagt, man könne sich denken, daß unsere Begriffe anders wären als sie sind. War das alles Unsinn?" (S. 32) Was diesen Zweifel auslöst, wird aus dem Kontext nicht klar; jedoch kommt Wittgenstein etwas später (S. 34) genau auf die „Foki" von Farbwortkategorien zu sprechen. Dort heißt es, daß sich das reine Rot jederzeit etwa so erkennen lasse, wie ein rechter Winkel im Vergleich mit einem spitzen oder stumpfen. Hier weist Wittgenstein genau auf den Punkt hin, der Berlin und Kay zu ihrer Entdeckung führte, und den die Sprachrelativisten, die nur die Grenzen von Farbkategorien beachteten, übersehen hatten. Übrigens kann Wittgensteins phänomenologischer Vergleich zwischen reinen Farbtönen und rechten Winkeln heute mit analogen neurobiologischen Prozessen in Verbindung gebracht werden. Wie deutlich gemacht wurde, ist es sowohl die Sprache, die der Perception, als auch umgekehrt die Perception, die der Sprache einen Stempel aufdrückt.

(2) Sowohl die Sprache als auch die Perception bilden extern Vorhandenes in intern Gegebenes ab. Nach dem Gesagten stehen beide „Formen der Abbildung" in einem Zusammenhang. Es sei zuerst die perceptuelle Seite dieses Zusammenhangs betrachtet. In den „Philosophischen Bemerkungen" heißt es: „Ich brauche eine rein phänomenologische Farbenlehre, in der nur von wirklich Wahrnehmbarem die Rede ist und keine hypothetischen Gegenstände — Wellen, Zellen etc. — vorkommen. Kann ich eine Metrik der Farben finden?" (S. 42) Was Wittgenstein suchte, ist ein ideales Farbsystem, welches Beziehungen zwischen Farbqualitäten, wie sie durch die Perception gegeben sind, geometrisch durch Distanzen vor Augen führt und insgesamt die perceptuelle Seite der internen Struktur der internen Qualität (zweiter Ordnung) „Farbe" charakterisiert. Das nennt man ein empfindungsmetrisches Farbsystem. Es ist versucht worden, die Geometrie des empfindungsmetrischen Farbraums durch ein Linienelement zu charakterisieren, wie vergleichsweise auch die Geometrie des physikalischen Raums. Aufgrund der komplexen Natur der zugrundeliegenden neurophysiologischen Zusammenhänge kann der psychophysische Maßtensor, der das kennzeichnet, was Wittgenstein suchte, jedoch nur approximativ und nur mit Hilfe komplexer Meßmethoden bestimmt werden.

Nach der perceptuellen ist nun die sprachliche Form der Abbildung von externen in interne Strukturen zu betrachten. In den „Philosophischen Bemerkungen" heißt es: „Das Farboktaeder ist Grammatik, denn es sagt, daß wir von einem rötlichen Blau aber nicht von einem rötlichen Grün reden können, etc." (S. 75). Im Rahmen der Grammatikauffassung der Bildtheorie ist das so zu verstehen: Die Grammatik bildet externe Strukturen in interne ab. Die Form dieser Abbildung wird dem Zitat nach durch ein Farbsystem bestimmt. Nimmt man das so wörtlich, wie es Wittgenstein sagt, dann müßte die „Logik der Farbbegriffe" (als interne Seite der Grammatik) mit der Geometrie des Farbraums (als interner Seite der Perception) auf einem gleichsam „inneren Bildschirm" isomorph sein. Das wäre der Extremfall eines Zusammenhangs von Sprache und Perception: Grammatiktheorie und Wahrnehmungstheorie müßten aus Symmetriegründen prinzipiell zu äquivalenten Ergebnissen führen. So wörtlich muß das Zitat jedoch nicht verstanden werden, denn Wittgenstein spricht einmal auch von dem „topologischen Zusammenhang" der Farben und berücksichtigt so, daß Farbbegriffe der Umgangssprache nicht exakt Punkte, sondern nur Gebiete des Farbraums kennzeichnen. Das entspricht einer Art „grober" Bildtheorie, in der die „Logik der Farbbegriffe" nicht mit der Geometrie, sondern einer Topologie des Farbraums intern zusammenhängt. Von hier aus wendet sich Wittgenstein der Frage zu, wie Farbbegriffe im Sprachgebrauch denn tatsächlich verwendet werden.

(3) In den ,,Bemerkungen über die Farben" untersucht Wittgenstein die Verwendung von Farbbegriffen in Sprachspielen. Dabei ist es sein Ziel, aus dem Gebrauch von Farbbegriffen auf interne Eigenschaften und Relationen zu schließen. In mancher Hinsicht kann seine Vorgehensweise mit der Goethes verglichen werden, auf den Wittgenstein mehrfach zu sprechen kommt und den er als einen Phänomenologen bezeichnet, für den die ‚Natur' der Farben nicht eine ,,Summe von Erfahrungen" ist, sondern etwas, das ,,in ihrem Begriff liegt". In einem mit Goethe verwandten Sinne geht es auch Wittgenstein nicht um die Empirie der Farbwahrnehmung, sondern um das, was im Begriff der Farbe liegt, nämlich die ,,Logik der Farbbegriffe". Diese hängt mit Sätzen zusammen, in denen sich interne Eigenschaften und Relationen zwischen Farbbegriffen zeigen. Zu diesen Sätzen gehören insbesondere die folgenden:

(i) Grau ist heller als schwarz und dunkler als weiß und schließt keinen anderen Farbton aus.

(ii) Es schließen sich aus: rötlich und grünlich sowie bläulich und gelblich.

(iii) Es schließen sich nicht aus: rötlich und gelblich, gelblich und grünlich, grünlich und bläulich, bläulich und rötlich.

In den ,,Bemerkungen über die Farben" heißt es: ,,Wir wollen keine Theorie der Farben finden (weder eine physiologische noch eine psychologische), sondern die Logik der Farbbegriffe und diese leistet, was man sich oft zu Unrecht von einer Theorie erwartet hat" (S. 5). Wie hier im folgenden gezeigt wird, leistet die heutige Neurophysiologie etwas, das sich an Wittgensteins Leistungsanspruch für seine ,,Logik der Farbbegriffe" messen und mit dieser parallelisieren läßt.

Im neunzehnten Jahrhundert standen sich zwei Farbtheorien gegenüber, die sich zu widersprechen schienen. Nach der Young-Helmholtz'schen Theorie gibt es auf der Netzhaut drei Rezeptortypen mit sich überlappenden spektralen Absorptionsfunktionen. Durch unterschiedliche Reizung dieser Rezeptoren — so war die Vermutung — würden die unterschiedlichen Farbeindrücke des dreidimensionalen Farbkontinuums hervorgerufen. Eine alternative Theorie wurde von dem Physiologen Ewald Hering vorgeschlagen, der von der phänomenologischen Beobachtung ausging, daß es kein rötliches Grün und kein bläuliches Gelb gibt. Hering postulierte zwei physiologische Antagonismen, die nach einem Gegenfarbenprinzip arbeiten: Der Rot/Grün Antagonismus schließt aus, daß etwas zugleich rötlich und grünlich sein kann, und der Blau/Gelb Antagonismus schließt aus, daß etwas zugleich bläulich und gelblich sein kann. Was noch hinzu kommt, ist ein physiologischer hell/dunkel Mechanismus. Im Unterschied zur Young-Helmholtz'schen Dreifarbentheorie, die sich auf der Rezeptorebene als richtig erwiesen hat, galt die Hering'sche Gegenfarbentheorie (auch ,,Vierfarbentheorie" genannt) als zwar phänomenologisch adäquater, jedoch physiologisch als unhaltbar. In den sechziger Jahren wurde dann aber entdeckt, daß die Rezeptorsignale bereits in den tieferen Netzhautschichten genau nach dem Hering'schen Gegenfarbenprinzip so umkodiert werden, daß bis hin zur kortikalen Ebene die Hering'sche Gegenfarbentheorie richtig ist. Mit anderen Worten: Die Dreifarbentheorie gilt auf der Netzhaut und die Gegenfarbentheorie im Sehtrakt dahinter. Auf der Basis der Gegenfarbentheorie gelang es neuerdings, die schon oben erwähnte Existenz von Universalien im Bereich von Farbwortfeldern neurobiologisch zu erklären.

Die oben herausgestellten Sätze (i)—(iii) sind nach Wittgenstein als logische Sätze aufzufassen, die interne Eigenschaften der darin vorkommenden Farbbegriffe zeigen. Dieselben Sätze können als Aussagen über empirische Gegebenheiten der menschlichen Farbwahrnehmung aufgefaßt werden: denn ausgehend von der phänomenologischen Richtigkeit genau dieser Sätze schrieb Hering diesen einen empirischen Gehalt zu, der sich dann neurobiologisch bestätigte. Das wirft die Frage auf, ob oder in welchem Sinne die Sätze (i)—(iii) ,,logisch" und empirisch zugleich sein können. Diese Frage diskutierte Wittgenstein bereits mit Moritz Schlick. Nach Wittgensteins damaliger Auffassung kann ein Satz nicht logisch und empirisch zugleich sein: Denn wenn er logisch ist, so ist es unmöglich, unvorstellbar

oder undenkbar, daß er falsch ist, und wenn er empirisch ist, dann ist seine Negation möglich, vorstellbar oder denkbar. Wäre der Satz logisch und empirisch zugleich, dann müßte das Unmögliche möglich oder das Undenkbare denkbar sein. Genau mit diesem Argument antwortete Wittgenstein auf Schlicks Frage, ob die Aussagen der Phänomenologie synthetische Urteile a priori seien, wie Husserl behauptete. Also ist ein Satz nach Wittgenstein entweder logisch oder empirisch. Für die Sätze (i)—(iii) heißt das, daß er diesen einen empirischen Gehalt abspricht. Indem er in den ,,Bemerkungen über die Farben" — wie schon zitiert — fragt, ob die Neutralität von Grau etwas Logisches oder etwas Physiologisches ist, gibt er zu erkennen, daß er sich beides denken kann. Damit widerspricht er implizit seinem Argument gegen Husserl, obwohl er auch wieder an diesem Argument festhalten möchte, indem er in den ,,Bemerkungen über die Farben" schreibt: ,,Es gibt zwar nicht Phänomenologie, wohl aber phänomenologische Probleme" (S. 9). Diesen Schwierigkeiten sucht er dort dann so auszuweichen: ,,Sätze werden oft an der Grenze von Logik und Empirie gebraucht, so daß ihr Sinn über diese Grenze hin und her wechselt und sie bald als Ausdruck einer Norm, bald als Ausdruck einer Erfahrung gelten" (S. 6). Das läßt sich auf zwei Weisen verstehen: (A) Es gibt eine scharfe Grenze von Logik und Empirie und je nach Gebrauch springt der Sinn der Sätze (i)—(iii) über diese Grenze hinweg. (B) Nicht der Sinn, sondern die Grenze von Logik und Empirie ist unscharf und daher wechselt die Grenze je nach dem Gebrauch der Sätze (i)—(iii) über ihren Sinn hinweg. Wenn (A) (was Wittgenstein zu bevorzugen scheint), dann gibt es eine ,,Logik der Farbbegriffe" unabhängig davon, ob diese zufällig oder nicht mit empirischen Farbtheorien übereinstimmt. Die ,,Logik der Farbbegriffe" ist dann etwas in sich Eigenständiges und die Entdeckungen der Neurophysiologie zeigen an, daß ein Parallelismus besteht zwischen Wittgensteins ,,Logik der Farbbegriffe" und empirischen Gegebenheiten der menschlichen Farbwahrnehmung. Indem Wittgenstein den Gebrauch von Sätzen zum Kriterium dafür macht, ob sie logisch oder empirisch sind, und indem er sie bei logischer Verwendung als Ausdruck einer Norm gelten läßt, rückt er in die Nähe von Carnap, der die Analytizität von Sätzen normativ in Form von ,,meaning postulates" begründen wollte. Wird (B) zugrundegelegt, dann entspricht das Zitat der in ,,Two Dogmas of Empiricism" dargelegten Kritik Quines am Analytizitätsbegriff, derzufolge sich für keinen einzelnen Satz eine scharfe Trennung zwischen der linguistischen (sprachinternen) und der faktischen (sprachexternen) Komponente seiner Wahrheit vollziehen läßt. Da dies für (i)—(iii) offenbar zutrifft, sind diese Sätze nicht streng analytisch und sollten darum auch eigentlich nicht wie bei Wittgenstein als ,,logische Sätze" bezeichnet werden.

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ANMERKUNG

1 Der Zusammenhang von Farbnennung, Psychophysik und Neurobiologie wird u.a. durch folgende Arbeiten belegt: P. Kay und C. K. McDaniel, The Linguistic Significance of the Meanings of Basic Color Terms, in: Language, Bd. 54 (1978), S. 610f.; F. Ratliff, On the Psychophysical Basis of Universal Color Terms, in: Proc. of the Am. Phil. Soc., Bd. 120 (1976), S. 311f.; H. Zollinger, Zusammenhänge zwischen Farbbenennung und Biologie des Farbensehens beim Menschen, in: Vierteljahresschrift Naturf. Ges. Zürich, Bd. 118 (1973), S. 227f.; an dieser Stelle danke ich Prof. H. Zollinger für seine Anregungen und der schweizerischen Carl Täuber Stiftung für Unterstützung.

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IS WITTGENSTEIN'S CONCEPT OF PROPOSITION IN *PHILOSOPHICAL GRAMMAR* INTENSIONAL, EXTENSIONAL, OR SOMETHING ELSE?

Heda Festini

Our aim is to show the unity of Wittgenstein's thought on language, conceived of as his thought in steps. In *PG*, which is the central work of his "middle period",[1] Wittgenstein's concept of language, contained in the concept of communication, amounts to a general theory of signs, i.e. semiotics, and avoiding a dichotomical difference extension/intension, it asks for a theory of culture as multifariousness of languages.

PG isn't only a theory of word-language; the understanding of word-language, as well as others, depends on the concept of sign, which is for Wittgenstein essential and not the term 'understanding' (*PG*, p. 39, 100, 133, 194). *PG* gives the grammar of signs in which Wittgenstein considered various languages as various systems of signs (*PG*, p. 112, 170, 171, 179, 190, 191, 192, 195). The language-systems are conventional calculating games. These systems are conventional, because "grammar consists of conventions". These systems are calculating systems because grammar is a calculus (*PG*, p. 190, 68, 40, 193, 195). A language is a game defined by rules (*PG*, p. 60, 50). Wittgenstein compared the concept of proposition with the concept of 'number', because the propositions are part of the calculus, which has its own order in code (*PG*, p. 113, 490, 125, 104, 43).

With his term 'meaning', which is different from Frege's 'Bedeutung',[2] he tried "to extricate" "from the extensional viewpoint" speaking even about mathematics (*PG*, p. 457). The grammatical rules determine the meaning, which is understandable by means of the grammar of denoting. The term 'denotation' is similar to Eco's term, developed by Eco following Frege's and Peirce's traces: the relation of denotation is a direct relation, rigidly fixed by the code; the denotation was a denotative content, which Eco called the denotative meaning.[3] Wittgenstein said that the use of fluctuating words was regulated by definite rules which are "codifying one of its characteristic aspects" (*PG*, p. 77). He mentioned the term 'content', too, as internal to the proposition—as part of the calculus—and the method of the grammar of denoting is "the method of designation" for understanding or interpretation of words or names, which is "taking a step in a calculus" (*PG*, p. 77, 63, 90, 51). The denotation is a recognition of the system to which words or names belong, but also the proposition, i.e. the grammar of denoting amounts to a decodifying grammar.

If a proposition, or a part of a proposition, belongs to a system of propositions and if the propositions or words are signs "in a system of signs", then "what is embodied in an explanation of the sense of a sentence", Wittgenstein can define as linguistic activities in the manner of calculating, i.e. rules-governed behavior (*PG*, p. 55, 131, 89, 44, 193, 172). When Wittgenstein thought about Frege's concept of sense, of thought as the sense of the proposition, he could say "the sense of a proposition (or thought)", because he meant something that is different from Frege's thesis.[4] For Wittgenstein the system of language makes the sentence a thought for us, and only in language something is a proposition, having its own position in the game (*PG*, p. 193, 131, 172). The sense of a sentence or a proposition is its role in the calculus (*PG*, p. 127, 130, 63, 67, 131). The proposition asks to be verified, and is the case when the proposition is understood as a proposition of grammar (*PG*, p. 127, 128). He said: "How a proposition is verified is what it says", moreover, it "is not a mere token of the truth", the verification determines the sense of a proposition—the sense is in the code (*PG*, p. 458, 459, 39). Wittgenstein explained that a sentence is given in the "code together with the key for deciphering it", and to understand it we "must first

decode it'' (*PG*, p. 43). To verify has to do with something which is 'added meaning' by decodifying, something, called by Eco connotative code. We may say, that Wittgenstein's words: ''replacing one sign by another'' are similar to such a connotative code, because, by Eco, the connotative code is ''undercode'', i.e. it is constituted on the previous code and can't be processed before the primary content is denoted.[5] By Wittgenstein, we can say, that verifying with connotative code means to determine the position of the proposition in a codified system after the application of a denotative code as the recognition of the system to which the proposition belongs. So we verify the proposition as ''a unit of language'' (*PG*, p. 170). The notion 'meaning' isn't Frege's 'Bedeutung' (extension), but a combination of denotation and connotation, as we wrote in 1973.[6] The sense emerges from such a dynamical process (*PG*, p. 55). Now, the problem of the entry and the way out of the language-game.

Wittgenstein thought that there was a transition from one kind of language to another with the method of ''projection'' which is the contrary term to 'rule' (*PG*, p. 93, 117). The problem is in deciding on a method of projection, because we can use the various methods of projection which are the translation of signs into action by means of rules (*PG*, p. 93, 91, 171—172). In other words, the problem between decision and action (*PG*, p. 172, 160). He rejected the possibility of having one type of transition for all cases using the examples of the chart of portrayal and in the *Appendix* of ''a projection of countless different logical forms'' (*PG*, p. 94, 179, 205). The problem covers the transition from intention, expectation, thought, picture and proposition to reality with which the harmony or agreement is established as ''a continuity with reality'', and from which the structure of language isn't separated—the language is a mover of intention, it is the vehicle of the thought. The reality is already there (*PG*, p. 183, 89, 97, 136—137). The thought works against the things ''as a ruler is laid against what is to be measured''; the proposition is laid against the reality like a ruler (*PG*, p. 104, 143, 132). We can't find a solution of the problem what embodies the decision about the method of projection, asking for adequacy between the codifying games and reality.

So emerges the problem of the other aspect of language which Wittgenstein in *PG* didn't wish to deal with explicitly, but nevertheless hinted at. He claimed that the concept of language is contained in the concept of communication, but for him this concept is neither basic nor interesting (*PG*, p. 193, 191). He hinted at a more basic claim with his well known term 'form of life' from *BRB, RFM* and *PI*. In *PG* we can find such inclinations which are not metaphysical,[7] in the term 'language games', [8] with the scope and limits of language.[9] In *PG* Wittgenstein mentioned life several times: the language is ''meshed'' with life, because the use of words is a part of life. The meaning and the purpose of words, i.e. their role in human life we can't understand from the understanding of the use of words (*PG*, p. 65, 68, 66). The using of sign-languages is a defining mark of ''living beings''—therefore, language is ''something made up of heterogeneous elements and the way it meshes with life is infinitely various'' (*PG*, p. 192, 66).

There are many interpretations of Wittgenstein's seeking the basis of language: in connection with society, nature and work, with hermeneutic ''Geisteswissenschaften'', with Heidegger, with anthropological concepts of culture, etc. With the culture connected the basis of Wittgenstein's thought G. H. v. Wright, Binkley negated it.[10] Eco developed semiotics as a general theory of culture. His semiotics showed that culture is constituted as a system of systems of signs and all cultural processes—as processes of communication—are possible because under all of them rests the system of significations which semiotics explains as a theory of codes.[11] Only if we start from the concept of culture is it sensible to use the term 'multifariousness' of languages (*PG*, p.179), otherwise it would be necessary to remain only on the level of word-language. Wittgenstein isn't satisfied with the general theory of signs, but he admits a generality (*PG*, p. 55, 163, 115), and this must be the cultural processes as systems of significations, *i.e.* systems of codes (*PG*, p. 130—131, 43). If languages are multifarious and if the meanings of propositions are a denotative-connotative

code, then the propositions as units of languages (*PG*, p. 170) are of a special kind—they are cultural units. If sense is a dynamical process, the changes emerge from intercultural units.[12] Wittgenstein's comparison of the language with a toolbox (*PG*, p. 67) permitted this to proceed. The places between the systems of significations are the places of encounter, or struggle of the various cultures, the changes and choices happened in the places of intercultural units. The 'between places' are inside of the games, as the possibility for adding to or changing the rule, as shows our example of card-game preference.[13] Linguistic activities are rule-governed behavior with specific intonations in cultural contexts and circumstances.

PG isn't the only strategy of game-language, it is the strategy of multifarious games, "meshed" with cultures. The choice of a projection-method emerges from the place of intercultural units as formulations or codifications of rules (*PG*, p. 63)—that is the way of continuous transitions from one type of culture to another as the only continuity with reality.

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NOTES

1 Luckhardt, C. G., *Wittgenstein: Sources and Perspective* (Hassocks 1979), p. 13—14.
2 Frege's term "meaning" is extensional, see "Sinn und Bedeutung", in: A. Bonomi (ed.), *La struttura logica del linguaggio* (Milano 1973), p. 14, 17, 32. See Wittgenstein's interpretation of the names and ostensive definitions (*PG*, p. 59, 63, 64, 80—81, 84, 184).
3 Eco, U., *Trattato di semiotica generale* (Milano 1975), p. 91; *La struttura assente* (Milano ⁹1977), p. 37, 39.
4 Frege's conception of thought as sense is objective judgement, which makes his conception intensional. Dummett thinks that Frege's conception pervades the idea of changing the truth-functional in truth-conditioned interpretation, see M. Dummett, "Truth", in: P. F. Strawson (ed.), *Philosophical Logic* (Oxford 1973) p. 55.
5 Eco (1975), p. 83.
6 H. Festini, "Karl Marx and Instrumentalist Theory of Language", *Abstract of Communications, XV th World Congress of Phil.* (Varna 1973), p. 761; see in extenso *Radovi*, Vol. 7 (Zadar 1972/73), p. 225—247; and Summary in English, p. 248.
7 See Garver's interpretation; M. Lang, *Wittgensteins Philosophische Grammatik* (Hague 1971), p. 25.
8 Apel, K. O., *Analytic Philosophy of Language and the Geisteswissenschaften* (Dordrecht 1967), p. 41.
9 S. Toulmin, "Introduction" to S. M. Engel, *Wittgenstein's Doctrine of Tyranny of Language* (Hague 1975), p. XI.
10 Lang (1971), p. 146, 27, 143; Apel (1967), p. 47; T. Binkley, *Wittgenstein's Language* (Hague 1973), p. 79; J. Bogen, *Wittgenstein's Philosophy of Language* (London 1972), p. 207—208.
11 Eco (1975), p. 14, 19.
12 Eco (1975), p. 98—99.
13 It is possible to play without or with the third player on the call, compare with *PG*, p. 131, 192.

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WITTGENSTEIN'S FAILURE TO TRANSCEND THE OBVIOUS

Charles Verharen

In a purely elucidative philosophy, one would like to have a viewless view, so that one's own views do not intrude in the practice of clarification. This point is particularly forceful when one remembers that ultimately one must practice philosophy on oneself—the most difficult of *all* practices, since it involves the bootstrap operation of hoisting oneself out of one's own views in order to see their limitations. In doing this, you must fall back on your own views. Thinking yourself objective, you simply rely on views which are so close to you that you do not see them as views, but rather as the natural order of things.

The test of creativity is one's ability to go beyond one's views, to regard what one takes to be *the obvious* as arbitrary postulates rather than as ineluctable foundations. Wittgenstein manifests this creativity in his ability to see the limitations of many of the stock ideas of traditional western philosophy. The question is whether he carried his creativity far enough in applying his own method to what he himself took to be obvious.

I want to give an explicit example of Wittgenstein's own failure to analyze his concept of the obvious. He introduced the notion of 'family resemblance' in the *Investigations* to make the point that theories of predication which assume a common element as a *modus explanans* overlook the obvious point that in many instances no common element can be found.

His methodological tack is clear. A preconception, so familiar that it is too obvious for examination, forces us to look at facts in a certain way. Cramped by our presupposition, we fail to see what is so obvious that even a casual examination must reveal it. The idea shapes our focus and we miss the disparity between conception and reality. The concept of a common element serves as a hypostatization which explains the long-standing problem of predication. If we say that many things are the same, then there *must be* some element of sameness.

Wittgenstein notes that theorists refuse to consider particular cases in their investigations: 'When Socrates asks the question, ''what is knowledge?'' he does not even regard it as a *preliminary* answer to enumerate cases of knowledge' (*BB*, p. 20). Wittgenstein's technique is to confront such universal philosophical theories with cases, i.e., with evidence. Defending himself against the objection that he has failed to produce the 'essence of a language-game, and hence of language . . . , what is common to all these activities, and what makes them into language or parts of language', he responds that linguistic phenomena 'have no one thing in common which makes us use the same word for all' (*PI*, § 65).

The point is illustrated with the familiar game analogy: diverse phenomena are designated 'games', and it is difficult to discern any single feature running through all the applications. The methodological admonition is: 'dont't think, but look!' (*PI*, § 66). The reductive tendency of requiring 'something in common to all entities which we commonly subsume under a general term' is illustrative of the source of metaphysics (*BB*, p. 18). The 'essence' or 'idea' of an object which one grasps on understanding the definition of the term is mistakenly thought to be like an internalized picture which is abstracted from all its instantiations. Thus the idea of a leaf or of the color green is like a general sample which one has in one's mind, comparable to the picture of a leaf in an encyclopedia or of a shade of green in a paint dealer's color chart.

Wittgenstein points out that the use of the terms 'idea' and 'essence' adds nothing to our understanding of the problem of predication. The analogy between the color chart sample and the idea of green breaks down because, while the sample on the chart has a shape, the sample in the mind is shapeless; this suggests a contradiction inasmuch as all

samples in the ordinary sense of the term have shapes (*PI*, §§ 73, 74). One can do no more than point to the fact that the same word may be used in many different contexts; to this date, *that* is the limit of our understanding of the matter, and the language of ideas, essences, and universals adds nothing further.

Wittgensteins's rejection of the idea of idea, familiar as it now is, seems obviously to be true. Its point is very effective, that metaphysical notions appear to give us some concrete answer to a problem, yet solve nothing when they are confronted with cases. However, his swiftness to point to the particular case is not as completely desirable as it first seems. His point is legitimate in the case of complex predicates such as 'game'. But in the case of simpler predicates, it appears that some sort of common element runs through the instantiations. All red objects, for example, occupy a certain range of the electromagnetic frequency, because of their common wavelength. All instances of the note 'middle C' share a common frequency. All circles share at least three common attributes.

In rejecting the notion of a common element, Wittgenstein blithely ignores the simple cases in paying attention to the more difficult ones. The instantiations of the more complex predicates do not *obviously* share a common element, but no evidence guarantees that this investigation has been pursued to the necessary extent.

It is premature to abandon the search for the common element simply because it does not make its appearance in the most casual of investigations. This would be like earlier generations than ours abandoning the search for the atom simply because they had no bubble chambers, geiger counters, or microscopes.

Granted, it would be folly to assume that the concept of idea is the answer to a problem. On the one hand Wittgenstein is quite correct: the quick answer to the problem of predication serves only as a soporific, an impediment to further investigation. But the problem is not dismissed in pointing out a solution that is, in its present form, idling. To dismiss the solution, to say there is no one element in common, is to dismiss summarily a very powerful heuristic device—on the grounds that the device has been abused.

The real difficulty of this summary dismissal is that it blinds Wittgenstein to his own guidance system. The solution to the problem of predication is not to dissolve or nudge it aside, but to continue the search for the common element with renewed vigor, until a more viable heuristic is spun out of that investigation. It is a perfectly appropriate task for the philosopher to point out instances of the use of language where nothing turns on the use, but it is not clear that Wittgenstein has chosen a felicitous example for the illustration of his method.

The idea of a common element in predication not only has the extraordinary weight of history behind it (Pythagoras, Plato, Aristotle, Galileo, Kant, although each gives the commonality a different status and origin), but contemporary research in neuropsychology uses the idea of the brain as a frequency analyzer employing Fourier transform equations as templates of commonality for different experiences (Pribram (1911)). The most recent formulation of the idea of idea is that it is a form or a pattern, but the pattern of wave structure, rather than the relation of discrete objects to one another in a *Gestalt*. All physical reality exists as a wave form of a unitary, indivisible substance. Where the wave package intensifies, particulate matter makes its appearance through an appropriate imaging or focusing device (Bohm (1980)). All material objects, themselves constituted of wave patterns, are able to be analyzed in terms of wave patterns. This is most clear in the case of sound and light. A medium, for example, air, is set in wave motion by some sort of disturbance. The wave motion is propagated through the medium until it impacts the ear drum, which maps the initial vibration. The physical motion of the drum is converted in the inner ear into electro-chemical energy which is isomorphic with the initial vibration, and transmitted as a frequency to the audio cortex. The brain analyzes the frequency in terms of stored Fourier equations and yields a judgment about the type of sound that is heard. Simple predicates (color, pattern, sound) differ from more complex predicates (true, good, beautiful) by reason of quantity or complexity rather than quality.

The ontological implications of these epistemological considerations point to a holistic view of the physical universe. The underlying hypothesis is that reality is constituted of a unitary field which is in constant vibration. The differences in vibration determine the appearance and disappearance of what we macroscopically determine to be objects (twistors, quarks, nucleons, molecules, cells, bodies, planets, suns, the cosmos). Ideas, meanings, universals, essences, are simply wave patterns which are often repeated in the course of our observations. In short, ideas are simply the modulation of vibration.

These considerations, as metaphysical or epistemological, are at best ethereal or suggestive. If we frankly admit our ignorance in the area of predication, then we must admit that we have not solved any problem in coming up with the idea of idea, except the very elementary one of the choice of a direction for research. If we recognize it as one direction among many possible, then perhaps we shall be quicker to realize its limitations (as Wittgenstein did) and better able to suggest alternatives (as Wittgenstein did not).

Just as investigations have guidelines, so stimuli to investigations have guidelines. Wittgenstein has presuppositions about the fallibility and corrigibility of human knowledge. These assumptions guided his search for a philosophical method which might deal with the perennial problem of the surety of any given piece of knowledge.

In short, Wittgenstein has a view about a proper method for dealing with the questionable status of theories. His practice of elucidation is his solution to a philosophical problem. His solution, it must be emphasized, is not a dissolution of the problem.

If the solution to philosophical problems are viewed as guidelines rather than doctrines, then there can be a middle ground between philosophy as pure technique and philosophy as pure doctrine. The danger of the former is that the therapeutic activity of philosophy must have some sort of bedrock from which it exerts its thrust; emphasizing the technique obscures the need to analyze the nature of the bedrock. The danger of the latter is that if the doctrinal side of philosophy is regarded as immutable, then it must obstruct the impetus to look in new directions for the solutions to longstanding (if not perennial) problems. In arguing for the dissolution of philosophical problems, Wittgenstein misses the opportunity to challenge his own presuppositions.

There are two central problems in philosophy: first, to acquire reflective control of the attention so that one may direct its critical ray; second, to acquire the intelligence to know where the ray may best be applied.

Wittgenstein directed his attention to the limitations of theories that required revision, but he did not direct his attention to the status of the criteria whereby the theories are seen to fail. Even this bedrock of rationality has a provisional status and minor alterations to the bedrock have yielded tremendously fruitful results in science. Wittgenstein's gravest error lies in his failure to examine the bedrock of the *obvious*.

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REFERENCES

Bohm, D., *Wholeness and the Implicate Order* (London 1980).
Pribram, K. H., *Languages of the Brain: Experimental Paradoxes and Principles in Neuropsychology* (Englewood Cliffs 1971).

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10. Wittgenstein im historischen Kontext

10. Wittgenstein in Historical Context

AUSSAGESATZ UND SACHVERHALT: EIN VERSUCH ZUR NEUBESTIMMUNG IHRES VERHÄLTNISSES IM ANSCHLUSS AN ARISTOTELES, WITTGENSTEIN UND FREGE

Hermann Weidemann

Auf die Frage ,,Was ist eine Tatsache?'' gibt Frege in seinem Aufsatz ,,Der Gedanke'' die Antwort: ,,Eine Tatsache ist ein Gedanke, der wahr ist'' (G, S. 50). Wendet man die Unterscheidung, die Wittgenstein in seinem ,,Traktat'' (vgl. TLP 2, 2.06) zwischen einem Sachverhalt auf der einen und einer Tatsache als einem bestehenden Sachverhalt auf der anderen Seite macht, auf Freges Definition des Tatsachenbegriffs an, so erhält man einen Begriff von Sachverhalt, der mit dem des Gedankens zusammenfällt. Wollte man auf die von Frege nicht gestellte Frage ,,Was ist ein Sachverhalt?'' eine Antwort geben, die Freges Beantwortung der Frage ,,Was ist eine Tatsache?'' entspricht, so müßte man sagen, ein Sachverhalt sei ein Gedanke, derjenige Gedanke nämlich, den der den Sachverhalt beschreibende Satz als seinen Sinn ausdrückt.

Von dem Gedanken, den ein Aussagesatz als seinen Sinn ausdrückt, unterscheidet Frege bekanntlich den Wahrheitswert des Satzes als das, was er — abweichend vom gewöhnlichen Sprachgebrauch — die ,,Bedeutung'' des Satzes nennt. Eine Bestätigung seiner Auffassung, daß ,,der Wahrheitswert eines Satzes dessen Bedeutung ist'' (SB, S. 50), sieht Frege darin, daß der Wahrheitswert, den ein Satz hat, der an die Bedeutung des Satzes zu stellenden Forderung genügt, ,,unverändert bleiben'' zu müssen, ,,wenn ein Satzteil durch einen Ausdruck von derselben Bedeutung, aber anderem Sinne ersetzt wird'' (SB, S. 49).

Ich möchte nun im folgenden zeigen, daß sich für die Rolle dessen, was Frege die ,,Bedeutung'' eines Aussage- oder Behauptungssatzes nennt, ein aussichtsreicherer Kandidat anbietet als der von Frege mit dieser Rolle bedachte Wahrheitswert des Satzes, nämlich der in dem Satz ausgesagte und als Tatsache behauptete Sachverhalt, wobei ich dieses Wort in einem Sinne gebrauche, in dem der *Sachverhalt*, der in einem Satz ausgesagt und als Tatsache behauptet wird, von dem *Gedanken*, den der Satz als seinen Sinn ausdrückt, in einer noch näher zu bestimmenden Weise zu unterscheiden ist. Der Auffassung von einem Sachverhalt als einer nicht intensionalen, sondern extensionalen Größe, die ich hier verteidigen möchte, entspricht die Auffassung, daß eine Tatsache nicht etwa, wie Frege definiert, ,,ein Gedanke'' ist, ,,der wahr ist'' (G, S. 50), sondern vielmehr das, was ein wahrer Gedanke abbildet.

Zugunsten der Auffassung, daß ein *Gedanke* die Abbildung eines *Sachverhaltes* und ein *wahrer* Gedanke die Abbildung eines als Tatsache *bestehenden* Sachverhaltes ist, kann man sich meines Erachtens nicht nur auf Wittgenstein berufen, insofern dieser im ,,Traktat'' die ,,Gesamtheit der bestehenden Sachverhalte'' als ,,die Welt'' (TLP 2.04) und die ,,Gesamtheit der wahren Gedanken'' als ,,ein Bild der Welt'' (TLP 3.01) bezeichnet, sondern auch auf Aristoteles, insofern dieser in seiner Schrift Peri hermeneias (,,De interpretatione'') die Ausdrücke der gesprochenen Sprache als Symbole für gewisse *pathēmata* der Seele einführt, die ihrerseits Abbildungen von Dingen (*homoiōmata* von *pragmata*) sind (Kap. 1, 16^a3—8). Wie aus dem zweiten Teil von Peri herm. 1 hervorgeht, versteht Aristoteles unter diesen seelischen *pathēmata* bestimmte Inhalte des Denkens (*noēmata*), von denen diejenigen, die durch Aussagesätze symbolisiert werden, wahr oder falsch sind (16^a9—18).

Daß Aristoteles unter den im Denken abgebildeten *pragmata*, deren gedankliche Abbildungen von den sprachlichen Ausdrücken symbolisiert werden, nicht nur sinnlich wahrnehmbare Einzeldinge versteht, zeigt das 7. Kapitel von Peri herm., in dem Aristoteles zwischen allgemeinen und einzelnen *pragmata* unterscheidet (17^a38f.), indem er sagt, ein allgemeines

prāgma, wie z.B. ,,Mensch", sei ,,seiner Natur nach dazu geeignet, von mehreren Gegenständen prädiziert zu werden", ein einzelnes hingegen, wie z.B. der Mensch Kallias, nicht (17^a39—$^b1$).

Was er unter dem von einem Aussagesatz bezeichneten *prāgma* verstanden wissen will, sagt Aristoteles zwar nicht ausdrücklich; im fünften Buch seiner Metaphysik findet sich jedoch ein Hinweis darauf, daß er beispielsweise unter dem von dem Satz ,,Du sitzt" bezeichneten *prāgma* den Sachverhalt versteht, daß du sitzt. Wenn er nämlich im 29. Kapitel dieses Buches ,,dies, daß du sitzt" (*to se kathēsthai*) als Beispiel für ein *prāgma* anführt, das ,,aufgrund dessen, daß (seine Teile) nicht miteinander verbunden sind" (*tō mē synkeisthai*), als ,,falsch" bezeichnet wird (1024^b 17—20), so versteht er unter einem solchen ,,falschen" oder, wie er es auch nennt, ,,nicht-seienden" *prāgma* (1024^b20f., 24f.) offenbar einen Sachverhalt, der nicht als eine Tatsache besteht. Unter dem von einem Aussagesatz bezeichneten *prāgma*, das er von dem durch den Satz symbolisierten *noēma*, d.h. von dem in dem Satz ausgedrückten *Gedanken*, unterschieden wissen will, scheint Aristoteles also den in dem Satz ausgesagten *Sachverhalt* zu verstehen, der dann, wenn er als eine Tatsache besteht, ein ,,wahrer" und dann, wenn er nicht als eine Tatsache besteht, ein ,,falscher Sachverhalt" (ein *prāgma pseudos*: 1024^b17f.) ist.

Wenn nun der in dem Satz ,,Du sitzt" ausgesagte *Sachverhalt*, daß du sitzt, von dem in diesem Satz ausgedrückten *Gedanken*, daß du sitzt, unterscheidbar sein soll, so muß die Identität dieses Sachverhaltes einem anderen Kriterium unterliegen als die Identität jenes Gedankens. Wollte man die Identität eines Sachverhaltes an dem Kriterium messen, dem zufolge zwei Sätze ‚*p*' und ‚*q*' genau dann denselben Sachverhalt beschreiben, wenn — so G. Patzig — ,,aus der Wahrheit bzw. Falschheit jedes der beiden Sätze auf die Wahrheit bzw. Falschheit des anderen Satzes allein auf Grund logischer Gesetze und der Bedeutungsregeln der Sprache, in der die Sätze formuliert sind, geschlossen werden kann",[1] so würde man mit diesem ,,üblichen Kriterium", wie E. Tugendhat es nennt,[2] einen Maßstab anlegen, der deshalb zu eng wäre, weil er zwischen Sachverhalt und Gedanke nicht zu unterscheiden erlaubte.

Will man den Gedanken, daß *p*, als den Sinn, den der Satz ‚*p*' ausdrückt, von dem in diesem Satz ausgesagten Sachverhalt, daß *p*, unterscheiden, indem man das von Patzig als Kriterium für die Identität von Sachverhalten angeführte Identitätskriterium als ein Kriterium betrachtet, an dem sich allenfalls die Identität von Gedanken messen läßt, so muß man für die Identität von *Sachverhalten* ein anderes Kriterium ausfindig machen, und zwar ein Kriterium, das auf der Ebene der *Aussagesätze* denjenigen Kriterien entspricht, an denen sich auf der Ebene der *Eigennamen* und der *Kennzeichnungen* die Identität von *Gegenständen* und auf der Ebene der *Begriffswörter* die Identität von *Begriffen* bemißt.

Daß man ein Kriterium, ,,das so weit wäre wie das, das alle Kennzeichnungen verbindet, die denselben Gegenstand bezeichnen", bei den Aussagesätzen nicht, wie Tugendhat behauptet, ,,erst da" findet, wo ,,derselbe Wahrheitswert" gegeben ist, sondern bereits da, wo ,,dieselben Wahrheitsbedingungen gegeben sind",[3] läßt sich am Beispiel der beiden von Frege angeführten Sätze ,,Der Morgenstern ist ein von der Sonne beleuchteter Körper" und ,,Der Abendstern ist ein von der Sonne beleuchteter Körper" (SB, S. 47) leicht zeigen. Diese beiden Sätze drücken zwar, wie Frege mit Recht bemerkt, insofern verschiedene Gedanken aus, als der Sinn des Wortes ,,Morgenstern" verschieden ist von dem Sinn des Wortes ,,Abendstern"; da diese beiden Wörter jedoch dieselbe Bedeutung haben, d.h. denselben Gegenstand bezeichnen, haben die beiden genannten Sätze, in denen sie vorkommen, nicht nur, wie Frege meint, denselben Wahrheitswert, sondern auch dieselben Wahrheitsbedingungen. Jeder dieser beiden Sätze ist nämlich genau dann wahr, wenn der durch die beiden Wörter ,,Morgenstern" und ,,Abendstern" bezeichnete Gegenstand unter den Begriff fällt, den der Begriffsausdruck ,,(ein) von der Sonne beleuchteter Körper" bezeichnet.

Das Bestehen des Sachverhaltes, daß jener Gegenstand unter diesen Begriff fällt, ist — unabhängig davon, mit welchen Worten er ausgesagt wird — die Bedingung dafür, daß die

Worte, mit denen er ausgesagt wird, wahr sind. Was die beiden genannten Sätze, deren Sinn ebenso verschieden ist wie ihr Wortlaut, über ihren Wahrheitswert hinaus gemeinsam haben, ist der in ihnen mit verschiedenen Worten von verschiedenem Sinn ausgesagte Sachverhalt, daß ein bestimmter Gegenstand unter einen bestimmten Begriff fällt.

Das hier zur Diskussion gestellte Identitätskriterium für Sachverhalte, dem zufolge zwei Sätze genau dann denselben Sachverhalt beschreiben, wenn sie unter denselben Bedingungen wahr sind, entspricht genau dem Kriterium, das E. J. Lemmon in seinem Aufsatz „Sentences, Statements and Propositions" als Kriterium für die Identität dessen vorgeschlagen hat, was er zur Unterscheidung von der in einem Satz ausgedrückten Proposition (*the proposition expressed by a sentence*) die mit einem Satz unter den Umständen, unter denen er geäußert wird, gemachte Behauptung nennt (*the statement a sentence is used to make*),[4] wobei er unter einer Behauptung nicht die Sprachhandlung des Behauptens versteht, sondern das, was im Vollzug einer solchen Sprachhandlung behauptet wird. Lemmon weist zwar darauf hin, daß das, was er eine *proposition* nennt, dem entspricht, was Frege den in einem Satz ausgedrückten Gedanken nennt;[5] er geht aber nicht so weit, das, was er im Anschluß an P. F. Strawson als das mit einem Satz gemachte *statement* bezeichnet,[6] d.h. den in einem Satz ausgesagten und als Tatsache behaupteten Sachverhalt, an die Stelle zu setzen, die bei Frege der Wahrheitswert eines Satzes einnimmt.

Da das, was Frege vom Wahrheitswert eines Satzes behauptet, daß er nämlich bei der Ersetzung eines Satzteils durch einen „gleichbedeutenden" anderen „unberührt bleibt" (SB, S. 50), nicht erst für den Wahrheitswert des Satzes gilt, sondern bereits für den Sachverhalt, dessen Bestehen oder Nicht-Bestehen die Wahrheit bzw. Falschheit des Satzes bedingt, läßt sich anstelle des Wahrheitswertes, den ein Satz hat, der in dem Satz ausgesagte Sachverhalt als das betrachten, was Frege zur Unterscheidung vom „Sinn" des Satzes dessen „Bedeutung" nennt.

Gegenüber Freges eigener Auffassung hat diese Betrachtungsweise unter anderem den Vorteil, daß ihr zufolge nicht „einerseits alle wahren" und „andererseits alle falschen" Sätze „dieselbe Bedeutung" haben (vgl. SB, S. 50), daß in der Bedeutung eines Satzes also nicht, wie Frege sagt, „alles einzelne verwischt ist" (ebd.). Ein weiterer Vorteil dieser Betrachtungsweise besteht darin, daß sie zwischen den Bedingungen, unter denen ein Satz wahr ist, und der Art und Weise, in der die Wahrheitsbedingungen eines Satzes demjenigen, der den Sinn des Satzes versteht, gegeben sind, eine klare Unterscheidung zu machen erlaubt.

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ANMERKUNGEN

1 Patzig (1970), S. 63.
2 Tugendhat (1976), S. 152; vgl. S. 493.
3 Vgl. Tugendhat (1976), S. 153.
4 Vgl. Lemmon (1966), S. 95, 99.
5 Lemmon (1966), S. 94.
6 Lemmon (1966), S. 90, 95, 100.

LITERATUR

Frege, G., Über Sinn und Bedeutung (=SB), in: G. Patzig (Hrsg.), Gottlob Frege: Funktion, Begriff, Bedeutung (Göttingen 1962, ^{4}1975).

Frege, G., Der Gedanke (=G), in: G. Patzig (Hrsg.), Gottlob Frege: Logische Untersuchungen (Göttingen 1966, ^{2}1976).

Jaeger, W., (Hrsg.), Aristotelis Metaphysica (Oxford 1957).

Lemmon, E. J., Sentences, Statements and Propositions, in: B. Williams and A. Montefiore (Hrsg.), British Analytical Philosophy (London 1966).

Minio-Paluello, L., (Hrsg.), Aristotelis Categoriae et liber De interpretatione (Oxford 1949).

Patzig, G., Satz und Tatsache, in: G. Patzig, Sprache und Logik (Göttingen 1970, ^{2}1981).

Tugendhat, E., Vorlesungen zur Einführung in die sprachanalytische Philosophie (Frankfurt a. M. 1976, ^{2}1979).

Wittgenstein, L., Tractatus logico-philosophicus (=TLP) (1921, Frankfurt a. M. ^{15}1980).

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WITTGENSTEIN AND FREUD: EPISTEMOLOGY AND PRIMAL SCENE

Aldo Gargani

In our culture the notion of repetition is frequently accepted as a factor shaping linguistic, logical, mathematical and scientific procedures. This long tradition of acceptance includes the unheard-of presumption that somehow everything is known, that all replies are symmetrically aligned to their questions and that thinking, calculating and knowing are modes of retracing tracks which have forever been traced. "They are all numbers" we say, for example, so not distinguishing between natural numbers and integers, so sweeping away with bluster as Wittgenstein says, the difference that exists between, say, the expression "two men entered the pub" and the expression "+ two men entered the pub", so concealing the fact that while for multiplication the law of monotony is of unlimited validity, in the case of integers, whether positive or negative, this law is circumscribed in its application. "They are all numbers", we continue to say, as if the various extensions of the concept of number were merely specialisations of a single concept, always identical and repeatable—the superconcept of number.

In our tradition there has been the dominant assumption that, in the various forms of knowledge, our linguistic and cognitive operations are none other than the incessant, monotonous repetition of a conceptional mechanism which is there, and always has been there, to anticipate any possible intellectual move or undertaking. Dominated by the primal scene, we believe that what we do is merely linear repetition of an operation already effected, and thus we end up by assuming the system of all things as a datum, which becomes the past and prehistory of our language and knowledge. This assumption becomes clear when we believe that the inference from or conclusion of a logical-mathematical piece of reasoning already exists, previously deposited in the super-mechanism of our concepts, from which in fact it is to be *drawn*—as we say in everyday speech—to be drawn from the premises where it has been lodging for ever. Thus in the *Principia Mathematica* Whitehead and Russell illustrate the *modus ponendo ponens* by observing that if p is true and if p implies q then we can only *draw* the conclusion that q is true, as if it were a question of pulling out something already existing, ready prepared, like the change from a slot-machine. Whereas it would be necessary to state that if the conclusion derives from premises, these in their turn derive their sense from those very conclusions drawn from them.

Now, the reduction of our constructive procedures of knowing to the mere repetition of an identical content is reassuring and suits a mode of thinking "with blinkers" which seeks to exorcise whatever is new and original. The limiting case of this attitude is found in what I might call the *Zukunftsangst*, the fear of the future which, in pathological situations, appears in the patient as a catatonic stupor, where defence against novelty and future change is expressed by a refusal to give answers and in a monotonous repetition of the question—a means by which the patient arrests within time that sense of "unchangingness" which he cannot give up. Following Wittgenstein and Freud, we may recognize in the conceptual super-mechanisms, in the super-languages of so much philosophy and epistemology constructs just as made as those manifest in the compulsion to repeat. The notions of the a priori, the transcendental, the analytic and so on to which every thing would be predisposed, should be re-examined as symptoms of a particular form of compulsion to repeat by which we attempt to exorcise novelty and the risks of the present moment. Epistemological schemes of this kind assume that language and knowing find in an early experience—the primal scene—a basis which is clearly defined precisely by its own unchallengeability. And this operation of carrying back something of *now* to refer to something of *then* gives us our sense of security. This is a

movement which can be reduced— as indeed Mach explained with reference to mechanical phenomena—to a referring of one unintelligible item to another unintelligible item. Explanation and demonstration within physical theory, according to Mach, do not consist in bringing the unintelligible down to the intelligible but in bringing the uncommon, unusual unintelligibility down to another, more familiar and better-known unintelligibility.[1]

At this point however we must ask if repetition is indeed the monotonous and unvarying retracing of an identical content, as a certain logicising tradition and indeed common acceptance would have it. This notion of repetition is in fact not sufficient, whether we ar referring to the compulsive repetition of obsessive neurosis, or to the repetitive schemes of the philosopher or epistemologist. The truth is, rather, that the term repetition is used to cover procedures which do not at all consist in doing the same thing or inexorably replaying the same content, but quite the contrary, in constructive reworking, in new, original decisions which have introduced into our knowledge such structures as infinitesimal notation, chemical symbolism or serial music—structures in no way inexorable since they did not exist before their deliberate construction. Structures, moreover, without which mankind managed to live comfortably for long enough. Now, repetition, understood as identical replay, disguises the operational aspect of language and knowing, putting forward instead the static, inert image of a primal scene of objects, representation of truth as an object, as a determinate presence. When we interpret a ritual and are profoundly moved, the effect does not come from the foundation-making character of a primal scene, an archaic event. Those epistemologists and anthropologists who would derive the meaning of a ritual from its primordial past are missing the point. Its interest and importance for us do not lie in the fact that it evokes a remote origin. On the contrary, it is the present working up which we perform on the basis of the myth which produces the profound impression. We may say that if depth is a trait of the past belonging to a remote time, then it is the depth of meaning which we attribute to a given myth which retrospectively projects its past, which creates it as the memorable primal scene with which we are so much struck. In this sense the myth doesn't have an explanation in the sense of mechanical causality, but it has a reason which lies in the indisputable evidence of its significance for us. The event described in a primal scene, as in a myth, depends—so to speak—on the retrospective capability of its meaning for us. Why does this thing happen? Because the myth has a terrible, unsettling significance. The circumstance that the event seems to us unsettling, terrible and fearful—all the opposite of futility, banality—this itself is what has originated the event as a myth. What for us represents perspicuity and evidence is what traces the remote depth of the event. This then is not a genetic, cause and effect problem of before and after. We're talking rather of a constellation of symbolic forms developing one from the other, as the ellipse develops from the circle. No-one, presumably, would claim that, historically, the circle generated the ellipse.[2]

In these terms, repetition doesn't develop as a replay of an identical content but as a progression of new, different reactions to a theme—the theme of a neurosis—originating in a primal scene but which does not exist either as a necessarily historical event, or as a structure significant before and independent of the reactions and reworkings men bring to it in the course of their lives. Rather, one can state, with Wittgenstein and Freud, that the notion of origin deposited in the primal scene does not exist outside the elaboration of the theme inscribed in it. Repetition's descent from the primal scene is not the same as the derivation of effects from mechanical causality, nor is it the replay of a content instantaneously reproducing all its recurrences. It is like the ellipse emerging from the circle. On the one hand the ellipse is already contained in the circle, but on the other, it derives from the circle by variations of form. Take the case of the child in Freud's *Jenseits des Lustprinzips* who is missing his mother. His game consists in throwing away from him a bobbin to which a thread is attached, and then drawing it back, repeating alternately the words "*fort*" (away) and "*da*" (here).[3] Thus this child repeats innumerable times per day the primal scene of his torment because of the lack of his mother. But his repetition does not consist in a mechanical, linear replay of the content of that scene. In what sense, one may ask, can a bobbin with

thread attached, alternately thrown away and pulled back, repeat the alternate absence and appearance of the mother? If someone were to show me that scene could I not simply say: I see a child pulling a bobbin attached to a long thread? It is not simply the alternation of presence and absence of the mother which suggests the explanation of the game. On the contrary, both scenes throw light on each other in the context of their formal connection. One could say that it is the child, with his play, who has structured the casual behaviour of the mother into a perspicuous and methodical representation. In that it is a repetition of the primal scene, the child's game contributes to forming and clarifying it, just as if it were an exercise to be completed. The repetition is not simply the replaying of a content already observed and fixed but includes a variation consisting in the reaction towards the mother that the child displays in his game, now that grief has burst into his life.

In this sense Freud's *Aus der Geschichte einer infantilen Neurose* is exemplary. Here the understanding of the primal scene of the parents' coition witnessed by a child of a year and a half strikes him at the age of four, i.e. in the course of a deferred thought. It is interesting that in this case the primal scene begins to take on significance only after the deferred working out, and the deferment therefore is essential to the primal scene itself. As I noticed earlier, the celebration of a ritual strikes us not because referring to an event remote in time—not all remote events have the effect on us of myth and ritual. As Freud observes in *Das Unheimliche*, "not everything which recalls removed motions of desire and past modes of thought from the origins of individual or of collective history is for that reason necessarily disturbing".[4]

The primal scene exists therefore in the deferred thought whose sounding of the depth of distant time is a function of the significance which the deferment itself adds to the theme it elaborates. "This significance" writes Freud "which was lacking in the memory, could be deduced with certainty from concomitant associations".[5] The entire representation of the "Clinical Case of the Wolf Man" in Freud's *Aus der Geschichte einer infantilen Neurose* consists of a cascade of symbols, a progression of references spreading out into an evolution of forms which, I repeat, do not belong to the domain of mechanical causality but rather to that of the development of symbolic forms one from the other, as happens for example in geometry. The primal scene of the parents' coition *a tergo more ferarum* which the child observes—but which he might also simply have imagined or supposed—is the theme for an elaboration which builds up through the images of the mounting of animals, of women crouching in positions with their back parts in evidence more or less analogous to that of the mother; through a governess's threat of castration which rebounds and makes sense, so to speak, in the child's presumed observation of the mother's genitals, interpreted as a wound, and through the fables of *Little Red Riding Hood, The Seven Kids*, the grandfather's tale of the wolf, the child's homosexual inclination towards his father and so on up to the transfiguration of the father, through the religious typology of God and the son-made-flesh. These elaborations are not analytical replays of a single content, as the ellipse is not a simple repetition of the circle, and just as the geometry of the cube is not contained in the cube. As a geometrical entity the cube in fact is the origin of its own geometry and nevertheless does not exist independently of the geometric discourse which develops around the cube, constituting the environment of its discourse and proofs, within which alone we can refer to the cube.

Now, regarding the compulsion to repeat, Freud observes that "these infantile scenes are not reproduced in analysis in the form of memories but are the fruit of a reconstruction—in other words we cannot reach the most remote infantile episodes as such".[6] There exists no primal scene without repetition, which is to say that there is no primal scene without retrospective elaboration. As Freud observes in a note to *Aus der Geschichte einer infantilen Neurose* the child understood the significance of the episode of his parents' copulation "at the stage of dreams, at four years of age, not at the moment of the observation. In other words, at a year and a half he gathered impressions the deferred understanding of which was made possible by his development, by his sexual excitement and sexual exquiries".[7]

In the circumstance of the repetition of a primal scene, Freud speaks of a prevalence of the general pattern compared with the individual experiences. In "The Case of the Wolf Man" the father is the object of the son's homosexual eroticism but is also his castrator according to the significance attributed to the scene of the parents' coition. Here too we would have as Freud says, "the same victory of the pattern over the individual".[8] I believe that here we must say that in repetition there takes place the recurrence of a structural theme, specified in a variety of forms. It is this recurrence which determines the throw-back to a primal scene, and hence to what Freud calls the prevalence of the general over the particular. These occurrences may be considered as distinct specifications which, taken together, make up the significance of the primal scene. Wittgenstein says that the different verifications of a hypothesis are not different ways of verifying the same content of a hypothesis, but are themselves distinct sections of the articulated structure of the hypothesis; what is verified in a different way must have a different meaning. And in same way as the hypothesis connects together all the distinct space-time sections of itself, so in psychic phenomena the primal scene connects together the various specifications and repetitions of the theme it has proposed. Whether with the scientific hypothesis or with the repetition of the primal scene: what we have is not the verification or the specification of the same meaning, but sections and symptoms, differing each time, of a single hypothesis, of a single primal scene, respectively. What we have verified each time is a different symptom of the original scene which has set the theme of a neurosis. And just as it is not a hypothesis that is verified but the single propositions that derive from it, and which correspond to its various sections, so a primal scene is not capable of verification, whereas we can verify its various symptoms, representing its different specifications.

When we carry out the procedures of a calculation therefore, or the repetition of a primal scene, we cannot say that we are always doing the same thing, which is however what we do say when, as Wittgenstein observes, we are tricked by our modes of expression, which seem to imply that the notions of identity and concordance are presupposed with respect to what we in fact do. Following Wittgenstein, it would in fact be correct to say that it is what we do that establishes the meaning of the notions of identity and concordance. These are not inert and static schemes of uniformity, pre-dating our operations; on the contrary it is through our operations and calculations that we establish for example in mathematics the meaning of "doing the same, identical thing". We realize the meaning of the notions of identity and concordance contemporaneously with the effective procedure of calculating mathematically. We construct new steps, we create new mathematical entities through our operations and at the same time we say that we have established an identity between what we have already done and what we are doing now. It is what we do which shows what it means "to do the same thing". So, rather than multiply 16 by itself 15 times, I raise it to the power 15 and write 16^{15}. The proof of this calculation doesn't lie only in the fact that the multiplication of factors and the raising to a power give the same result, rather it is the proof which must show that we take the number 16 as a factor 15 times and we obtain the same result by these two routes.[9] *We may say that we establish the meaning of the notions of identity and concordance while we construct and invent our mathematical entities.*

Now I should like to say that the primal scene is not an ontological fundament, it is not a substantial presence, and it doesn't manifest itself as an opinion or belief; just as the fact that we get up from a chair is not the manifestation of the opinion that we have two feet.[10] The primal scene is the vital element within which we elaborate our behaviour and our attitudes. Men don't declare that they know that there are external objects such as chairs, tables, stars, books and trees, and the existence of all these things doesn't constitute the content of an opinion or belief, but it is a presupposition implicit in all their actions, in all their behaviour. In other words, a man doesn't tell us, describes to us, his primal scene, but he acts under its influence—we could even say that he describes his primal scene to us by the actions which he performs. That is to say that he now explains his primal scene

not with *the grammar of his cognitions* but, so to say, with *the grammar of his actions.* As Freud observes,

> The subject does not say that he has been stubborn and mistrustful towards his parents' authority, but behaves in just this way towards his analyst. He doesn't remember having been without advice and help during his infantile sexual exploration, but carries with him a great many dreams and confused associations. He complains being unsuccessful in everything he does and declares that it is his fate never to achieve the object that he undertakes. He doesn't remember having been deeply ashamed of a certain sexual behaviour and fearful that it was discovered, but he shows that he is ashamed of the treatment to which he is subjecting himself, tries to keep it hidden from other people, and so on.[11]

But there is more: I should like to say that the Freudian notion of the primal scene reveals in an exemplary manner how truth does not consist in the representation of an object, of a determinate presence, but in the actions which are carried out. Yet in another sense truth stands there in front of us if we know how to seek it. The patient who cannot produce a word in the analyst's presence, who cannot remember, in reality is producing his primal scene in front of our eyes. "In the end", says Freud, "one realizes that this is his way of remembering". Whenever we have the patience and clarity of mind, we should be able to discover the truth in the silence which his actions reveal to us. These actions delineate something which was not there before: in their development they trace the physiognomy of their origin. That obsessed boy in *Aus der Geschichte einer infantilen Neurose* fills us of course with distress, but also with admiration at the huge mad structure he has built up since that moment when grief entered his life and condemned him to compulsive repetition. By means of his distressed retrospective fantasizing he has gathered and elaborated into a synthesis—which did not exist before he made it exist—the entire environment of his life. The men and objects that surrounded him, his fables, the seductions of his sister, his nurse, the scullery-maid, poor peasant women are elaborated into something as original as his own life itself. And by means or repetition he has been able to deeply stare back at the remembrance of the primal scene which has marked his whole life. And I should like to add that that boy has done it all by himself. After all, was it not Freud talking about children who said that they "have been underestimated, and truly we no longer know what may not be attributed to them?" [12]

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NOTES

1 "Man führt ungewöhnliche Unverständlichkeiten auf gewöhnliche Unverständlichkeiten zurück", E. Mach, *Die Geschichte und die Wurzel des Satzes von der Erhaltung der Arbeit* (Prag 1872), p. 31.
2 Wittgenstein, L., "Remarks on Frazer's Golden Bough", in: C. G. Luckhardt (ed.), *Wittgenstein: Sources and Perspectives* (Hassocks 1979), p. 69.
3 Freud, S., "Jenseits des Lustprinzips" (1920), in: S. Freud, *Gesammelte Werke*, Bd. 13 (Frankfurt a. M. 1972), pp. 11—15.
4 Freud, S., "Das Unheimliche" (1919), in: S. Freud, *Gesammelte Werke*, Bd. 12 (Frankfurt a. M. 1972), p. 259.
5 Freud, S., "Aus der Geschichte einer infantilen Neurose" (1914), in: S. Freud, *Gesammelte Werke*, Bd. 12 (Frankfurt a. M. 1972), p. 129.

6 Freud, S. (1914), p. 80; Freud, "Traumdeutung" (1899), in: S. Freud, *Gesammelte Werke*, Bd. 2—3 (Frankfurt a. M. 1972), p. 190.
7 Freud, S. (1914), p. 64.
8 Freud, S. (1914), p. 155.
9 Wittgenstein, L., *Remarks on the Foundations of Mathematics* (Oxford 1956), Part. II, sect. 47.
10 Wittgenstein, L., *On Certainty* (Oxford 1969), sect. 148.
11 Freud, S., "Erinnern, Wiederholen und Durcharbeiten" (1914), in: S. Freud, *Gesammelte Werke*, Bd. 10 (Frankfurt a. M. 1972), pp. 129—30.
12 Freud, S. (1914), p. 137.

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PHILOSOPHIE UND METAPHILOSOPHIE: WITTGENSTEINS AUFLÖSUNG DES „REFLEXIONSPROBLEMS“ DER PHILOSOPHIE

Arno Ros

1. Bei einer jeden Auseinandersetzung, in der um die Geltung einer Behauptung gestritten wird, kann es dazu kommen, daß einer der Redenden dem jeweiligen anderen vorwirft, er habe nicht so sehr Recht oder Unrecht, sondern argumentiere falsch, da er die eine oder andere Regel der Einlösung von Geltungsansprüchen verletze.

Wird ein solcher Vorwurf innerhalb einer nicht-philosophischen Argumentation erhoben, z.B. innerhalb einer Auseinandersetzung im Rahmen einer empirischen oder formalen Wissenschaft, so sprechen wir davon, daß deren Ebene verlassen und die der Philosophie, bzw. spezieller: die der Wissenschaftstheorie, der Meta-Mathematik, usw., betreten werde. Wird jener Vorwurf hingegen innerhalb einer philosophischen Argumentation erhoben, so scheint es zu folgender Aporie zu kommen: Entweder werden die jeweiligen Prüfmaßstäbe für die Geltung von philosophischen Argumenten innerhalb der Art von Philosophie vorgestellt, die sich selbst auf diese Maßstäbe beruft — und dann kommt es anscheinend zu einem Zirkel. Oder jene Prüfmaßstäbe werden innerhalb einer Philosophie vorgetragen, die sich als von diesen Maßstäben unabhängig darstellt — was dazu zu führen scheint, daß für die kritische Explikation von Art und Geltungskriterien einer solchen „Metaphilosophie“ eine weitere Philosophie benötigt wird, usw. ad infinitum. Eben diese Aporie zwischen Zirkel oder infiniter Iteration von Metaphilosophien ist gemeint, wenn hier von dem „Reflexionsproblem der Philosophie“ gesprochen wird.

Berücksichtigt man neben der Möglichkeit eines Zirkelschlusses bzw. einer infiniten Iteration von Metaphilosophien noch die eines dogmatischen Abbruchs der Argumentation, so sieht man, daß es sich bei dem Reflexionsproblem um eine Variante des seit der Antike bekannten Trilemmas der Begründung von Geltungsansprüchen überhaupt handelt. Einer weit verbreiteten Auffassung nach läßt sich dieses generelle Begründungsproblem nicht beheben. Dieser skeptischen Haltung sind allerdings Vertreter insbesondere zweier Positionen entgegengetreten. Die erste Position wird heute z.B. von K.-O. Apel repräsentiert. Sie argumentiert mit dem Einwand, daß die Auffassung des Skeptikers sich nicht konsistent formulieren lasse. Diese Argumentation muß allerdings, neben anderen, die Entgegnung hinnehmen, daß sie nur ex negativo verfahre, während unser eigentliches Interesse doch darin bestehe, positive Auskünfte über das Aussehen eines mit zwingenden Gründen zu einem Ende kommenden Begründungsgangs zu erhalten.

Die zweite anti-skeptische Position hat vor allem Wittgenstein in seinem Spätwerk entwickelt. Kern dieser Position ist, daß in der Tat versucht wird, ein Konzept „rationaler“ Begründungen positiv zu charakterisieren. Von dieser zweiten Position wird im Folgenden der Aspekt, der sich auf das Reflexionsproblem der Philosophie bezieht, etwas näher dargestellt werden.

2. Wittgensteins Auffassung gegenüber der These von der vermeintlich unumgänglichen Iteration von Metaphilosophien ist am deutlichsten ausgedrückt im § 121 der „Philosophischen Untersuchungen“:

> Man könnte meinen: wenn die Philosophie vom Gebrauch des Wortes ‚Philosophie‘ redet, so müsse es eine Philosophie zweiter Ordnung geben. Aber es ist eben nicht so; sondern der Fall entspricht dem der Rechtschreibelehre, die es auch mit dem Wort ‚Rechtschreibelehre‘ zu tun hat, aber dann nicht eine solche zweiter Ordnung ist.

Um die Pointe dieses Vergleichs genauer erfassen zu können, empfiehlt es sich, ihn mit Hilfe einer etwas abstrakteren Begrifflichkeit zu formulieren. Grundlegend ist dafür die Unterscheidung zwischen dem *Schema* (type) und der *Aktualisierung* (token) einer Handlung.

Unter Anwendung dieser Begrifflichkeit läßt sich die skeptische These und die Entgegnung Wittgensteins so formulieren: Der Skeptiker ist der Auffassung, daß der Gegenstand, über den bei philosophie-methodologischen Reflexionen gesprochen wird, ein Schema I eines Konzepts philosophischer Argumentation sei, während das Schema, das beim Vollzug solcher philosophie-methodologischer Reflexionen aktualisiert wird, ein von jenem verschiedenes Schema II eines Konzepts philosophischer Rede sein müsse. Der Witz des Wittgensteinschen Vergleichs hingegen ist es, augenscheinlich werden zu lassen, daß es für diese Auffassung keinen zwingenden Grund gibt.

Denn wer über die Rechtschreibung des Ausdrucks ,,Rechtschreibelehre" (über den Begriff ,,Philosophie") diskutiert, hat einerseits ein bestimmtes Schema zum *Gegenstand* seiner Rede: das graphische Schema ,,Rechtschreibelehre" (den Begriff ,,Philosophie"), das zugleich ein bestimmtes Schema sprachlichen Handelns bezeichnet. Darüber hinaus *aktualisiert* ein solcher Sprecher ein bestimmtes Handlungsschema, nämlich das bereits genannte Handlungsschema ,,Rechtschreibung Lehren" (,,Philosophieren"). Darin liegt natürlich ein Unterschied. Aber dieser Unterschied zwischen zum Gegenstand gemachtem Schema und aktualisiertem Schema besagt nicht, daß es sich auch auf der Ebene der Schemata um notwendig Verschiedenes handeln müsse.

Dieses so interpretierte Argument Wittgensteins kann mit Hilfe neuerer sprachtheoretischer Unterscheidungen noch präzisiert werden. Wie die von Austin initiierte Betrachtung unserer Begriffe sprachlichen Handelns gezeigt hat, läßt sich an jeder Äußerung ein metakommunikativer und ein propositionaler Teil unterscheiden. Das gilt auch für den Fall einer Äußerung, mit der ein begrifflich-philosophisches Argument vorgetragen wird. Bei einem Ausdruck wie ,,jemand erklärt jemandem in begrifflich-philosophischer Weise, warum es zum Begriff ‚eine begrifflich-philosophische Erklärung vollziehen' gehört, daß . . ." beispielsweise bezeichnet der mit dem ersten ,,daß" beginnende Teil den propositionalen, der davor liegende Teil den metakommunikativen Part der gesamten sprachlichen Handlung.

Bringt man nun die Unterscheidung zwischen dem propositionalen und dem metakommunikativen Teil einer sprachlichen Handlung mit der Unterscheidung zwischen Schema und Aktualisierung in einen Zusammenhang, so zeigt sich: Der propositionale Teil des angeführten Ausdrucks hat das Schema ,,begrifflich-philosophische Erklärung" zum *Gegenstand*. Der metakommunikative Teil des angeführten Ausdrucks dagegen bezeichnet das Handlungsschema, welches das jeweilige Subjekt jener sprachlichen Äußerung *aktualisiert*. Und es gibt keinen Grund, warum diese beiden Schemata sich prinzipiell gesehen unterscheiden müssen — genau das aber wird von dem Einwand unterstellt, eine Methodologie der Philosophie müsse zu einer infinten Iteration von Metaphilosophien führen.

3. Mit dem alleinigen Hinweis darauf, daß eine infinite Iteration von Meta-Philosophien durchaus vermeidbar ist, ist das Reflexionsproblem der Philosophie freilich noch nicht gänzlich gelöst. Denn gerade die eventuelle Übereinstimmung zwischen dem mit einer philosophischen Methodologie behandelten und dem mit ihr aktualisierten Argumentationsschema mag ja den Einwand provozieren, daß eine solche Methodologie sich, wenn sie nicht zu einer infiniten Iteration führt, in einen Zirkel verstricke.

Wittgenstein hat zu diesem, dem zweiten Aspekt des Reflexionsproblems anscheinend keine Überlegungen mehr vorgetragen. Doch lassen sich die Unterscheidungen, zu denen der oben zitierte Paragraph der ,,Philosophischen Untersuchungen" Anlaß gab, mit Gewinn auch dazu verwenden, um die These vom vermeintlich unumgänglichen Zirkel zurückzuweisen.

Entscheidend dafür ist es, sich Folgendes zu vergegenwärtigen: 1. Von einem ,,Zirkel" in einer Argumentation dürfen wir nur dann reden, wenn ein Sprecher einen Geltungsanspruch des Inhalts p mit Bezug auf Prämissen zu begründen versucht, von denen mindestens eine mit p äquivalent ist. 2. Der spezielle Geltungsanspruch, der mit einer Äußerung angemeldet

wird, wird nur im *propositionalen* Teil dieser Äußerung artikuliert, während der *metakommunikative* Teil damit nichts zu tun hat. (Der metakommunikative Teil einer sprachlichen Handlung indiziert nämlich allein die Form des jeweiligen Geltungsanspruchs überhaupt, d.h. ob er z.B. normativer, empirischer usw. Art ist, während der Inhalt des jeweiligen Geltungsanspruchs propositional formuliert werden muß.) 3. Das in 2. Gesagte gilt auch für die Prämissen, mit Hilfe derer ein Geltungsanspruch gegebenenfalls begründet werden soll: auch sie werden immer nur im propositionalen Teil der jeweiligen Äußerung artikuliert.

Die Bedeutung dieser Punkte für den hier interessierenden Zusammenhang wird erkennbar, wenn man sich nunmehr nur noch vor Augen hält, daß aus 1. bis 3. folgt, daß es zu einem Zirkel immer nur kommen kann innerhalb des Verhältnisses zwischen den propositionalen Teilen eines Argumentationsganzen. Eine eventuelle Übereinstimmung zwischen dem, was im propositionalen Teil einer Äußerung beansprucht wird, und dem, was mit dem metakommunikativen Teil einer Äußerung vollzogen wird, begründet keineswegs einen Zirkelvorwurf. Genau von dieser Unterstellung aber geht der zweite der hier unterschiedenen skeptischen Einwände gegen die Möglichkeit einer gut begründbaren Methodologie der Philosophie aus.

In der Regel wird in diesem Zusammenhang eingewandt, daß derjenige, der eine philosophiemethodologische These über den Begriff des Begründens, Erklärens usw. zu begründen versucht, die Geltung seines Begriffs des Begründens usw. „voraussetze". Aber das ist eine irreführende Redeweise. Denn mit dem metakommunikativen Teil seiner Rede — und auf den allein bezieht sich dieser Einwand — bewegt sich ein Sprecher innerhalb eines bestimmten Bereichs institutionell vermittelter Praxis. Und „sich innerhalb einer bestimmten Praxis bewegen" ist zunächst einmal etwas ganz anderes als „Voraussetzungen machen". In eine Praxis tritt man nämlich ein, indem man sie *einübt*, nicht, indem man „Voraussetzungen macht".

Zwar ist es der speziellen Praxis, die wir „jemandem gegenüber eine Behauptung begründen" nennen, eigen, daß auf Prämissen zurückgegriffen wird. Das kompliziert die Sache etwas. Denn diese Prämissen dürfen zu Recht als das bezeichnet werden, was ein Sprecher in seiner Praxis des Begründens „voraussetzt". Aber wenn wir von *solchen* Voraussetzungen sprechen, beziehen wir uns wieder auf den propositionalen Teil einer sprachlichen Handlung. Und der allein muß nicht notwendig zu dem Zirkel führen, der von skeptischen Positionen in Hinsicht auf das Reflexionsproblem der Philosophie als unumgänglich dargestellt wird.

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WITTGENSTEIN UND HUMBOLDT: TERMINOLOGISCHE UND METHODOLOGISCHE PROBLEME IN WITTGENSTEINS SPÄTPHILOSOPHIE

Armin Burkhardt

Für Humboldt ist Sprache die kollektive geistige Leistung der Generationen innerhalb einer Nation. Ist die jeweilige historische Einzelsprache zum einen nach Humboldt Mittel des Ausdrucks des Gedachten und zugleich die formulierende und begriffsbildende Tätigkeit der Individuen, so ist sie andererseits die geistige Basis des ,,jedesmaligen Sprechens" (VI, S. 46)[1] und steckt dem kommunizierenden und reflektierenden Individuum über das Netz ihrer Begriffe seinen Horizont ab. Da sie der kollektiven Subjektivität der Wahrnehmung innerhalb des Ganzen einer Nation entspringt, ist Sprache für Humboldt ,,durchaus kein bloßes Verständigungsmittel, sondern der Abdruck des Geistes und der Weltansicht der Redenden" und bedarf allerdings der Geselligkeit als das ,,unentbehrliche Hülfsmittel zu ihrer Entfaltung" (VI, S. 23). Sprache ist für Humboldt das ,,Organ des Denkens" (VI, S. 179 f.).[2]

Ist für Humboldt die ,,Weltansicht" die einzelsprachlich bestimmte Sehweise oder die jeweils charakteristische Art, die Wirklichkeit zu kategorisieren, so ist für Wittgenstein die ,,Lebensform" vor allem die kulturell-praktische Basis, auf der sich alles Sprachhandeln abspielt. Anders als bei Humboldt ist im Begriff der ,,Lebensform" schon die Einheit von Sprechen, Handeln, tradierter Konvention, Wissen und Erfahrung mitgedacht. Die ,,Lebensform" ist die allen gemeinsame gesellschaftliche Welt, in die das sprechenlernende Kind hineinsozialisiert wird und die den Hintergrund seines theoretischen und praktischen Wissens sowie seiner Erfahrung bildet. In einer solchen ,,Lebensform" haben bestimmte Sätze z.T. unhinterfragbare Gültigkeit. Diese Sätze bilden das, was Wittgenstein in ,,Über Gewißheit" das ,,Weltbild" genannt hat, von dem er sagt, es sei ,,der überkommene Hintergrund, auf welchem ich zwischen wahr und falsch unterscheide". (ÜG, § 94) Die Sätze des ,,Weltbildes" bilden demnach den als gültig akzeptierten und vorausgesetzten tradierten Kanon des Wissens innerhalb einer ,,Lebensform". Das ,,Weltbild" liegt jedoch nicht, wie Humboldts ,,Weltansicht", *in* der Sprache, sondern wird *mit* ihr gelernt: in den alltäglichen ,,Sprachspielen" wird auf der Grundlage der gemeinsamen ,,Lebensform" die ,,Verbindung zwischen ‚Sprache und Wirklichkeit'" (PG, § 55) hergestellt.

War die Sprache bei Humboldt insgesamt als ,,Thätigkeit" oder ,,Energeia" (VII, S. 46) bestimmt, die er in das ,,jedesmalige Sprechen" und die ,,Totalität dieses Sprechens" unterscheidet, so deckt sich diese Auffassung mit Wittgensteins Bestimmung des ,,Sprachspiel"-Begriffs in den ,,Philosophischen Untersuchungen", nur mit dem Unterschied, daß Wittgenstein im ,,Sprachspiel"-Begriff die Verwobenheit von Sprache und Handeln hervorhebt und daher, neben den einzelnen Spielen, auch ,,das Ganze: der Sprache und der Tätigkeiten, mit denen sie verwoben ist" das ,,Sprachspiel" nennt (PU, § 7), während Humboldt gerade die kognitive, ,,gegenstandskonstitutive"[3] Leistung der Sprache betont. D.h.: wenn man von einer gewissen Aspektverschiebung absieht, ist Humboldts ,,Energeia"-Begriff dem des ,,Sprachspiels" vollkommen analog. Was aber Humboldts Begriff der ,,Weltansicht" bei Wittgenstein in etwa entspricht, ist die ,,Grammatik". Sieht man einmal von den Fällen ab, wo Wittgenstein von ,,Grammatik" im Sinne einer sprachwissenschaftlichen Disziplin spricht, so bleiben noch zwei weitere wesentliche Weisen, in denen Wittgenstein den Terminus gebraucht: 1. im Sinne des logisch-syntaktischen Regelsystems, das die Voraussetzung unseres formulierenden Denkens und Sprechens bildet, und 2. als die Verwendungsregel eines Wortes oder Zeichens. ,,Die Grammatik", so schreibt Wittgenstein, ,,besteht aus Vereinbarungen". (PG, § 138) Und, nachdem er vorher die Bedeutung als den ,,Ort eines Worts in der Grammatik" (PG, § 23) erklärt hat, führt er weiter aus: ,,Die Grammatik ist keiner

Wirklichkeit Rechenschaft schuldig. Die grammatischen Regeln bestimmen erst die Bedeutung (konstituieren sie) und sind darum keiner Bedeutung verantwortlich und insofern willkürlich." (PG, § 133) Es scheint, als ob Wittgenstein die syntaktischen Kompositionsregeln der Sprache und die Regeln des situationsadäquaten Gebrauchs eines Wortes zu einem komplexen Begriff von „Grammatik" synthetisiere. Aber, wie auch an vielen anderen, ist gerade an der zitierten Stelle nicht mit Sicherheit zu entscheiden, welche der beiden Varianten von „Grammatik" hier gemeint ist. Denn mögen die Regeln der Syntax auch in der Tat willkürlich sein, so gilt dies doch auf keinen Fall für die Begriffe einer Sprache. Natürlich können sie willkürlich *gebildet* werden — z.B. können wir das Produkt des Alters in Jahren und der Größe einer Person in Millimetern ihr „Grölter" nennen[4] — und natürlich sind die Begriffe „arbiträr" in Saussures Sinne, d.h. ihre Laut- und Schriftzeichen stehen in keiner nachahmend-analogen Beziehung zu ihrem Bezeichneten,[5] aber deshalb ist man noch nicht ohne weiteres befugt, die Verwendung eines Wortes willkürlich zu nennen, denn die Konstitution von Begriffen bildet zumindest den Versuch, Wirklichkeit unseren Interessen entsprechend in Sprache zu projizieren. Es ist eben nicht denkbar, daß ich mit meiner Grammatik und den Grammatiken meiner Wörter „im Sattel bleibe, auch wenn die Tatsachen noch so sehr [bocken]" (ÜG, § 616).[6] Zwar kommen die Regeln der Syntax in der Tat nie mit der Wirklichkeit in Konflikt,[7] wohl aber die Regeln des Wortgebrauchs. Ein Wortgebrauch kann nämlich angemessen sein oder auch nicht. Und genau dies ist es, was Wittgenstein am philosophischen Sprachgebrauch kritisiert. Es ist aber in diesen Fällen genau genommen nicht der Gebrauch des Wortes selber falsch — der kann nur üblich oder unüblich sein — sondern der diesem Gebrauch zugrundeliegende Begriff, d.h. die für das Wort einsetzbare Worterklärung. Wenn er auch schreibt: „Wir analysieren nicht ein Phänomen (z.B. das Denken), sondern einen Begriff (z.B. den des Denkens), und also die Anwendung eines Worts" (PU, § 383), so gibt er doch zumeist seine begrifflichen Untersuchungen (z.B. über „Bedeutung" oder „Schmerzen") als grammatische Analysen aus. Der Begriff *ist* aber nicht die Anwendung des Wortes, sondern dessen Voraussetzung.

Begriffe haben es auch in der Bestimmung Wittgensteins mit subjektiver Zweckmäßigkeit und objektiver Angemessenheit zu tun.[8] Wenn sich der Begriff von etwas ändert — z.B. in einer Wissenschaft — so in der Folge offenbar doch auch die Grammatik (= Verwendungsregel, „use" (BBB, S. 23)) des betreffenden Wortes. Wenn das stimmt, kann die Grammatik nicht vollkommen autonom sein, sondern ist ihrerseits von Begriffen abhängig, die zum einen Teil theoretische Entwürfe über die Welt sind und zum anderen neue konstituieren. Begriffe gehören einerseits unauflöslich zur „Lebensform" einer Gemeinschaft, andererseits sind sie Bestandteil wissenschaftlicher Theorien, in denen allein sie vollständig erklärbar sind. „Begriffsbildung und Theoriebildung gehen Hand in Hand".[9] Eine solche umfassende, wenn auch in Vielem ungenaue Theorie ist auch das „Weltbild" der Alltagssprache und die „Grammatik" ihrer Begriffe.

War für Humboldt die Sprache Ausdruck des Gedankens und „Abdruck des Geistes", bestand für Cassirer die „entscheidende Leistung des Begriffs", ähnlich wie bei Humboldt, in der „Formung der Eindrücke zu Vorstellungen",[10] so ist für Wittgenstein das Sprachzeichen in semantischer wie in grammatischer und pragmatischer Hinsicht rein sprachlich vermittelt. Der Erwerb von Sprache ist für ihn — rein ontogenetisch betrachtet — wesentlich ein „Abrichten" im Symbolgebrauch und -verständnis, in dem „Vorstellungen" kaum eine Rolle spielen (vgl. PU, § 6) und kein „Anschlagen einer Taste auf dem Vorstellungsklavier" (PU, § 6) stattfindet. Und das Denken ist für ihn keine Assoziationskette oder eine Abfolge von Gedanken und Vorstellungen, sondern einfach „das Operieren mit Symbolen" (PG, § 65). Denken ist also nicht das Hin- und Herbewegen von Vorstellungen und auch nicht Augustins „bei sich selber" bzw. „in seinem Herzen sprechen",[11] denn „‚Denken' und ‚in der Vorstellung sprechen' — ich sage nicht, zu sich selbst sprechen — sind verschiedene Begriffe". (PU II, S. 339, xi) Denken ist für Wittgenstein ein symbolischer Akt, in dem Zeichenprozesse stellvertretend für Vorstellungsprozesse ablaufen. Verstehen ist demgemäß ein automatisiertes, unmittelbares äußeres bzw. inneres symbolisches oder praktisches Rea-

gieren auf Zeichen. Darum ist die ,,Weltansicht" Humboldts ebenso wie das Denken zwar an Sprachzeichen gebunden, aber mit Wahrnehmungskategorien korreliert, Wittgensteins ,,Grammatik" jedoch rein symbolisch vermittelt.

Wenn es zutrifft, daß Wittgenstein die Emanzipation des Symbolsystems von Vorstellung und Wirklichkeit durch deren Ersatz durch sprachliche Beschreibungen und Zeichenprozesse erkannt hat, Denken, Verstehen, Spracherwerb und Begriffsbildung auf diese Weise beschrieben hat, dann ist einerseits nicht recht verständlich, weswegen er dennoch auf der Autonomie und Willkürlichkeit der Grammatik beharrt und damit implizit auch auf der These von der einzelsprachlichen Relativität der Weltsicht, denn die Einzelsprachen sind zwar grammatisch und begrifflich unterschiedlich konstruiert, ermöglichen aber grundsätzlich den Ersatz von Begriffen durch semantisch äquivalente Beschreibungen. Andererseits bleibt auch unklar, weswegen er, nachdem einmal die wesentliche Sprachlichkeit oder sprachliche Konstruiertheit und Vermittlung des Begriffs erkannt ist, dennoch Bedeutung als bloßen Gebrauch und die ,,Grammatik" des Worts als bloße Verwendungsregel einführt und damit die gegenstandskonstitutive und kreative Leistung des Begriffs unterschlägt oder zumindest vernebelt.

Es gibt aber noch eine weitere grundlegende Schwäche der Wittgensteinischen Position, die das von ihm der Philosophie und den Wissenschaften empfohlene methodologische Vorgehen betrifft. Um sein Ziel zu erreichen, ,,die Wörter von ihrer metaphysischen, wieder auf ihre alltägliche Verwendung [zurückzuführen]" (PU, § 116), schlägt er den Philosophen als entscheidendes Kriterium richtigen Wortgebrauchs die Frage vor: ,,wird denn dieses Wort in der Sprache, in der es seine Heimat hat, je tatsächlich so gebraucht?" (PU, § 116) Mit der Angabe dieses Kriteriums verfehlt er in einem wichtigen Punkt das zentrale Anliegen von Philosophie und Wissenschaften, nämlich: auf dem Hintergrund von theoretischen Erklärungssystemen Begriffe zu bilden und beständig an den thematisierten Erscheinungen und im Hinblick auf ihre Angemessenheit zu menschlichen Zwecken zu überprüfen. Wittgenstein scheint die Erklärung dessen, *was* etwas *ist*, durch die Beschreibung des Gebrauchs des ihm entsprechenden Wortes oder Ausdrucks ersetzen zu wollen — ein methodologisches Konzept, an das er sich — wie etwa seine Untersuchungen zum Begriff ‚Schmerz' oder zu den Empfindungsverben beweisen — selber keineswegs hält.[12] Wäre Wittgensteins Maxime die: ,,willst du wissen, was ein Wort bedeutet, so schau nach, wie es gebraucht wird", so wäre sie völlig richtig, weil man auf diese Weise immer nur die Frage nach der wesentlich konventionalen Bedeutung beantworten kann. Wittgenstein deutet sie jedoch um zu: ,,willst du wissen, *was* etwas ist, schau nach, wie das es bezeichnende Wort *xyz* gebraucht wird". Durch das Nachschauen im Gebrauch kann man aber immer nur auf — als solche unkritisierbare — Bedeutungen kommen. Das kann jedoch nicht das Ziel der Philosophie oder der Wissenschaften, sondern allenfalls der Lexikographie sein.

Wittgenstein lassen sich also nach alledem fünf Vorwürfe nicht ersparen:

1. der der Entwicklung einer zumindest gegenläufigen Terminologie (,,Bedeutung" und ,,Grammatik" von Zeichen als Gebrauchsregeln einerseits und als Worterklärungen und sprachliche Substitute andererseits),
2. eine Überbetonung der Verwobenheit von Sprache und Praxis bei gleichzeitiger Vernachlässigung der kognitiv-konstitutiven Leistung des Begriffs,
3. die Rede von Autonomie und Willkürlichkeit der Grammatik, die geeignet ist, einer Relativismus-Hypothese wieder Vorschub zu leisten,
4. die Reduktion der philosophisch-wissenschaftlichen Fragestellung auf die Untersuchung von Wortbedeutungen und
5. ein Widerspruch zwischen Methodologie und Methode.

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ANMERKUNGEN

1 Alle Quellenangaben zu Schriften Humboldts nach Band- und Seitenzahl der Akademie-Ausgabe: Wilhelm von Humboldt, Gesammelte Schriften, Bd. I—XVII, hrsg. v. d. Königlich Preußischen Akademie der Wissenschaften (Berlin 1903—1936).

2 An anderer Stelle spricht Humboldt von der Sprache auch als dem ,,bildenden Organ des Gedanken'' (VII, S. 53; VI, S. 152), Wittgenstein und Cassirer hingegen bestimmen sie als das ,,Vehikel des Denkens'' ((PU, § 329); E. Cassirer, Wesen und Wirkung des Symbolbegriffs (Darmstadt 1976), S. 157).

3 C. Menze, Wilhelm von Humboldts Lehre und Bild vom Menschen (Ratingen bei Düsseldorf 1965), S. 229.

4 Vgl. C. G. Hempel, Grundzüge der Begriffsbildung in der empirischen Wissenschaft (Düsseldorf 1974), S. 47.

5 Vgl. F. de Saussure, Grundfragen der allgemeinen Sprachwissenschaft (Berlin 1967), S. 79 ff.

6 Wenn die quantitativen Begriffe auch vielleicht wirklich weitgehend beliebig sein mögen, wie etwa Längen- oder Gewichtsmaße, so gilt dies noch lange nicht für klassifikatorische Begriffe und für die qualitativen bzw. komparativen.

7 Vgl. dazu P. M. S. Hacker, Insight and Illusion: Wittgenstein on Philosophy and the Metaphysics of Experience (London/Oxford/New York 1972), S. 165.

8 Bei den komparativen und quantitativen Begriffen dominiert der Aspekt der Zweckmäßigkeit, bei den klassifikatorischen der der Angemessenheit oder Richtigkeit.

9 Hempel (1974), S. 68.

10 Cassirer, E., Philosophie der symbolischen Formen; Erster Teil: Die Sprache (Darmstadt 1977), S. 251 ff.

11 ,,dicere intra se'' bzw. ,,in corde suo dicere'', vgl. dazu De Trinitate, XV 10, 17.

12 Vgl. dazu A. Burkhardt, Bedeutung und Begriff: Die Fragwürdigkeit des Wittgensteinischen Methodologie-Konzepts, in: Zeitschrift für philosophische Forschung, Bd. 36 (1982).

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WITTGENSTEIN: DIE DEUTSCHSPRACHIGE TRADITION DER SPRACHKRITIK IN GEGENSATZ ZU IMMANUEL KANT

Annegret Stopczyk

Vor einem Jahr bemerkte Professor Stephen Körner in seiner Eröffnungsrede zum Wittgensteinsymposion, daß in England vielleicht der Eindruck entstanden sei, Wittgenstein sei vom Himmel gefallen, dabei sei er ganz normal mit dem Zug aus Wien angekommen. Damit deutete er an, daß Wien eine Lebensumgebung von Wittgenstein war, daß dort bestimmte Lebensformen üblich waren und eine bestimmte Sprache, die deutsche; und damit eine bestimmte Überlieferung der Sprachinhalte und der Art der Sprach- und Ideologiekritik, die im Wien der Jahrhundertwende in intellektuellen Kreisen eine Lebensform geworden war.

Wittgenstein war zu seiner Zeit nur einer unter mehreren im deutschsprachigen Raum, der Philosophie als Sprachkritik auffaßte. Um einige Namen zu nennen: Max Müller (Das Denken im Lichte der Sprache), Karl Otto Erdmann (Die Bedeutung des Wortes), Gustav Gerber (Die Sprache und das Erkennen), auch Nietzsche gehört dazu, und natürlich Fritz Mauthner und Karl Kraus.

Ihr Hauptanliegen wurde im Begriff „Sprachkritik" ausgedrückt; es drückte sich nicht neutraler wie heute als „Sprachphilosophie" oder „Sprachanalytik" oder „Bedeutungstheorie der Sprache" aus. Die Möglichkeit der Kritik an menschlichem intellektuellem Verhalten durch den Hinweis auf Sprach- und Schreibverhalten wurde auch zugleich — vor allen von Karl Kraus — als politisches Anliegen verstanden. Wittgenstein selbst sah sich als Therapeut; so in dem bekannten Satz, daß er der Fliege aus dem Fliegenglas helfen wolle, oder deutlicher in dem Satz: „Der Philosoph behandelt eine Frage: wie eine Krankheit" (PU, § 255), oder: „Es gibt nicht e i n e Methode, wohl aber gibt es Methoden, gleichsam verschiedene Therapien". (PU, § 133) Auch im Tractatus geht es Wittgenstein m.E. um „unsere Lebensprobleme", wenn auch er im Tractatus dafür keine Sprachmöglichkeit sah, d.h. für ihn keine Lösungsmöglichkeit.

Dieses kritische Engagement scheint mir in der heutigen sprachanalytischen Philosophie fast völlig verloren gegangen zu sein, und den Grund sehe ich in der zumeist mathematisch-logischen Rezeption, die Wittgenstein sich schon zu Lebzeiten gefallen lassen mußte. Paul Engelmann, ein Jugendfreund Wittgensteins, bemerkte,[1] daß Wittgenstein sich bei einem Treffen mit Schlick und anderen Denkern der positivistischen Richtung durch Rabindranath Tagore verständlich zu machen versuchte. Er las von diesem damals sehr bekannten indischen Mystiker Gedichte vor, und zeigte damit, daß ihm die letzten Seiten des Tractatus wichtiger seien als die anfänglichen und die mittleren. Noch heute passierte es in einem Berliner Seminar, daß englische und amerikanische Studenten völlig erstaunt taten, als sie den Satz hörten: „Wittgenstein war ein Mystiker"; einer stand sogar empört auf und rief: „Aber nein, Wittgenstein war ein Logiker!". Mir ist in dieser Diskussion klar geworden, daß es notwendig sein könnte, die Tradition oder Überlieferung der deutschsprachigen Sprachkritik zu kennen, und wenn es auch nur deshalb sein sollte, um Wittgenstein besser zu verstehen.

Das kritische Motiv ist ein durchgängiges Element deutschsprachiger Philosophen der Sprache.

David Pears sieht keinen grundlegenden Unterschied zwischen der Methode der Kritik eines Sprachphilosophen oder der Methode eines „Vernunft"-Philosophen wie Kant. Er schreibt: „daß es keinen grundlegenden Unterschied ausmacht, welche der beiden Möglichkeiten man wählt",[2] wenn man philosophiert; denn die zu erforschenden Daten könnten in zweierlei Form gegeben sein: „Sie können in psychologischer Form als Ideen, Gedanken

und Denkweisen gegeben sein; oder sie können in sprachlicher Form als Wörter, Sätze und Redetypen gegeben sein. Kants Kritik geht von den Daten der ersten Art aus, und die zweite Welle kritischer Philosophie . . . geht von den Daten der zweiten Art aus".[3] Pears sieht Wittgenstein und Kant als die beiden Philosophen der kritischen Art an, weil sie beide Grenzen gezogen hätten, der eine in der Sprache, der andere in der Vernunft. Abgesehen davon, daß Kant sich gegen diese psychologische Reduktion seines Vernunftbegriffs gewehrt hätte, gab es schon zu Kants Zeiten diese ,,Zweite Welle der Kritik", nämlich mit Reinhold und Gruppe, und vor allen mit Herder und Hamann und dem Herderschüler Humboldt, über den Armin Burkhardt im Vergleich zu Wittgenstein referierte. Es ist in gewisser Weise sogar zu beobachten, daß diese ,,Zweite Art der Kritik" bis zur Jahrhundertwende latent in der deutschsprachigen Literatur und Philosophie vorhanden geblieben ist, nur ist sie niemals akademisch geworden, es sei denn als eine Spezialität der Philologie. Wittgenstein wurde zunächst in England anerkannt, und wird erst in letzter Zeit bei uns akademische Norm. Ich habe noch vor zwei Jahren in einer Vorlesung gehört: ,,Wer sich mit Sprache beschäftigt, hat die Vernunft schon verraten".

Hamann und Herder bezweifelten die kritische Absicht der kantischen Philosophie. Herder schrieb gegen die Kritik der reinen Vernunft:

> Sprache ist das Kriterium der Vernunft, wie jeder echten Wissenschaft, so des Verstandes. Wer, gesetzt es geschähe auch durch den feinsten Scharfsinn, sie verwirrt, verwirrt die Wissenschaft, verwirrt den Verstand des Volkes, dem sie gehört. Und diese Sprache nennt sich k r i t i s c h, d.h. genau, bestimmt, bis zum Kriterium deutlich. Schwerlich ist der Name Kritik je gemißbraucht worden wie bei dieser kritischen Sprache . . .[4]

des Kant. Und Hamann schreibt: ,,Bei mir ist nicht soviel die Frage: ‚Was ist Vernunft' sondern vielmehr: ‚Was ist Sprache!' und hier vermute ich den Grund aller Paralogismen und Antinomien . . ."[5]

Diejenigen, die damals für sich das Attribut ,,kritisch" beanspruchten, wandten sich gerade gegen Kant, der nach ihrer Auffassung nur ein neues Idol geschaffen hätte, die reine Vernunft. Hamann bemerkte:

> Die Leute reden von Vernunft, als wenn sie ein wirkliches Wesen wäre.[6] Sein, Glaube, Vernunft, sind lauter Verhältnisse, die sich nicht absolut behandeln lassen, sind keine Dinge, sondern reine Schulbegriffe, Zeichen zum Verstehen, nicht bewundern, Hilfsmittel, unsere Aufmerksamkeit zu wecken und zu fesseln.[7] Kant machte Gott zum Ideal ohne zu wissen, daß seine reine Vernunft eben dasselbe ist.[8]

Herder schrieb an Hamann:

> Auch in den Prinzipien der sogenannten Philosophie bin ich mit Ihnen ganz einig: denn auch mir haben die abstrahierten Worte und Definitionen von Kirche, Staat, Naturrecht, Gesellschaft nie Genüge getan; und eben die geheimen nauseae darüber haben mich zu meiner Philosophie der Geschichte getrieben; es ist, wenn ich diese allgemeinen philosophischen Erörterungen lese, als ob ich einen Traum erzählen hörte, noch Staat und Gesellschaft existieren in dergleichen philosophischer Reinigkeit und Klarheit.[9]

Und Hamann schreibt zurück: ,,Alles Geschwätz über Vernunft ist reiner Wind".[10]

Wogegen sich Hamann und Herder wandten, wandte sich m.E. auch Wittgenstein; z.B. in dem bekannten Aphorismus darüber, was passiere, wenn ,,die Sprache feiert" (PU, § 38), gleichsam, als ob in einem okkulten Vorgang bei mehrmaligem Aussprechen eines Wortes das Wort so deutlich wie ein Ding werden könnte.

Kriterium der Kritik bei Hamann und auch Herder und Wittgenstein ist sozusagen ,,die sinnliche Deckung eines Wortes" (Mauthner vergleicht dies mit der Deckung eines Schecks). Für was soll das Wort oder der Satz stehen? Für das Wort ,,Vernunft" stünde nach Hamann und Herder nichts, oder Wind; und ohne es explizit zu sagen, suchten sie nach ,,festen Kriterien" und nicht nach ,,geistigen" — oder ,,windigen", wie sie sagen würden. Trotzdem weigerten sich Hamann und Herder als ,,feste Kriterien" nur empirische Gegebenheiten zu akzeptieren, so wie es Wittgenstein im Tractatus versucht hatte, indem er den Begriff

der Welt als die Gesamtheit der Tatsachen bestimmte, und eine Tatsache bestünde aus den Sachverhalten der Dinge, d.h. aus der Konstellation von Gegenständen.

Hamann sah ein ,,festes Kriterium" in der Überlieferung der Worte und in der Tradition der Schrift und im Sprachgebrauch: ,,Was man in morgenländischen Zisternen sucht, liegt im sensu communi des Sprachgebrauchs".[11] Er suchte sozusagen nach den ,,Urworten" in den ältesten überlieferten Schriften, und versuchte, sich mit Sätzen und Worten dieser alten Schriften verständlich zu machen, so daß er seiner Zeit als Mystiker oder ,,Magus des Nordens" galt. Das Judentum faßte er dabei als Aufgabe gegen das ,,Heidentum" auf: ,,Vielleicht ist aber ein ähnlicher Idealismus die ganze Scheidewand des Judentums und Heidentums. Der Jude hatte das Wort und die Zeichen; der Heide die Vernunft und ihre Weisheit —".[12]

Herder suchte ,,feste Kriterien" in der ,,Geschichte der Menschheit" und in der Orientierung der Sprache an der sinnlichen akustischen Wahrnehmung, dem Gehör. Er war der Erste, der Volkslieder sammelte, um aus der Alltagssprache eines Volkes auf seine ,,inneren Bewegtheiten" zu schließen. Durch ihn wurden Dichter in der Sturm- und Drangbewegung inspiriert, sich volkstümlich auszudrücken, und die gelehrte Sprache als künstliche tote Sprache zu verhöhnen. (Ein Resultat davon ist Goethes Faust.) Hauptmerkmal für Herders Sprachkriterium ist ebenso wie für Hamann die Überlieferung der Sprache, aber die Überlieferung der Alltagssprache, d.h. der Sprache, mit der gelebt wurde (Sprache als Lebensform). Unsere Gedanken und Ideen seien nur neue Kombinationen sprachlicher Tradition und Überlieferung. Um also einen Gedanken zu verstehen, müsse man die Genese dieses Gedankens verstehen, seinen Wortgebrauch in der geschichtlichen Entwicklung aufsuchen und die gegebene Sprache als gewordene auffassen, nie als absolute Gegebenheit, wozu aber wohl Wittgenstein neigte.

Auf diese beiden Philosophen, Hamann und Herder, stützte sich auch Fritz Mauthner in seinen dreibändigen Beiträgen zu einer Kritik der Sprache, die 1901 erschienen sind. Wittgenstein kannte diese Sprachkritik und erwähnte sie kurz im Tractatus (4.0031). Im Unterschied zu Herder und Hamann erwartete Mauthner von der Sprache die Möglichkeit von Welterkenntnis im Sinne von Wittgensteins Weltbegriff im Tractatus. Sprache sollte ein Erkenntnismittel für die empirische Natur sein; und da er erkannte, daß Worte niemals die Natur ausdrücken könnten, höchstens metaphorisch benennen, glaubte er Grund zu haben, an der Sprache zu verzweifeln und Schweigen zu gebieten. In der schweigenden Anschauung der Natur — und somit in Übereinstimmung mit Natur — sei ein mystisches Welterkenntniserlebnis in der mystischen Stimmung vielleicht möglich. ,,Welterkenntnis durch Sprache ist unmöglich",[13] bedauerte Mauthner, und daher sei die beste Philosophie jene, die die Menschen durch Sprachkritik zum Schweigen brächte. Er gab zwar zu, daß ,,eine Kunst durch Sprache möglich" sei, ,,die Poesie",[14] aber nur als eine entfernte Ahnung der mystischen Übereinstimmung von Mensch und Natur. Wittgenstein lehnte diese rigorose Art der Sprachkritik ab, und wies die Sprache als ausreichend für die Benennung der Tatsachen aus, allerdings als Abbildung, so daß naturwissenschaftliche Sätze sinnvoll gesagt werden könnten, obgleich sie nach Mauthner nur eine Metapher seien, oder ein Bild, wie Wittgenstein schrieb.

Obwohl Mauthner sich auch als Dichter und Schriftsteller betätigte, und Wittgenstein aus einer technisch-mathematisch-logischen Schulung kam, vertrat Wittgenstein in viel stärkerem Maße als Mauthner die Sehnsucht nach Ausdruck des Nichtempirischen, des Nichtnatürlichen oder Nichtdinglichen, d.h.: es reichte ihm so wenig wie Herder und Hamann, nur die naturwissenschaftlichen Sätze oder empirischen Sätze sagen zu können. ,,Wir fühlen, daß selbst, wenn alle m ö g l i c h e n wissenschaftlichen Fragen beantwortet sind, unsere Lebensprobleme noch gar nicht berührt sind". (TLP 6.52)

Und dieses Gefühl ist es auch, das einige Philosophierende haben, sobald sie sich mit der sprachkritischen Methode Wittgensteins befassen. Auch in der Sekundärliteratur werden in den seltensten Fällen unsere sogenannten ,,Lebensprobleme" sprachkritisch erforscht. In den dort angeführten Beispielen geht es meistens um empirische Sätze wie ,,es regnet oder es regnet nicht" oder ,,der Baum ist grün" oder wenn A behauptet, daß B, dann ist B ent-

weder wahr oder falsch“; diese Art sprachanalytischer Schriften scheinen sich kaum von linguistischen Schriften zu unterscheiden, und nehmen zu lebensproblematischeren Sätzen wie ,,gibt es Freiheit?“ oder ,,es muß einen Gott geben!“ keine Stellung.

Vielleicht paßt hierzu genau die Unzufriedenheit, die Wittgenstein spürte, nachdem er seinen Tractatus beendet hatte; 1919 schrieb er an seinen Freund Paul Engelmann:

> Ihren Zustand glaube ich ganz zu verstehen. Denn ich befinde mich gerade jetzt in einem ähnlichen und zwar schon seit meiner Rückkehr aus der Gefangenschaft. Ich glaube, es geht damit so zu: Wir gehen nicht auf der direkten Straße zum Ziel, dazu haben wir — oder ich wenigstens — nicht die Kraft. Dagegen gehen wir auf allen möglichen Seitenwegen und so lange wir auf einem solchen vorwärtskommen, geht es uns leidlich. Wie aber ein solcher Weg aufhört, so stehen wir da und werden uns erst bewußt, daß wir ja nicht dort sind, wo wir hingehören. —“ [15]

Der Seitenweg im Tractatus war die Untersuchung der naturwissenschaftlichen Sätze, aber sein Ziel war, menschliche Lebensprobleme zu lösen, und so ist es nicht verwunderlich, daß er Jahre später einen zweiten Versuch unternahm, und sich endlich mit jenen Begriffen befaßte, aus denen möglicherweise ,,menschliche Lebensprobleme“ oder besser ,,zwischenmenschliche Lebensprobleme“ entstehen — mit Begriffen wie: denken, verstehen, geistig, erinnern, Gefühl. Und hiermit befindet er sich wieder im Einklang mit Herder und Hamann, und untersucht die alltägliche Sprache, allerdings ohne auf die Überlieferung zu achten, obwohl er fast wie in einem Nebensatz erwähnt, daß unser Weltbild der überkommene Hintergrund sei, auf welchem wir zwischen wahr und falsch unterscheiden würden (ÜG, § 94).

Mauthner vertritt folgende These:

> Die Sprache ist, wie ich nicht müde werden darf zu wiederholen, nichts als das mangelhafte Mittel der Menschen, sich in ihrer Erinnerungswelt zurechtzufinden, das Gedächtnis, das heißt ihre eigene Erfahrung und die ihrer Ahnen, auszunützen, mit aller Wahrscheinlichkeit, daß diese Erinnerungswelt der Wirklichkeitswelt ähnlich sein werde.[16]

Bei Mauthner bedeutet diese Erinnerung aber nur ein An-denken an alles, was durch die Sinne aufgefaßt würde, ein Er-innern an empirische Erfahrung. Bei Wittgenstein bleiben die Kriterien der Erinnerung offen, er fragt z.B., ob es möglich sei, sich an ein Gefühl zu erinnern. Wittgenstein untersucht im zweiten Versuch diese andere Möglichkeit der Sprache, nämlich nicht nur zu benennen oder abzubilden, sondern auszudrücken. Im ersten Versuch geht es hauptsächlich um Sprechmöglichkeiten über die Außenwelt des Menschen, der nichtmenschlich verursachten Gegebenheiten; im zweiten Versuch geht es um Sprachmöglichkeiten der sogenannten ,,Innenwelt“ des Menschen, oder traditioneller ausgedrückt: im ersten Fall um Naturerkenntnis, im zweiten Fall um Selbsterkenntnis.

Das Letzere ist es, was Herder und Hamann durch Sprachforschung und Sprachkritik zu erreichen sich vornahmen, und sie sahen die Sprache dazu als beste Möglichkeit an. Mauthner dagegen wehrt diese Möglichkeit — daß Menschen etwas über sich selbst durch ihre Aufmerksamkeit auf Sprache erkennen könnten — total ab.

> Der Grund liegt aber nicht in mystischen Dingen, sondern im Wesen der Sprache, welches ein Werkzeug ist zum Verstehen der Außenwelt und darum ungeeignet zu Urteilen über die Innenwelt. Ich muß es öfter als dreimal sagen: Die Sprache ist wesentlich materialistisch, sensualistisch, . . . die Welt an sich ist für die Sinne und ihre arme Sprache nicht faßbar, und schon gar nicht die Welt des inneren Erlebens, die psychische Welt.[17]

Mauthners Erwartung an Sprachmöglichkeit ist aber eben die seltsam naive, daß Sprache identisch sein müsse mit dem, was sie benenne oder ausdrücke, daß sie kein Bild sein dürfe, um wahr zu sein. Wittgenstein ist nicht verzweifelt darüber, daß Sprache ,,nur“ ein ,,Bild der Wirklichkeit“ sein könne, und Herder meint sogar, Sprache könne das innere Erleben auch nur als Bild ausdrücken, aber mit dem Unterschied, daß z.B. Gefühle durch Sprache in dem Hörenden oder Lesenden *erzeugt* werden können, und zwar dieselben Gefühle, die der Sprecher oder Schreiber während seiner Sprachtätigkeit hatte; dasselbe kann Sprache für

Empirisches nicht leisten, auch wenn der Sprecher noch so nachhaltig das Wort „Glasperle" ausspricht, wird er nur dadurch doch niemals eine Glasperle in die Hand bekommen. Bloße Worte aber können Unsprachliches erzeugen, nämlich Gefühle, aber keine Dinge. Diese letztere Erwartung stand wohl hinter Mauthners Sprachverzweiflung, frei nach dem Motto: im Anfang war das Wort und das Wort erschuf die Welt.

Herder machte die Dichter auf die Gefühlserzeugung durch Sprache aufmerksam. Der Dichter solle

> Empfindungen ausdrücken; Empfindungen durch eine gemalte Sprache in Büchern ist schwer, ja an sich unmöglich. Im Auge, im Antlitz, durch den Ton, durch die Zeichensprache des Körpers — so spricht die Empfindung eigentlich und überläßt den toten Gedanken das Gebiet der toten Sprache. Nun, armer Dichter, und du sollst deine Empfindungen aufs Blatt malen, sie durch einen Kanal schwarzen Safts hinströmen, du sollst schreiben, daß man es fühlt, und sollst dem wahren Ausdrucke der Empfindung entsagen, du sollst nicht dein Papier mit Tränen benetzen, daß die Tinte zerfließt . . . Du mußt den natürlichen Ausdruck der Empfindung in den Perioden, den der Lenkung und Bindung der Wörter ausdrücken.[18]

Wenn der Leser „ergriffen" sei von dem, was er lese, wenn er selbst fühle, was der Dichter fühlte, hätte Sprache — dichterische Sprache — ihren Sinn erfüllt. Und genau dieses Kriterium des Sprachausdrucks ist es, das Wittgenstein für sich in Anspruch nimmt. Es ist ein literarisches oder dichterisches Kriterium der Genauigkeit, kein logisches der Exaktheit; es soll sich etwas z e i g e n, was selbst ohne Worte ist, aber mit Worten vermittelbar, als Gefühl des Lesers. Das, was sich in der Sprache zeige, sei das Unaussprechliche, das Mystische, und Wittgenstein hofft, es hätte sich sein Problem g e z e i g t, aber im Vorwort des Tractatus schreibt er, daß seine „Kraft zur Bewältigung der Arbeit zu gering" (TLP, Vorwort) sei, weil der Ausdrucksanspruch seiner Sprache ein dichterischer oder literarischer ist.

Ich glaube, wer es versteht, Wittgenstein literarischer zu lesen, und nicht nur die exakten Sätze der Logik und Naturwissenschaft sucht, der wird nicht mehr jenes unbefriedigende Gefühl verspüren, das Wittgenstein befürchtete, als er schrieb: „Diese Methode wäre für den anderen unbefriedigend — er hätte nicht das Gefühl, daß wir ihn Philosophie lehrten —" (TLP 6.53).

In der deutschsprachigen Philosophie der Sprachkritik war es nie ein Mangel gewesen, als schöpferischer, d.h. dichterischer oder literarischer Denker zu gelten, und Wittgenstein wäre wohl der Letzte gewesen, der seine Sprachkritik den Logikern und Mathematikern überlassen wollte. Als Zeugnis dafür kann ich leider nur Paul Engelmanns Buch über Wittgenstein angeben und natürlich Wittgensteins Schriften selber. Vor allem in den Philosophischen Untersuchungen zeigt sich die Schwierigkeit, über sogenanntes „Inneres" zu schreiben in seinem fragmentarischen und dialogischen Sprachstil, der auch an Hamann erinnert. Daß ein logisch-mathematisch orientierter Denker wie Russell nichts mit dieser „Zweiten Sprache" Wittgensteins anzufangen wußte, und die Untersuchungen als unwichtig verwarf, liegt wohl auch an seiner undichterischen Auffassung und Leseart des Tractatus, so daß sich Wittgenstein von Anfang an mißverstanden fühlen konnte. So schrieb er an Engelmann über Russells Einleitung zu seinem Tractatus: „Es ist ein Gebräu, mit dem ich nicht einverstanden bin",[19] und „Mein Buch wird wahrscheinlich nicht gedruckt werden, da ich mich nicht entschließen konnte, es mit Russells Einleitung, die in der Übersetzung noch viel unmöglicher aussieht als im Original, erscheinen zu lassen".[20]

Vielleicht ist es auch gar nicht selbstverständlich, über Wittgenstein zu wissen, daß er mehr Literatur las als philosophische Schriften; z.B. Goethe, Tolstoi, Mörike, Eichendorff, Gottfried Keller, Tagore, Uhland, Grillparzer, Ibsen; daß er Arbeitergedichte sammelte und sich als einzige Zeitschrift in seine norwegische Einsiedelei die sprach- und ideologiekritische „Fackel" von Karl Kraus nachschicken ließ.

Sein Leseverhalten war genau jenes klassische, das Herder den Dichtern nahe legte; der Leser solle fühlen, was der Dichter fühlte. Wittgenstein schrieb über ein Stück von Tagore:

> Das Stück hat auf mich keinen wirklich tiefen Eindruck gemacht, obwohl die große Weisheit darin offensichtlich ist — oder vielleicht gerade deshalb. Es hat mich nicht erschüttert . . . Es kommt mir so vor, als käme alle Weisheit aus dem Eiskasten; ich würde mich nicht sehr darüber wundern, zu hören, daß er das alles zusammengelesen und gehört . . . aber nicht eigentlich selber g e f ü h l t hat. Vielleicht aber verstehe ich seinen Ton nicht: aber mir scheint er nicht der Ton eines von der Wahrheit e r g r i f f e n e n zu sein. (Wie etwa der Ton Ibsens.) . . . Ich habe immer mit Interesse gelesen, aber ohne gepackt zu werden.[21]

Auch daß Wittgenstein einen Ton in der geschriebenen Sprache zu hören vermeint, zeigt seine literarische oder dichterische Leseart, die Herders Auffassung von Schreiben und Lesen vollständig bestätigt. Zum Schluß möchte ich noch einige Sätze von Herder zur Philosophie der Sprachkritik anmerken.

> Vielleicht wundert sich mancher, daß ich von einer leeren Sprachmaterie so viel hoffe, allein ich habe mehr Recht, mich zu wundern, wie man noch so wenig Vorteile davon gezogen, daß man die Sprache als ein Vehiculum menschlicher Gedanken und den Inhalt aller Weisheit und Kenntnisse hätte ansehen können.[22] Wir haben durch die Sprache denken gelernt, sie ist also ein Schatz von Begriffen . . . Die wahre und einzige Methode der Philosophie ist also die analytische; diese muß notwendig die Begriffe des gesunden Verstandes zum Grunde legen und von hier sich zu Höhen der abstrahierenden Vernunft erheben . . . Daß diese Art zu philosophieren schwer sei, ist offenbar, denn sie kann nicht mit Wörtern spielen wie die Arithmetik mit Zeichen . . . aber Begriffe aus den gegebenen Worten entwickeln und deutlich machen, das ist Philosophie.[23]

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ANMERKUNGEN

1 Engelmann, P., Wittgenstein: Briefe und Begegnungen (München 1970), S. 34.
2 Pears, D., Wittgenstein (München 1971), S. 28.
3 Pears (1971), S. 28.
4 Herder, J. G., Sprachphilosophie, ausgew. Schriften (Hamburg 1960), S. 227.
5 Hamann, J. G., Der Magus des Nordens (Wiesbaden 1950), S. 57.
6 Hamann (1950), S. 48.
7 Hamann (1950), S. 48.
8 Hamann, J. G., Briefwechsel mit Jacobi, in: J. G. Hamann, Werke, Bd. V (Gotha 1868), S. 154, 3.12.1785.
9 Hamann, J. G., Briefe, Bd. V (Frankfurt a. M. 1965), Nr. 759.
10 Hamann (1965), Nr. 766.
11 Hamann (1965), Nr. 721.
12 Hamann, Schriften zur Sprache, Metakritik über den Purismus der Vernunft (Frankfurt a. M. 1967), S. 227.
13 Mauthner, F., Beiträge zu einer Kritik der Sprache, Bd. 1—3 (Leipzig ^{3}1923), S. 97.
14 Mauthner (1923), S. 97.
15 Engelmann (1970), S. 23.
16 Mauthner (1923), Bd. 3, S. 2.
17 Mauthner (1923), Bd. 1, S. 235.
18 Herder, Ein Lesebuch (Berlin und Weimar 1978), S. 12.
19+20 Engelmann (1970), Briefnr. 27 und 30.
21 Engelmann (1970), Briefnr. 43.
22 Herder (1960), S. 98.
23 Herder (1960), S. 154f.

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WITTGENSTEINS TRANSZENDENTALE THESE ÜBER DAS SEIN

Wilhelm Lütterfelds

Wittgenstein bermerkt einmal (1931), Kants Lösung des Problems der Philosophie sei die Einsicht, daß man eine Tatsache, die einem Satz entspreche, nicht anders als durch die Wiederholung dieses Satzes beschreiben könne. Und darin zeige sich eben die Grenze der Sprache. Läßt sich diese versteckte Affinität von Kants und Wittgensteins Denken am Existenzbegriff belegen? Ist es insofern berechtigt, beim späteren Wittgenstein von einer transzendentalen These über das Sein zu sprechen?

Von vielen akzeptiert ist Kants kritische Auffassung, Dasein sei 1. kein reales Prädikat. Es könne also auch nicht zum Begriff eines Dinges hinzukommen. Vielmehr bedeute es die Position des Dinges samt dessen Bestimmungen an sich selbst oder außer seinem Begriff. Und einem Gegenstand Existenz zusprechen heiße, ihn in Raum und Zeit an sich selbst setzen. 2. Nicht weniger bekannt ist Kants kritische Feststellung gegenüber dem ontologischen Gottesbeweis, Existenzsätze seien synthetisch, d.h. sie basierten auf einer Erfahrung oder sie unterstellten zumindest deren Möglichkeit nach den empirischen Gesetzen des Erfahrungszusammenhanges. 3. Schließlich findet sich eine weitere bekannte These Kants über das Sein in seiner Widerlegung des Idealismus. Ihr zufolge ist das Dasein der Dinge, die unabhängig von uns in Raum und Zeit existieren, keineswegs sekundär gegenüber dem empirischen Bewußtsein unseres Daseins oder gar von diesem Bewußtsein nur durch irgendeine Operation zu erschließen. Sondern es sei mit meinem empirischen Bewußtsein unmittelbar gegeben, ja identisch verbunden. Sich in einem bestimmten Wahrnehmungszustand befinden bedeute, Wirkliches in Raum und Zeit sehen. 4. Nicht zuletzt hat Kant die These vertreten, das Prädikat des Daseins lege fest, daß ein Gegenstandsbegriff einem bestimmten subjektiven Erkenntnisvermögen, nämlich dem der Wahrnehmung zuzuordnen sei und hier seinen Ursprung habe; während etwa die Aussage, ein Gegenstand sei möglich, ihn z.B. nur mit dem Denkvermögen verknüpft.

Diese vier Thesen Kants sind offenbar nicht miteinander verträglich. Wenn Existenzsätze synthetisch sind und auf einer Erfahrung basieren, dann kann das Dasein eines Dinges in Raum und Zeit nicht unmittelbar, ja identisch mit einem Bewußtseinszustand verbunden sein. Dies macht den Gedanken einer Synthese überflüssig. Andererseits läßt sich der synthetische Charakter von Existenzsätzen nur dann halten, wenn Existenz ein reales Prädikat ist, das einen Begriff irgendwie bestimmt. Soll dagegen Dasein zwar kein reales, aber ein logisches oder analytisches Prädikat sein, dann wäre Erfahrung für die Existenzbehauptung überflüssig. Schließlich ist Kants These, Existenz prädizieren bedeute, einen vorgestellten Gegenstand außer seinen Begriff oder an sich selbst setzen, nicht mit dessen Rückführung auf einen bloß subjektimmanenten Wahrnehmungsursprung vereinbar. Nicht zuletzt kann selbst dann, wenn das Dasein eines Dinges an sich selbst innerhalb der Anschauungsform von Raum und Zeit verbleibt, es doch niemals unserer Handlung des Setzens entspringen, soll Kants Realismus Geltung behalten, der besagt, daß uns das Dasein der Dinge gegeben wird. Auch scheinen Kants Thesen über die Existenz dann noch mehr Probleme hervorzurufen, wenn es um das Dasein meiner selbst, genauer: meiner mentalen Handlungen und Zustände geht.

Fragt man sich, wodurch Kants Existenztheorie einen transzendentalen Charakter erhält, dann läßt sich dies m.E. nur beantworten, wenn man Existenz als eine jener Kategorien auffaßt, wodurch unser Urteilen überhaupt einen Gegenstandsbezug oder objektive Geltung erhält. Dies bedeutet, daß die Kategorien die Wahrheitsfähigkeit des Urteils begründen, d.h. die Möglichkeit, daß es in seiner Behauptung mit einem empirischen Sachverhalt übereinstimmen kann. Und die Leistung der Existenzkategorie ist es, jeden gegebenen Anschauungs-

inhalt für unser Bewußtsein auf einen subjektunabhängigen Sachverhalt in Raum und Zeit zu beziehen.

Wenn Existenz überhaupt kein Prädikat in einem empirischen Satz, sondern eine der Möglichkeitsbedingungen unserer Erfahrung ist, dann sind synthetische Existenzsätze unsinnig, und man kann sie keineswegs unter den empirischen Sätzen als einen besonderen Typ herausheben. Das transzendentale Prädikat „Dasein" bezeichnet eine Bedingung der Erfahrung, die erfüllt sein muß, soll ein empirisches Urteil überhaupt einen (und sei es falschen) objektiven Geltungsanspruch erheben können. Und diese Bedingung kann man nicht zum behauptbaren Inhalt eines empirischen Satzes machen. U.a. deshalb nicht, weil es andernfalls auch sinnvoll sein müßte, von der Falschheit einer derartigen Behauptung zu sprechen. Es existierte dann jedoch nicht einmal ein Gegenstand, mit dem die Behauptung nicht übereinstimmen könnte. Der modifizierte Beispielsatz Kants „Die hundert Taler des Kaufmanns X existieren" kann deshalb nicht synthetisch sein und nichts Erfahrbares behaupten. Im Sinne einer konsequenten Interpretation des transzendentalen Ansatzes besagt dieser Existenzsatz, daß gegebene sinnliche Daten begrifflich als hundert Taler des Herrn X bestimmt und identifiziert und so zu einem empirischen Sachverhalt werden, von dem man etwas mit Wahrheitsanspruch prädizieren kann. Diese begriffliche Bestimmung und Identifizierung ist insofern transzendental, als durch sie gegebene anschauliche Daten überhaupt erst in einen Bezug zu unserem Bewußtsein treten und zu einem subjekt-unabhängigen Worüber unserer Urteilshandlung werden. Dem entspricht es, daß der fragliche Existenzsatz auch nicht als analytischer Satz interpretiert werden darf, etwa insofern, als der Subjektausdruck implizit auf etwas Existierendes Bezug nimmt und eben dies im Prädikat explizit ausgesagt wird. Denn Existieren kann überhaupt keine, also auch keine analytische, Bestimmung des Subjektausdrucks sein, weil es lediglich dessen urteilsermöglichende Anwendung auf sinnliche Daten „aussagt", die dadurch für uns zu einem bestimmten empirischen Sachverhalt werden.

Genauer zu erörtern wäre vor allem der Status der transzendentalen Sätze, in denen Kant kategoriale Möglichkeitsbedingungen von Erfahrung und Gegenstand auszusagen versucht und die er als synthetische Sätze a priori ausgibt, sowie der idealistische Konstitutionsgedanke. Auch wäre es notwendig, die Möglichkeit der Umformulierung bestimmter Typen von Existenzsätzen (wie „Es gibt in diesem Raum Stühle" oder „Es gibt Zahlen" oder „Es gibt Kant nicht mehr" oder „Es gibt in Kirchberg keinen Dom"), wie die transzendentale Theorie der Existenz es nahelegt, zu untersuchen, d.h. ob und inwieweit sie sich in Aussagen über die urteilsermöglichende Anwendung von empirischen Begriffen übersetzen lassen.

Einige Bemerkungen des späten Wittgenstein über die Rolle des Ausdrucks „Existenz" in unserem Sprechen lassen sich m.E. nun durchaus als sprachanalytische Transformation der transzendentalen Überlegungen Kants interpretieren. In dem Sprachspiel der Beschreibung dieses Zimmers können wir bestimmte Dinge als Elemente oder einfache Gegenstände unseres Sprachspiels auswählen und z.B. „Tisch" oder „Stuhl" nennen. Wie sollen wir nun die Aussage verstehen „Dieser Stuhl existiert"? Ist sie sinnvoll und dann eine analytische oder synthetische Existenzprädikation? Oder handelt es sich überhaupt nicht um eine Aussage über diesen Stuhl? Was ist dann ihre Funktion im Sprachspiel und was die Bedeutung des scheinbaren Existenzsatzes? Wittenstein ist in PU 50 der Auffassung, daß man einem Element des Sprachspiels weder Sein noch Nichtsein beilegen kann, daß man also auch nicht einmal sagen kann, dieses Element müsse existieren, um es benennen zu können. Elementare Existenzaussagen sind vielmehr Paradigmensätze eines Sprachspiels; genauer, sie betreffen als grammatische Sätze unsere Darstellungsweise und legen fest, daß etwas ein Instrument oder Mittel unserer Darstellung ist, und zwar einer Darstellung, welche „die Art ihres Bedeutens erst von ihrer Bedeutung, von der Welt, erhält" (PB 47). Nach dieser Theorie sind 1. Paradigmen für ein Sprachspiel unentbehrlich, weil es ohne sie keine kriteriell fundierte Darstellung der Welt gibt; 2. ist die scheinbare Existenzaussage über einen paradigmatischen Gegenstand eine Aussage über die Anwendung seines Ausdrucks, und sie sagt, daß dieser zu einer Darstellung verwendet werden muß, in der man einen Wahrheitsanspruch erhebt.

Zur Erläuterung dieser zwei Thesen dient Wittgensteins Hinweis in PU 50 auf die Not-

wendigkeit des Urmeters für das Meßverfahren und auf die Notwendigkeit einer fiktiven Farbe Ursepia für Farbaussagen. Beide sind instrumentelle Muster unserer Darstellung von Größen und Farben. Mit ihnen muß letztlich jeder Gegenstand verglichen werden, dem wir eine bestimmte Größe oder Farbe beilegen. Analog dazu kann man eine Aussage wie ,,Der Stuhl steht neben dem Tisch" nur dann als Darstellung eines Sachverhaltes auffassen, wenn z.B. die identifizierende und klassifizierende Anwendung des Ausdrucks ,,der Stuhl" korrekt ist. Das Kriterium für die Korrektheit der Anwendung ist nun in unserem Sprachspiel der Rückgang auf die Erstverwendung des Ausdrucks. Darin wird ein bestimmter Gegenstand eben so bezeichnet, und zwar mit Hilfe einer hinweisenden Geste. Dieser Gegenstand wird dadurch zum Paradigma unseres Ausdrucksgebrauchs, während die Verwendung dieses Ausdrucks auf die Bezeichnung von Gegenständen seines Typs eingeschränkt ist. Mit diesem Gegenstand als der Bedeutung unseres Ausdrucks muß verglichen werden, wenn wir den Ausdruck überhaupt bedeutungsvoll, d.h. in einer klarstellenden Funktion und korrekt auf andere Gegenstände anwenden wollen. Es ist klar, daß wir dann von dem paradigmatischen Gegenstand nicht sagen können, er sei ein Stuhl oder er sei kein Stuhl. Man müßte ihn mit sich selbst vergleichen, damit eine derartige Aussage überhaupt eine Bedeutung haben könnte. Allein, wie sollte das möglich sein?

Muß aber nicht der für ein Sprachspiel elementare Gegenstand trivialerweise existieren, weil er andernfalls nicht bezeichnet und zum Paradigma werden könnte? Offenbar nicht, weil wir uns nur innerhalb eines Sprachspiels, d.h. mittels sprachlicher Ausdrücke auf die Gegenstände der Welt beziehen können. Diese sind nicht auch unabhängig von ihrer Bezeichnung für uns existent, sondern uns nur in der Anwendung eines Ausdrucks gegeben. Daß ein Gegenstand, z.B. ein Stuhl, existiert, heißt dann jedoch, daß etwas die Bedeutung des Ausdrucks ,,Stuhl" ist und daß dieser Ausdruck zur Darstellung derartiger Dinge verwendet wird. Insofern faßt Wittgenstein den Gegenstand zu Recht nicht als etwas Außersprachliches auf, das im Falle einer Bezeichnung notwendig existiert, sondern er rechnet ihn — gerade auch als eine vom Ausdruck verschiedene Entität — zur Sprache und versteht ihn als Instrument unserer Darstellung (Paradigma). Dasein heißt, Bedeutung eines paradigmatischen Ausdrucks sein.

Ein Existenzsatz über einen paradigmatischen Gegenstand ist demnach kein Satz über eine von der Bezeichnung vorausgesetzte Eigenschaft des Gegenstandes. Sondern er stellt bestenfalls die Existenz eines sprachlichen Darstellungsinstrumentes fest. Auch ist jener Satz kein versteckter Subjekt-Prädikat-Satz, der etwa besagt, daß ein bestimmtes Möbelstück ein Stuhl ist. Denn dies basiert bereits auf einem paradigmatischen Gebrauch der Ausdrücke. Die Feststellung über diesen Gebrauch ist nicht mit der Feststellung einer Dingeigenschaft zu verwechseln, die auf Grund der Anwendung des Ausdrucks erst beschreibbar wird; auch nicht mit einer solchen, die ihn einer Klasse von Gegenständen zuordnet. Daß schließlich der Gegenstand existiert, d.h. Bedeutung eines paradigmatischen Ausdrucks ist, läßt sich innerhalb des Sprachspiels nicht aussagen und in der Tat nur durch die wiederholte Anwendung seines Ausdrucks verdeutlichen.

Auf dieser semantischen Transformation von Existenz in Bedeutung beruht nicht nur der Versuch sprachanalytischer Philosophie, Ontologie durch (formale) Semantik zu ersetzen. Vielmehr läßt sich diese Interpretation von Existenz auch als eine transzendentale Deutung auffassen. Und zwar deshalb, weil durch die Transformation der Existenzaussage in eine Aussage über unsere Sprachspielparadigmen 1. Existenz weder ein analytisches noch ein synthetisches Dingprädikat ist; weil 2. die Existenzaussage auch nicht die Explikation einer impliziten Existenzaussage sein kann oder als umformulierter Subjekt-Prädikat-Satz im Sprachspiel gebraucht werden muß; sondern weil sie 3. den paradigmatischen Gebrauch eines Ausdrucks als Möglichkeitsbedingung unseres Sprachspiels festlegt, sofern wir darin einen Gegenstand mit Wahrheitsanspruch beschreiben wollen. Denn dies können wir nur, wenn für unsere Ausdrücke garantiert ist, daß ihnen etwas in der Welt als Bedeutung entsprechen kann; d.h. wenn wir unterstellen, daß sie immer auch ein Instrument unserer Darstellung sind. Sonst könnten wir mit unseren Ausdrücken nicht einmal etwas falsch beschreiben. Kantisch formuliert: Der

als Paradigmenangabe interpretierte Existenzsatz legt die semantische Objektivitätsbedingung einer Beschreibung fest.

Natürlich bleiben viele Fragen offen. Wie sind etwa nicht-paradigmatische Existenzsätze und negative oder partikulare Existenzsätze zu deuten? Generell muß es sich dabei um eine grammatische Aussage über unseren wahrheitsfähigen Ausdrucksgebrauch und nicht über Gegenstände eines Sprachspiels handeln; etwa derart, daß ein bestimmter Ausdruck nicht in einer wahrheitsfähigen Beschreibung gebraucht werden kann oder aber mehrmals, oder daß er auf einen paradigmatischen Gebrauch desselben Ausdrucks zurückzuführen ist. Ähnlich sind auch Aussagen zu interpretieren, die auf etwas Bezug nehmen, dessen paradigmatischer Gegenstand nicht mehr existiert. Und Existenzsätze der Form ,,Es gibt hier einen Gegenstand, der ein Stuhl ist'' lassen sich durchaus im Sinne der Paradigmentheorie umformen. Dann besagen sie entweder die Möglichkeit einer Paradigmenfestlegung oder sie legitimieren die Möglichkeit eines Ausdrucksgebrauchs auf Grund eines Paradigmenvergleichs. Wenn Wittgenstein schließlich schreibt: ,,Der Satz ,,Wäre es nicht, so könnte es keinen Namen haben'' sage so viel und so wenig wie ,,Gäbe es dieses Ding nicht, so könnten wir es in unserem Spiel nicht verwenden'''', so hat er zwar Existenzsätze über Gegenstände innerhalb eines Sprachspiels abgelehnt, aber zugleich läßt er Existenzsätze über Gegenstände als Paradigmen unserer Sprachspielausdrücke und damit über den Typ unseres Sprachspiels zu. Dies scheint mit darauf hinauszulaufen, daß Wittgenstein externe Existenzsätze akzeptieren könnte, worin wir die Art des Sprachspiels und dessen Welt festlegen, obwohl sich auch diese Sätze als (grammatische) Aussagen darüber verstehen lassen, daß ein bestimmtes Sprachspiel gespielt wird.

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WITTGENSTEIN'S INFLUENCE ON STRAWSON'S "DESCRIPTIVE METAPHYSICS"

Elena Panova

It is now rather difficult to disregard the remarkable fact that metaphysical, i.e. ontological problems are increasingly becoming the central points of discussion in the most serious philosophical works of our time. Long past are the days when they were ignored and when the positivists declared them absurd and not susceptible to theoretical discussion. Those who dare to consider ontological quests as an idle occupation are now regarded as old-fashioned. And yet, the question remains open: What does modern metaphysics mean, i.e. metaphysics which does not run counter to the scientific style of thinking?

At the end of *Critique of Pure Reason* Kant drew up the conclusion that metaphysics cannot be a science at all. Professor Peter Strawson, however, believes that Kant's verdict concerns the old speculative philosophy only. The new metaphysical investigation should be critical, that is, it should start not from analytical initial principles, but rather deduce their necessity from the necessity of a universal conceptual scheme. This is the problem of Kant's transcendental deduction of categories which Strawson treats in his *Individuals* as the basic problem of "descriptive metaphysics".

Strawson has read and reformulated Kant's thesis from the position of a philosopher educated in the British empirical and analytical tradition, who has, however, realized their theoretical limitations. It could be said that his re-thinking of some of the central ideas and problems of the *Critique of Pure Reason* was prompted by his desire to find a way out of those limitations. The examination of the actual use of words, which in Strawson's words is "the best and, indeed, the only sure way in philosophy"[1] should be relinquished, because "The structure he (the metaphysician) seeks does not readily display itself on the surface of language, but lies submerged".[2]

As regards the problem of defining the logical boundaries of human knowledge—i.e. of its necessary conceptual structure, only within which our thinking about things is possible—the influence of Kant's *Critique of Pure Reason* on Strawson's descriptive metaphysics is closely interrelated with the influence of Ludwig Wittgenstein's *Philosophical Investigations.* Even the term 'descriptive metaphysics' bears the stamp of the 'late' Wittgenstein. In his lectures, delivered (during the thirties) in Cambridge, one could find the contention that philosophy is 'purely descriptive'.

Strawson places his descriptive metaphysics into a wider theoretical and historical context, regarding it not only as an achievement of contemporary philosophic thought, but includes a number of philosophers throughout the ages, who, without having called themselves 'descriptivists' are looked upon as such. On the other hand, he contrasts 'descriptive metaphysics', with the representatives of the so-called 'revisionary metaphysics', which is to a high degree indentified with traditional metaphysics.

The distinction P. Strawson draws between "revisionary metaphysics" and "descriptive metaphysics" is too vague, particularly from a historical point of view. Descartes, Berkeley, Leibnitz are called "revisionary metaphysicians", while Aristotle and Kant are called "descriptive". Hume is somewhere in between, while the German nineteenth century idealists are nowhere. In any case, the "revisionary metaphysicians" want to improve the human conceptual apparatus through sophisticated and speculative philosophical analysis, while the "descriptive metaphysicians" rely on the natural conceptual scheme immanent in all human thinking.

Here the allusion to distinguishing between "logical" and "ordinary" languages is obvious. But in spite of Strawson's contention that it is difficult to find "pure" revisionary or de-

scriptive metaphysicians, even such a provisional division in the history of philosophy is rather risky. Nothing is said, for instance, about the reasons why Descartes and Berkeley are grouped together. As is well known, for Descartes the ontological conceptual scheme consists of innate concepts and principles which are "naturally" inherent in all people and are not therefore either susceptible of improvement or supplementation. And as far as Berkeley is concerned it is difficult to speak not only about an ontological, but about a logical conceptual scheme as well, since the objects to which our thoughts refer do not possess, and in the process of thinking do not acquire, any necessary, i.e., conceptual characteristics.

To all these and to many other similar considerations Strawson's differentiation between revisionary and descriptive metaphysics does not give any explanations.

Above all, what a descriptive metaphysician should reveal is "a massive central core" of unchangeable fundamental concepts, constituting the logical structure of every thought—not the specialities of the thinking of the scientist and the most sophisticated human beings, but what constitutes the conceptual apparatus of all human thinking, without which our mental attitude towards objects would be impossible.

The problem of the origin of the conceptual equipment of human thinking about the world is related to the spatio-temporal characteristics of the material objects themselves. In this way Strawson has reintroduced in his descriptive metaphysics one of the central issues of traditional metaphysics, the identification of the objective categories of thinking and reality.

Strawson defines the conceptual scheme of human thinking as: 'identifying the way of thinking about the world', 'the general conditions for the speaker-hearer identification of particulars', 'the system of spatial and temporal relations in which every particular is uniquely related to every other', 'a point of reference which helps to individuate the particulars located in the network'. His spatio-temporal system does not constitute the objects it refers to; on the contrary, it is constituted on the analogy of the object expressing the most general features of the existent. "For that framework is not something extraneous to the objects in reality of which we speak. If we ask what constitutes the framework, we must look to those objects themselves, or some among them."[3]

Along this line of reasoning Strawson has reached a very important conclusion, namely, that things which themselves possess spatio-temporal characteristics, i.e., material bodies, are the only "basic particulars", that is, the basis of our conceptual scheme of thought for any kind of objects. "Persons" are considered as basic particulars of the second type. "Roughly speaking, the primary conceptual scheme must be one which puts people in the world. A conceptual scheme which, instead, puts a world in each person must be at least a secondary product."[4]

These and a number of other theses bring Strawson quite close to a materialistic position. They turn him against the subjectivism of English classical empiricism and objective-idealistic ontology. But in his *Individuals* and "The Bounds of Sense" he does not look for the answer to a number of questions which inevitably come to the fore in a comprehensive ontological investigation.

Strawson's attention is almost entirely turned to proving the necessity of the spatio-temporal characteristics of the conceptual scheme of thought. But as is well-known from Kantian criticism, the identification and reidentification of objects in experience presupposes not only their existence in space and time, but also the presence of a whole series of necessary relations expressed in the system of the twelve transcendental categories of human understanding. We find this categorial system, enriched and already referring not only to the things in experience, but also to the things themselves, in the later objective-idealistic theories of Schelling and Hegel. Is there any room for these categories in Strawson's ontological system? And if their psychological and aprioristic explanation is rejected, then on what basis is it possible to deduce them as objective characteristics of reality and knowledge?

It is imperative to find the answer to these questions, taking into consideration some of Strawson's interpretations connected with the nature of the subject, which make it very difficult to consistently overcome rationalistic and empirical metaphysics. We have in mind

the severe criticism to which Strawson subjects the so-called "no-ownership theory of the self", his treatment of the concept of the selves as logically a priori in considering individual consciousness, the quest, in spite of all the declarations against the substantialist view on the self, for a mental unity and that not on a purely psychological, but on an epistemological and even ontological plane, which would unite the definite states of consciousness in a single soul or in a single body.

Strawson is interested in those single necessary ontological features of the conceptual scheme of thought outside of which the existence and knowledge of objects is impossible. This is the meaning of the experiment with a "pure auditory world", as well as the opposition of the spatio-temporal framework of our thoughts and the basic character of material particulars to Leibnitz's monadology.

Strawson starts his analysis from the linguistic identification and reidentification of objects and in spite of his affirmation of the objective determination of the ontological apparatus, he remains related not to things themselves, but only to the contents and conditions of human experience. And although classical empiricism is criticized, it is only rejected but not totally refuted, because nothing is given to prove that in our experience we deal with objective things as they exist independent of our consciousness. This thesis can be backed with arguments only if one goes deeper than the question, "How is the identification and reidentification of objects possible in experience?" Before that we should answer the question, "How is it possible that in our experience there could be objects which are 'things in themselves'?"

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NOTES

[1] Strawson, P. F., *Individuals* (London 1971), p. 9.
[2] Strawson (1971), p. 10.
[3] Strawson (1971), p. 39.
[4] Strawson (1971), p. 126.

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KUNDMANNGASSE 19: ARCHITEKTUR ALS SYMBOL OHNE ORNAMENT

Friedrich Stadler

Als vor ungefähr zehn Jahren Bernhard Leitner intuitiv richtig vorausahnend vor dem drohenden Abbruch der exzentrischen Villa in der Kundmanngasse im 3. Wiener Gemeindebezirk warnte,[1] löste er — dies wohl kaum erwartend — eine mehrere Jahre andauernde, typisch österreichische Debatte um den Erhalt dieses abbruchgefährdeten Hauses aus, das von — nun von wem eigentlich erbaut worden ist?: Paul Engelmann *und* Ludwig Wittgenstein (beide Namen stehen mit der Berufsbezeichnung „Architekt" im Einreichungsplan),[2] Engelmann *oder* Wittgenstein, oder vielleicht sogar — wie der damalige Wiener Landeskonservator behauptete — die Bauherrin Margarethe Stonborough, Wittgensteins Schwester.

Eben dieser Kulturpolitiker fragte sich nämlich rhetorisch, „ob es sich hier um Architektur oder um begabten Dilettantismus handelt, ob hier ein ‚Dokument' oder ein Kuriosum vorliegt, wie es vergleichsweise eine von Sigmund Freud angefertigte Laubsägearbeit wäre",[3] und resümiert weiter, Engelmann sei zwar ein im Banne von Adolf Loos stehender Architekt, jedoch kein berühmter, Wittgenstein nun zweifelsohne ein berühmter Philosoph, leider aber kein ausgebildeter Architekt gewesen. War der Bau also das Resultat von Wittgensteins „Spleen und cupiditas rerum novarum?"[4] Die intendierte Aporie wurde noch dazu durch die lapidare Behauptung des Wittgenstein-Neffen und damaligen Haus-Besitzers Thomas Stonborough untermauert, seine Mutter habe die Grundkonzeption vorgegeben, worauf Engelmann — diesen Richtlinien entsprechend — die Entwürfe zeichnete und Wittgenstein die Inneneinrichtung entwarf. Thomas Stonborough, der das Haus prinzipiell als nicht bewohnbar betrachtete, weil es Wittgenstein nur Prinzip war,[5] entschloß sich daher zum Verkauf des nicht nur von ihm abgelehnten spartanischen Gebäudes. Die in den folgenden Jahren abgeführte emotionalisierte und internationalisierte Auseinandersetzung um das „Wittgenstein-Haus" kann hier in diesem Rahmen nicht nachvollzogen werden.[6] Das Ergebnis des Kampfes um Abbruch und Denkmalschutz zwischen Politikern, Architekten, Wissenschaftern und Literaten ist heute bekanntlich die Präsenz des bulgarischen Kulturinstituts im Streitobjekt.

Die Frage nach dem eigentlichen Erbauer des Hauses wäre allein schon deshalb interessant, weil gerade die Beziehungen von Wittgenstein zu Mitgliedern des Wiener Kreises (z.B. F. Waismann oder R. Carnap) von Plagiats- und Prioritätsvorwürfen überschattet sind und die authentische Urheberschaft extrem personalisierend im Mittelpunkt steht. Es scheint jedoch, daß die bisherige Quellenbasis uns keine eindeutige Entscheidung erlaubt, obwohl wir uns mit der kurz vor seinem Tod von Engelmann abgegebenen Erklärung zufrieden geben könnten, der Bau sei Wittgenstein zuzuschreiben.[8]

Versuchen wir aber unabhängig davon die Frage nach Urheberschaft, Originalität und Authentizität des Hauses unter der Geniekult-Perspektive durch allgemeinere Überlegungen zum architektonischen und geistigen Kontext und Problemhintergrund zu relativieren.

Die Variationsbreite der Wittgenstein-Exegese ist beachtlich: vom Positivisten bis zum christlich-existenziellen Mystiker, vom konservativ-skeptischen Denker à la Spengler bis zum avantgardistischen Pädagogen, vom emanzipatorischen Wissenschaftskritiker zum marxistisch orientierten Sprachphilosophen.[9] Man suchte bei ihm typisch Österreichisches und fand eine Reihe von Bezugspersonen, Vorbildern, Imitatoren: Lichtenberg, Nestroy, Kürnberger, Grillparzer, Kraus, Musil, Broch bis zu Ingeborg Bachmann oder Thomas Bernhard. Dazu wird noch immer die Kernfrage nach der prinzipiellen Einheit seines Denkens vom „Tractatus" bis zu den „Philosophischen Untersuchungen" diskutiert und das Verhältnis zur philosophischen Tradition in Anbetracht seines extravaganten Stils problematisiert. Wittgenstein

selbst nannte als diejenigen, die ihn beeinflußten, Boltzmann, Hertz, Schopenhauer, Frege, Russell, Kraus, Loos, Weininger, Spengler und Sraffa.[10]

In der heutigen Kunst motivierte Wittgenstein umgekehrt beispielsweise die druckgrafischen Collagen eines Eduardo Paolozzi oder den Bilderzyklus von Shusuka Arakawa.[11] Es wurden Parallelen mit dem dadaistischen Universalgeist Marcel Duchamp[12] gezogen oder die Möglichkeit ,,logischer Kunst" zur Debatte gestellt.[13]

Das, was nun Wittgenstein als (Hobby-)Architekt zusammen mit seinem langjährigen Intimus Paul Engelmann schuf, scheint zwar ebenso originell zu sein wie seine philosophisch-literarischen Aphorismen mit fundamental ethischem Anliegen im ,,Tractatus". Allerdings konnte er sich im Bereich der Architektur genausowenig einem traditionellen Einfluß entziehen wie in der Sprachphilosophie, Mathematik und Logik.

Das Haus in der Kundmanngasse, im Jahre 1928 nach fast dreijähriger Bauzeit fertiggestellt, weist bekanntlich via Engelmann zu dessen Lehrer Adolf Loos und zu Karl Kraus, die alle drei miteinander befreundet waren. Dem entspricht die Klarheit, Einfachheit, die ornamentlosen Kubismen und ein extremer Funktionalismus als Ergebnis minutiöser Konstruktion. Die von Wittgenstein behauptete Äquivalenz von Ethik und Ästhetik[14] manifestiert sich hier vor allem in einer Semantik puristischer Sachlichkeit.

Im Gegensatz zu seinem Vater Karl Wittgenstein[15] ging sein rebellierender Sohn auf antisezessionistischen Kurs, wodurch er über Ludwig von Ficker Ende Juli 1914 Adolf Loos kennenlernte und mit diesem in anregender Weise Fragen der modernen Baukunst diskutierte.[16] Die überragende Rolle von Adolf Loos (1870—1933)[17] für die österreichische Architektur ist heute trotz zahlreicher Mythen unbestritten. Der ausschließliche Hinweis auf seinen Kampf gegen das Ornament ist polemisch, auch wenn er einen funktionalistischen Stil zur Überwindung von Historismus (der Otto-Wagner-Schule) und Jugendstil (der Sezession und Wiener Werkstätte) kreierte. Seine Bauten waren ihm Sprache und Symbol für entillusionierte Lebensauffassung im Anschluß an traditionales Handwerk (nicht: Kunstgewerbe), was auch in seinen avantgardistischen Schriften (mit Kleinschreibung) zum Ausdruck kommt.[18] Der Kulturkampf gegen sein Haus auf dem Wiener Michaelerplatz vor dem Kriege[19] signalisiert bereits die instinktive Ablehnung dieser therapeutischen Mentalität im Umkreis von Kraus und Schönberg. Kraus, der sich im Kampf gegen Phraseologie und Doppelmoral auf die Seite von Loos stellte, bemerkte zu dessen Haus lakonisch: ,,Er hat ihnen dort einen Gedanken hingebaut"[20] und Engelmann verfällt in ekstatisch-lyrische Begeisterung.[21] Loos selbst wiederum stilisiert seinen Freund Kraus zum moralischen Propheten: ,,Er steht an der Schwelle einer neuen Zeit und weist der Menschheit, die sich von Gott und der Natur weit, weit entfernt hat, den Weg . . .".[22]

Wenn Wittgenstein den umstrittenen Loos nach dem Kriege persönlich kritisierte,[23] so blieb ihm die Impression dieses Baustils, durch Engelmann verstärkt, doch bis in die Zeit der Planung des Hauses wirksam. Man vergleiche nur die frappierende Ähnlichkeit der Stonborough-Villa mit den Loos-Häusern ,,Steiner" (1910), ,,Moller" in Wien (1928) oder ,,Müller" in Prag (1930),[24] auch wenn diese nur *eine* Facette des Loos'schen Schaffens darstellen. Klarheit, Kubismen und Flachdach dokumentieren die Konvergenz in der Außengestaltung, während das Interieur — und hier wird die Differenz deutlich — bei Loos konventionell ,,wohnbarer" und ,,gemütlicher" wirkt. In größerem Rahmen wird die Verwandtschaft all dieser Bauten mit dem Funktionalismus des europäischen Konstruktivismus der zwanziger Jahre (Ernst May, Ludwig Mies van der Rohe, Le Corbusier u.a.) deutlich. Für Loos war dieses neue Bauen doch nur *ein* Element einer zu verändernden Gesellschaft, was er durch seine Teilnahme an der Wiener Siedlungsbewegung und später an der Wiener Werkbundsiedlung dokumentierte. Bei Loos, der den ,,neuen Menschen" nicht nur von überflüssigem Dekor, sondern auch von überflüssiger Arbeit durch Rationalisierung befreien wollte, studierte ein weiterer Krausianer, der jüdische Schöngeist Paul Engelmann. Diesen Lyriker und Mystiker lernte Wittgenstein über Loos 1916 in Olmütz kennen. Obwohl uns Engelmann selbst über diese Freundschaft eindrucksvoll informiert,[25] liegt gerade über den gemeinsamen Bau des Hauses leider kein genauer Bericht vor. Der ,,Tractatus" ist bekannt-

lich während dieser Kriegsjahre geschrieben worden und in die komplizierte, aber für das Verständnis aufschlußreiche Publikationsgeschichte waren auch Kraus, Loos und Russell involviert.[26] In dem oft zitierten Schlüsselbrief an Ficker[27] hat Wittgenstein sein Grundanliegen prägnant zum Ausdruck gebracht: nämlich die Abgrenzung des Ethischen (Ästhetischen, Metaphysischen, Mystischen, Unsagbaren) „von Innen" vom Bereich der naturwissenschaftlichen (verifizierbaren) Sätze. Der damit behauptete Dualismus von Tatsachen und Werten führte im Kontext der Bildtheorie der Sprache zur Konsequenz, daß der für Wittgenstein gerade bedeutsame Bereich des „Unsagbaren" und „Unaussprechlichen" sich nur in der Kunst und Literatur „zeigt" oder gezeigt werden kann.

Nach dem Scheitern seines Volksschullehrerdaseins in Niederösterreich schrieb Wittgenstein am Kulminationspunkt einer seelischen Krise Ende 1925 an Engelmann, daß ihn der Bau eines Wohnhauses interessieren würde.[28] Engelmann zeichnete die ersten, doch grundlegenden Pläne, bot aber seinem Freund — aus arbeitstherapeutischen Überlegungen nach Absprache mit den Wittgenstein-Schwestern — die Mitarbeit an. Wittgenstein riß allmählich die Initiative an sich und widmete sich intensiv drei Jahre lang dem Bau, während Engelmann nur noch im Büro mitarbeitete, wie aus den Erinnerungen von Hermine Wittgenstein, Ludwigs Lieblingsschwester, hervorgeht.[29]

Die fertiggestellte dreistöckige Villa[30] besticht außen durch ihre rigorose Einfachheit; die hohen (vertikal strukturierten) schmalen Fenster und Türen und die schmucklose Gestaltung der Fassaden lassen aber zeitweise auch die Illusion einer rationalistisch-wehrhaften Architektur aufkommen. Im Kontrast zur großzügigen Raumgestaltung steht im Innern die puritanische Verwendung weniger Elemente (Metall, Stein) und Farben (Schwarz-Weiß). Die Innenausstattung, die Wittgenstein selbst Stück für Stück entwarf und in intensiver Zusammenarbeit mit der Baufirma herstellen ließ, geht allein auf sein Konto wie auch eine Mädchenbüste, die er — angeregt durch die Freundschaft mit Michael Drobil — als Produkt des „Klärens" bezeichnete.[31] In der Weise, wie er sich mit der Konstruktion seiner Sätze im „Tractatus" abquälte, ließ Wittgenstein Radiatoren, Türen und Fenster in langwierigen Arbeitsgängen anfertigen, womit er mit dem dominanten Schwarz-Weiß-Kontrast und der Hell-Dunkel-Komposition die Klarheit, Strenge und luzide Formästhetik der Außenansicht nachvollzog. Das Haus wirkt als statisches Ganzes, als harmonisches Produkt ideeller und materieller Arbeit, es „zeigt" als Symbol die zugrundeliegende Mentalität viel stärker, als es durch detaillierte Beschreibung „gesagt" werden kann.

Das Material, die Proportionen und die Farben — über die Wittgenstein später eine eigene Vorlesungsreihe hielt[32] — mußten eine stringente Form bekommen, der logische Raum wurde funktional durch ein idealtypisches Modell realisiert. Wiederum drängen sich Analogien zum „Traktat" auf: die Trennung von Wissenschaft und Metaphysik und ein unpretentiöser Konstruktivismus im Gegensatz zu einem Ästhetizismus im Sinne von l'art pour l'art. Hermine Wittgenstein spricht treffend von „hausgewordener Logik . . ., Vollkommenheit und Größe zu überwinden".[33] Der nüchternen Statik des Hauses entspricht auch die für Wittgenstein damals feststehende Letztverbindlichkeit seiner logischen Abhandlung; die Ablehnung jeder Innendekoration (Teppiche, Luster, Vorhänge) konvergiert mit der Grenzziehung zwischen Sagbarem und Unaussprechlichem, oder sinngemäß abgewandelt: Was (symbolisch) nicht ausgedrückt werden kann, soll man nicht bauen.[34]

Noch 1931 schreibt Wittgenstein dazu: „Die Arbeit an der Philosophie ist — wie vielfach die Arbeit in der Architektur — eigentlich die Arbeit an einem selbst. An der eigenen Auffassung. Daran, wie man Dinge sieht (und was man von ihnen verlangt)".[35] Eine Architektur rationaler Zweckmäßigkeit war ihm nicht erstrebenswert, sie sollte eher wie eine „Geste" wirken. So bedauert Wittgenstein selbst die Beherrschung des vitalen Triebs in seiner sublimiert-kühlen Architektur, wenn er sein Haus als „Produkt entschiedener Feinhörigkeit, *guter* Manieren, (als) Ausdruck eines großen *Verständnisses* (für eine Kultur, etc.)" rückblickend bewertet, da „das *ursprüngliche* Leben, das *wilde* Leben, welches sich austoben möchte — fehlt".[36] Schließlich schließt er selbstkritisch: „Man könnte also auch sagen, es fehlt ihm die *Gesundheit* (Kierkegaard). (Treibhauspflanze)".[36]

Diese Gegenüberstellung von Konstruiertem und traditional Gewachsenem, das Bedauern der in funktionelle Rationalität einmündenden Sublimation des „Es" und die fehlende Gemütlichkeit lassen sich am Beispiel der Schriften und Architektur von Josef Frank (1885—1967)[37] exemplarisch und komplementär verständlich machen. Frank zählte mit Loos und Josef Hoffmann zu den einflußreichsten Architekten seiner Zeit, wurde als ein dem Wiener Kreis nahestehender Autor betrachtet[38] — er war übrigens der Bruder von Philipp Frank — und arbeitete auch im „Gesellschafts- und Wirtschaftsmuseum" von Otto Neurath mit.[39] Er betrachtete wie Loos traditionelle Formen und Symbole als brauchbare Zitate für moderne Architektur, den Siedlungsbau — als Initiator und führende Persönlichkeit im österreichischen Werkbund in Wien 1929—1932 — als adäquateste Form des Wohnens nach dem Kriege[40] und prägte nach seiner Emigration den schwedischen Wohnstil. Gegen Loos und die Vertreter der „Neuen Sachlichkeit" des Bauhauses (mit dem Otto Neurath, Herbert Feigl und Rudolf Carnap kooperierten)[41] nahm Frank die heutige Kritik am Funktionalismus und Rationalisierungsdenken vorweg, entwarf eine Innenarchitektur mit Zielrichtung „Gemütlichkeit" nach englischem Vorbild — was er nach dem Zweiten Weltkrieg als „Akzidentismus" bezeichnete, der die Assoziation mit Wittgensteins „Geste" aufkommen läßt. Überhaupt scheint Frank das im Wohnstil verwirklicht zu haben, was Wittgenstein an seinem Haus vermißt, nämlich Behaglichkeit und Natürlichkeit mit Phantasie, eine gelockerte Lebenshaltung, während in der Außenansicht eine starke Ähnlichkeit mit Franks Häusern Wilbrandtgasse 3 (1914 mit Oskar Wlach und Oskar Strnad) und Wenzgasse 12 in Wien (1929/30 mit Wlach)[42] zu konstatieren ist. Als Verfechter individualistisch-humanistischen Bauens und geistreicher Zeitgeist-Kommentator — in seinem 1931 erschienenen Buch „Architektur als Symbol: Elemente deutschen neuen Bauens"[43] zusammengefaßt — kritisierte Frank auch die kollektivistischen wehrhaften Kommunalbauten des „Roten Wien" als Symbole feudal-bürgerlicher „Volkswohnungspaläste",[44] obwohl er selbst einige antimonumentale Wohnblocks errichtete. Seinen durchaus dekorativen Stil mit Flachdach betrachtete er als Pendant zur nichtmetaphysischen Weltanschauung der modernen Industriekultur, obwohl auch diese ohne Symbole nicht auskommt — Symbole für den Glauben an eine „Abkehr von der Kunst zur Natur".[45] Das Suchen nach neuen Formen führte Frank jedoch nicht zu einem funktionalistischen Puritanismus, zu „Occams Rasiermesser" als Direktive oder zum Diktat von Material und Farbe, wie dies in der Kundmanngasse zumindest im Innern teilweise realisiert ist. Auch der ornamentlose Funktionalismus bleibe ein Symbol für die Gesinnung des Architekten. Architektur wird somit zum (sprachlichen und materiellen) semantischen Problem, was auch im Falle Loos und Wittgenstein deutlich wird. Das Formen-Vakuum in der Zeit des Aufbruchs nach dem Kriege war beiden Ausgangspunkt und Kontext einer geistigen und materiellen Reinigung für unpathetische Sachlichkeit.

Mit den Namen Kraus, Loos, Schönberg und Wittgenstein ist somit eine Geisteshaltung präsent, deren Strukturzusammenhang Engelmann bereits einleuchtend beschrieben hat:[46] die Polemik gegen das manierierte Feuilleton einerseits, gegen den metaphysischen Leerlauf der Sprache andererseits und der gemeinsame Kampf gegen amoralische, professionelle Sprachakrobatik. Bei Loos ist es die Apologie traditionalen Handwerks gegen jedes Kunstgewerbe als Selbstzweck und die Architektur als neue Lebensform in ähnlichem Geiste, in dem der frühe Wittgenstein die Philosophie vom Metaphysischen getrennt wissen wollte. Es kann also nicht überraschen, wenn Loos zu Wittgenstein gesagt hat: „Sie sind Ich".[47]

Sachlichkeit als Therapie, nicht als Fetisch einer neu kreierten Ästhetik war das gemeinsame Anliegen als Voraussetzung für einen nüchternen Zugang zum Ethischen, Ästhetischen, zum „Höheren" in den verschiedenen Bereichen schöpferischer Vernunft. Metadenken und Metasprache muß dann notwendigerweise diesem reinen Produkt gegenüber hilflos erscheinen, das kontemplative Schweigen als Ausgangspunkt richtigen Handelns wird zur Forderung des Tages. Insofern hätten auch diese Ausführungen — dieser inneren Logik (des Leitermotivs im „Tractatus")[48] folgend — nur Berechtigung, als sie diese Haltung vermitteln helfen gerade angesichts der heutigen „lärmenden Nervosität", die Günther Anders mit zur „Antiquiert-

heit des Menschen“[49] rechnet — doch stellt sich demgegenüber auch massiv die Frage, ob wir uns zugleich vor dem Hintergrund der uns bedrohenden Probleme einen solchen esoterischen Luxus leisten sollen.

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ANMERKUNGEN

1 Leitner, B., Der Philosoph als Architekt, in: Die Zeit, 20.2.1970, Nr. 8, S. 15. Ich danke Dr. Viktor Matejka für die Überlassung des umfangreichen Zeitungsmaterials.
2 Hoffmann, W., Ludwig Wittgenstein, ein Philosoph als Architekt, in: Bau: Schrift für Architektur und Städtebau, 24. Jg., H. 1 (1969), S. 3.
3 Pötschner, P., Wittgensteins Haus: Die Geschichte eines sonderbaren Bauwerkes in Wien, in: Die Presse, 10.4.1970.
4 Zemanek, H., Tractatus architecto-philosophicus: Ein Beitrag zur Diskussion um die Villa Ludwig Wittgensteins, in: Die Presse, 26.8.1971, S. 3.
5 Anon., Es geht ums Prinzip, in: Wiener Zeitung, 22.6.1971.
6 Die Debatte ist anhand von Zeitungsartikeln im Zeitraum vom 20.2.1970 bis 20.4.1974 rekonstruierbar: AZ (20.2.70, 16.6.71, 22.6.71, 31.7.71, 7.8.71, 22.3.72); Die Presse (28.2.70, 18.6.71, 19./20.6.71, 22.6.71, 31.7.71, 20.4.74); Neue Kronenzeitung (20.6.71, 22.6.71, 23.6.71, 25.6.71, 8.7.71, 25.3.72); Kurier (22.6.71, 23.6.71, 3.7.71, 29.7.71, 6.8.71, 6.4.72); Oberösterreichische Nachrichten (28.2.70, 12.8.71); Linzer Volksblatt (26.6.71); Wochenpresse (30.6.71, 13.3.72); Salzburger Nachrichten (23.6.71, 3.7.71); Die Furche (3.7.71); Wiener Zeitung (31.7.71); Die Welt (10.3.70, 25.6.71, 23.1.74); Frankfurter Allgemeine Zeitung (24.6.71); Süddeutsche Zeitung (24.3.72); Neue Zürcher Zeitung (8.6.72).
7 Briefwechsel Carnap-Wittgenstein, Wittgenstein-Schlick, Neurath-Carnap (Carnap-Archiv Pittsburgh; Wiener-Kreis-Archiv Amsterdam).
8 Leitner, B., Wer ist schon Wittgenstein?, in: Die Presse, 18.6.1971.
9 Vgl. z.B. die Schriftenreihe der Wittgenstein-Gesellschaft (hrsg. von R. Haller/A. Hübner/E. und W. Leinfellner/P. Weingartner) oder die Beihefte der Ludwig-Wittgenstein-Schriften.
10 Wittgenstein, L., Vermischte Bemerkungen: Eine Auswahl aus dem Nachlaß, (hrsg. von G. H. von Wright) (Frankfurt a. M. 1978) (= VB).
11 Jessen, W., Wittgenstein, collagiert, in: Die Zeit, 21.2.1969. C. B., Wittgenstein auf Etappenmarsch, in: Frankfurter Allgemeine Zeitung, 10.3.1969. I. Seidenfaden, „Sag eins, denk zwei“, in: Münchner Merkur, 17.10.72.
12 Hoffmann (1969), S. 3.
13 Logische Kunst? (Katalog zur Ausstellung der Niederösterreich-Gesellschaft für Kunst und Kultur im Rahmen des II. Internationalen Wittgenstein-Symposiums in Kirchberg am Wechsel, 1977) (Wien 1977).
14 TLP 6.421.
15 Bramann, J. K., Karl Wittgenstein: Ein Amerikaner in Wien, in: Zeitgeschichte, H. 2 (Nov. 1974), S. 29—40.
16 Engelmann, P., Ludwig Wittgenstein: Briefe und Begegnungen, hrsg. von B. F. McGuinness (Wien/München 1970), S. 44, 117.
17 Münz, L., und Künstler, G., Der Architekt Adolf Loos (Wien 1964). H. Kulka (Hrsg.), Adolf Loos: Das Werk des Architekten. Mit einem Vorwort von F. Glück (Wien ^{2}1979).
18 Loos, A., Sämtliche Schriften, in zwei Bänden, hrsg. von F. Glück (Wien/München 1962).
19 Czech, H., und Mistelbauer, W., Das Looshaus: Eine Monographie (Wien 1977).
20 Czech, H., und Mistelbauer, W., Das Looshaus, in: der aufbau, 19. Jg., Heft 4/5 (April/Mai 1964), S. 172.
21 Engelmann, P., Dem Andenken an Karl Kraus, hrsg. von E. Benyoetz (Wien 1967), S. 45.
22 Loos (1962), S. 328.
23 Engelmann (1970), S. 22.
24 Vgl. die Abbildungen in: Tendenzen der Zwanziger Jahre: 15. Europäische Kunstausstellung (Katalog), 2/1048 (Berlin 1977). der aufbau (1964), S. 164; H. Sterk, Der Kampf gegen das Überflüssige, in: AZ, 10.1.1981.
25 Engelmann (1970).

[26] von Wright, G. H., Die Entstehung des Tractatus logico-philosophicus, in: Ludwig Wittgenstein, Briefe an Ludwig von Ficker, hrsg. von G. H. von Wright unter Mitarbeit von W. Methlagl (Salzburg 1969), S. 73—110.
[27] Wittgenstein, L., Briefe (1969), S. 90.
[28] Engelmann (1970), S. 39.
[29] In: B. Leitner, The Architecture of Ludwig Wittgenstein: A Documentation, With Excerpts from the Family Recollections by Hermine Wittgenstein (New York 1976), S. 17—32.
[30] Zur Baugeschichte und Technologie vgl. Leitner (1976).
[31] VB, S. 43.
[32] Wittgenstein, L., Bemerkungen über die Farben, hrsg. von G. E. M. Anscombe (Frankfurt a. M. 1979).
[33] Wittgenstein, H., in: Leitner (1976), S. 32.
[34] TLP 7.
[35] VB, S. 38.
[36] VB, S. 77f. (1940 verfaßt); S. 86: „Architektur ist eine Geste. Nicht jede zweckmäßige Bewegung des menschlichen Körpers ist eine Geste. Sowenig, wie jedes zweckmäßige Gebäude Architektur" (verfaßt 1942).
[37] Frank, Josef, 1885—1967, Zusammenstellung und Gestaltung J. Spalt und H. Czech (Katalog zur Ausstellung) (Wien 1981a). Josef Frank 1885—1967: Möbel & Geräte & Theoretisches (Katalog) (Wien 1981b).
[38] Wissenschaftliche Weltauffassung — Der Wiener Kreis, hrsg. vom Verein Ernst Mach (Wien 1929), S. 48f.
[39] Stadler, F., Bildstatistik in der Schule: Otto Neurath und sein Gesellschafts- und Wirtschaftsmuseum, in: Zeitgeschichte, H. 11/12 (Aug./Sept. 1979), S. 418—439.
[40] Kommunaler Wohnbau in Wien: Aufbruch 1923—1934 — Ausstrahlung (Katalog) (Wien 1978). Zwischenkriegszeit — Wiener Kommunalpolitik 1918—1938 (Katalog) (Wien 1980).
[41] Wingler, H. M., Das Bauhaus: Weimar-Dessau-Berlin 1919—1933 (Wiesbaden 1975), S. 170.
[42] Vgl. die Abbildungen in: J. Frank (1981a), S. 16—19, 37—43.
[43] Neu hrsg. von H. Czech (Wien 1981).
[44] Frank, J. (1981a), S. 141ff. Dazu: G. Kapner, Der Wiener kommunale Wohnbau: Urteile der Zwischen- und Nachkriegszeit, in: F. Kadrnoska (Hrsg.), Aufbruch und Untergang: Österreichische Kultur zwischen 1918 und 1938 (Wien/München/Zürich 1981).
[45] Frank (1981a), S. 178.
[46] Engelmann (1967), S. 46ff. und (1970), S. 101—110. W. Kraft, Rebellen des Geistes (Stuttgart 1968), S. 102—134.
[47] Engelmann (1970), S. 106.
[48] Wittgenstein, TLP 6.54.
[49] Anders, G., Die Antiquiertheit des Menschen, 2 Bde. (München 1956/1980).

Das im Wilhelm Fink Verlag für Herbst 1981 angekündigte Buch von G. Gebauer u.a., „Wien, Kundmanngasse 19", war beim Abschluß dieses Beitrags noch nicht erhältlich.

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AUTORENVERZEICHNIS
INDEX OF AUTHORS

ACS, Janos 387
ANSCOMBE, G.E.M. 212
AYER, A.J. 419

BACHMAIER, Peter 442
BAIGRIE, Brian 361
BAR-ON, A.Z. 125
BECKER, Edward 278
BENDER, Rüdiger 87
BIANCO, Franco 391
BOHL, Jesse Pieter 491
BOJADSHIEFF, Zotscho 68
BORN, Rainer 335
BOSCH, Peter 282
BRAND, Myles 106
BURKE, T.E. 79
BURKHARDT, Armin 520
BURR, Ronald 399

CANDLISH, Stewart 222
CASULLO, Albert 166
CHISHOLM, Roderick M. 117
CODE, Lorraine B. 475

DAHMS, Hans-Joachim 435

EGIDI, Rosaria 465
EIKMEYER, Hans-Jürgen 289

FAGHFOURI, Mostafa 412
FALKENBERG, Gabriel 245
FESTINI, Heda 498
FINE, Kit 97
FISCHER, Hans Rudi 479
FRANZEN, Winfried 130
FREY, Gerhard 240

GÄHDE, Ulrich 327
GALLACHER, Hugo P. 403
GARAVASO, Pieranna 487
GARGANI, Aldo 511
GARVER, Newton 230
GODWIN, W. 458
GOLDSTEIN, Laurence 162
GOODMAN, Nelson 31
GRASSL, Wolfgang 218

HALLER Rudolf 265
HINTIKKA, Jaakko 137
HINTIKKA, Merrill B. 137, 429
HRACHOVEC, Herbert 445
HÜBNER, Adolf 346

IEMHOFF, Willem G. J. 133

KRAEMER, Eric Russert 151
KÜNG, Guido 37

LEE, Kwang-Sae 358
LEHRER, Keith 201
LEINFELLNER, Elisabeth 292
LEINFELLNER, Werner 367
LEJEWSKI, Czesław 173
LOSONSKY, Michael 300
LÜTTERFELDS, Wilhelm 530

MacGEE, Douglas 306
MACMILLAN, C.J.B. 483
MARTIRE, Joseph E. 449
MÖLLMANN, Margarete 75
MORICK, Harold 227
MUDERSBACH, Klaus 270
MÜHLHÖLZER, Felix 339

NEUMAIER, Otto 83

OBERMEIER, Klaus K. 92
OETJENS, Hermann 71
OMYŁA, Mieczysław 195

PANOVA, Elena 534
PAPPAS, George S. 235
PAVIČIĆ, Mladen 354
PLUMWOOD, V. 49, 471
PÜHRINGER, Christine 191

ROS, Arno 517
ROSENBLUTH, Richard 408
ROUTLEY, Richard 49, 471
RUNGGALDIER, Edmund 286

SCHANK, Jeffrey C. 381
SIMONS, Peter M. 159
SINGH, Chatrapati 394
SMITH, B. 186
STADLER, Friedrich 537
STEINACKER, Ingeborg 292
STÖCKLER, Manfred 331
STOPCZYK, Annegret 524

TOMINAGA, Thomas T. 453
TRAPPL, R. 292
TROST, Harold 292
TROYER, John 156

VAN DER AUWERA, Johan 303
VERHAREN, Charles 501
VUILLEMIN, Jules 313

WALLNER, Friedrich 343
WEIDEMANN, Hermann 507
WEINKE, Kurt 122
WENNING, Wolfgang 494
WUKETITS, Franz M. 377
WÜST, Eckehard 274

ZADEH, Lofti A. 253

OTTO NEURATH

Gesammelte philosophische und methodologische Schriften
in zwei Bänden.
Hrsg. v. R. HALLER u. H. RUTTE
(Alle fremdsprachigen Beiträge in deutscher Übersetzung)
Wien 1981. 2 Bände, XVI, VIII, 1033 Seiten; öS 1.110,—.

Der lange Zeit vergessene Otto Neurath (1882—1945) war einer der vielseitigsten Denker des Jahrhunderts und einer der führenden Köpfe des ,,Wiener Kreises". Diese Ausgabe enthält alle bisher erfaßten philosophischen, logischen, methodologischen, wissenschaftsintegrativen und auch eine Reihe von soziologischen Publikationen von Otto Neurath, soweit sie vorwiegend methodologisch orientiert sind. Sie markieren den Weg eines Aufklärers, Antimetaphysikers und Sozialreformators, der in seiner ,,Wissenschaftlichen Weltauffassung" in ganz unorthodoxer Weise Empirismus, Physikalismus, Konventionalismus und Marxismus zu verbinden und auch historisch-soziologisch zu fundieren verstand. Dabei gelangt der organisatorische Motor und Namensgeber des Wiener Kreises, die gegenwärtige Diskussion vorwegnehmend, zu einer Destruktion vieler leitender methodologischer Prinzipien, blieb aber dem Ziel der ,,Einheitswissenschaft", einer neuen Enzyklopädie, stets verpflichtet. Die hier gesammelten Arbeiten stellen die bisher umfassendste Sammlung von Neuraths Schriften dar und bieten dem wiedererwachten Interesse für die Philosophie des Empirismus eine solide Grundlage.

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SCHRIFTENREIHE DER WITTGENSTEIN-GESELLSCHAFT

Herausgegeben von Elisabeth Leinfellner
Rudolf Haller, Adolf Hübner, Werner Leinfellner, Paul Weingartner

Volume 1

Ludwig Wittgenstein, Wörterbuch für Volksschulen (Dictionary for Elementary Schools)

(Faksimile der Ausgabe von 1926) Wien 1977.
Hrsg./Eds. A. Hübner, W. und E. Leinfellner.
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During his lifetime Wittgenstein published only two small volumes. One of them, his *Tractatus logico-philosophicus*, made him world-famous; the other one, his *Wörterbuch für Volksschulen*, went through only one printing. It was soon forgotten and only a few copies survived. There is a strange contrast between the contents of these two books, and equally strange is the temporal order of their genesis. One would assume that the *Wörterbuch* is the author's first book—but it his second. This order was by no means forced upon Wittgenstein by outside influences but was an expression of Wittgenstein's extraordinary personality.

Recently Wittgenstein's late philosophy has induced several linguists to examine Wittgenstein's dictionary for early signs of change in the philosopher's thoughts. H. Wellman writes: "Wittgenstein's *Wörterbuch* stands as a strange relic of the period when Wittgenstein was an elementary teacher between the *Tractatus* and his later philosophical writings. The *Wörterbuch* is alien to philosophy and thus it is considered in the scholarly literature at best as a curiously. Seen through the eyes of someone born later this period of Wittgenstein's practical working as a schoolteacher —from which the dictionary stems—almost seems to be the result of a kind of dialectical countermovement to the looking for pure knowledge and the formulation of this knowledge in Wittgenstein's early philosophy. There are certain indications that support the assumption that experiences which Wittgenstein made in this middle period have flown into the synthesis of his later philosophy. In this context also the *Wörterbuch* becomes important as evidence."

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ISBN 3-209-00191-X

Ludwig Wittgenstein hat zu seinen Lebzeiten nur zwei schmale Bändchen veröffentlicht. Das eine, sein *Tractatus logico-philosophicus*, machte ihn weltberühmt, das andere, sein *Wörterbuch für Volksschulen*, erlebte nur eine einzige Auflage (1926), geriet bald in Vergessenheit und ist heute bis auf ganz wenige Exemplare verlorengegangen. Seltsam, wie der Kontrast der beiden Bücher vom Inhalte her, ist die zeitliche Folge ihres Entstehens. Nicht, wie man annehmen möchte, das *Wörterbuch* ist die erste Arbeit des Autors, sondern der *Tractatus*. Und diese Reihung wurde keineswegs durch äußere Umstände erzwungen, sondern ist der Ausdruck von Wittgensteins außergewöhnlicher Persönlichkeit.
Die Wittgensteinsche Spätphilosophie hat in jüngster Zeit verschiedentlich Sprachforscher veranlaßt, das *Wörterbuch* auf frühe Zeichen des Wandels im Denken des Philosophen zu untersuchen. H. Wellmann schreibt: „Wittgensteins *Wörterbuch* steht als fremdartiges, philosophiefremdes und deshalb in der wissenschaftlichen Literatur allenfalls als Kuriosum beachtetes Relikt der Volksschullehrerzeit zwischen dem *Tractatus* und den Werken der Spätphilosophie. Aus der Sicht des Nachgeborenen erscheint die Phase der praktischen Arbeit als Lehrer, aus der dieses *Wörterbuch* stammt, fast als Ergebnis einer Art dialektischer Gegenbewegung zur reinen Erkenntnisfindung und -formulierung des frühen Wittgenstein. Es gibt Anhaltspunkte für die Annahme, daß Erfahrungen aus dieser mittleren Zeit in die Synthese der Spätphilosophie eingegangen sind, und in diesem Zusammenhang wird das *Wörterbuch* als Beweisstück wichtig."

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Herausgegeben von Elisabeth Leinfellner
Rudolf Haller, Adolf Hübner, Werner Leinfellner, Paul Weingartner

Volume 2

Wittgenstein and His Impact on Contemporary Thought

Proceedings of the 2nd International Wittgenstein-Symposium, Kirchberg am Wechsel, Austria 1977.

Hrsg./Eds. E. und W. Leinfellner, H. Berghel, A. Hübner.
Wien 1980. *2. Auflage (2nd edition)*, pp. 550, Pb.
ISBN 3-209-00204-5

The volume provides one of the most comprehensive evaluations of Wittgenstein's philosophy since the beginning of analytic philosophy, and places him in an historical context. Most of the leading Wittgenstein scholars have contributed to this volume and treat his biography, the ontology and semantics of the *Tractatus*, logical-mathematical problems, his philosophy of science as well as his views on problems of religion, mysticism and 'showing'. The volume also presents a thorogh discussion of his later philosophy in chapters on philosophy of language and semantics, language games, private language, deontic theory and problems concerned with the notion of certainty.

The volumes will be of special interest to graduates and professionals in the philosophy of science, history of philosophy, philosophy of religion, semantics, ethics and epistemology. They are also suitable as research books for advanced seminars and class use.

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Herausgegeben von Elisabeth Leinfellner
Rudolf Haller, Adolf Hübner, Werner Leinfellner, Paul Weingartner

Band 2

Wittgenstein und sein Einfluß auf die gegenwärtige Philosophie

Akten des 2. Internationalen Wittgenstein-Symposiums
29. August bis 4. September 1977, Kirchberg am Wechsel (Österreich).
Hrsg. v. Elisabeth Leinfellner, Werner Leinfellner, Hal Berghel, Adolf Hübner.
2. Auflage, Wien 1980, 550 Seiten, kartoniert.
ISBN 3-209-00204-5

Dieser Band umfaßt alle Aspekte der Philosophie Wittgensteins. Er zeigt seine Philosophie im historischen Zusammenhang, behandelt seine Biographie, die Ontologie und Semantik des *Tractatus*, die logisch-mathematischen Probleme der frühen und der späten Philosophie Wittgensteins, seine Wissenschaftstheorie, aber auch das Problem des Mystizismus und des Zeigens. Die späte Philosophie erfährt eine gründliche Darstellung in den Kapiteln über Sprachphilosophie und Semantik, Sprachspiele und Privatsprache, deontische Probleme und die Probleme der Gewißheit. Die Wirkung der Philosophie Wittgensteins ist in den Beiträgen der Philosophie seiner Schule und jener der nach-Wittgensteinschen Richtungen repräsentiert.
Der Band stellt eine der wichtigsten Dokumentationen der Wittgensteinschen Philosophie und der Wittgensteinforschung seit der Begründung der Analytischen Philosophie dar, nicht zuletzt dadurch, daß nahezu alle bedeutenden und international anerkannten Philosophen dieser Richtung durch Beiträge vertreten sind. Die *Akten* zeigen sehr klar, daß die gegenwärtige Analytische Philosophie kein monolithischer Block ist, wo es nur eine, gewissermaßen mit dem Maßstab ausgerichtete Art des Philosophierens gibt, sondern daß sich innerhalb der Richtung verschiedene Strömungen abzeichnen.

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Volume 3

Wittgenstein, the Vienna Circle and Critical Rationalism

Proceedings of the 3rd International Wittgenstein-Symposium, Kirchberg am Wechsel, Austria 1978.
Hrsg./Eds. H. Berghel, A. Hübner, E. Köhler.
Wien 1979. 544 pp., Pb.
ISBN 3-209-00226-6

The proceedings pay tribute to the great philosophers of Vienna who have had a dominating influence on twentieth century thought: Wittgenstein, Schlick, Carnap, Neurath, Menger, and Popper. What made this symposium unique was that it was the largest conference to date having the Vienna Circle as a major topic. Nevertheless, Wittgenstein and Popper received the largest measure of individual attention, as is appropriate, considering that both remained independent of the Circle although interacting with it. Despite their aloofness, Wittgenstein and Popper were much closer to the Circle than to any philosopher of their time.
Scholars from 18 countries presented papers to the conference with almost a third coming from outside Europe. The contributions are grouped under 4 headings: 1. Wittgenstein, 2. The Vienna Circle, 3. Karl Popper, 4. Social Theory. In the section headed 'Wittgenstein', many of the themes dealt with at the 2nd conference the previous year are touched on. They reveal various contrasts in emphasis, such as the relative importance attributed to the early *Tractatus* and the later work as epitomized in the philosophical investigations. In the following chapter 'The Vienna Circle', many of the unsolved problems of logic, language, metaphysics, perception and methodology, are discussed from present historical perspectives and many new insights are advanced. The subsequent section 'Karl Popper', explains Popper's political philosophy—one of this century's most highly regarded defenses of individual liberty in opposition to state centralism and totalitarianism. In the final section 'Social Theory', the contributions indicate many of the recent advances in this fast-developing field.

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Band 3

Wittgenstein, der Wiener Kreis und der Kritische Rationalismus

Akten des 3. Internationalen Wittgenstein-Symposiums
13. bis 19. August 1978, Kirchberg am Wechsel (Österreich).
Hrsg. v. Hal Berghel, Adolf Hübner, Eckehart Köhler.
Wien 1979, 544 Seiten, kartoniert.
ISBN 3-209-00226-6

Die *Akten des 3. Internationalen Wittgenstein-Symposiums* sind eine kritische Würdigung jener Philosophen, die, von Wien ausgehend, einen dominierenden Einfluß auf das Denken im 20. Jahrhundert ausgeübt haben: Ludwig Wittgenstein, Karl R. Popper und die Mitglieder des Wiener Kreises, u. a. Moritz Schlick, Rudolf Carnap, Otto Neurath und Karl Menger.
Wie bei den vorangegangenen Symposien blieb Wittgensteins Philosophie Mittelpunkt, doch war es gleichzeitig die größte Konferenz, die den *Wiener Kreis* zu einem Hauptthema hatte. Die Mitglieder des Wiener Kreises — durchwegs mathematisch und naturwissenschaftlich gebildete Philosophen — haben der wissenschaftlichen Weltauffassung des 20. Jahrhunderts das Fundament geliefert; darüber hinaus gebührt ihnen größte Anerkennung für eine beträchtliche Reihe von systematischen Forschungen und Entdeckungen. Man kann sie als Begründer der modernen Wissenschaftstheorie ansehen und in Ansätzen als Wegbereiter einer neuen Sozialphilosophie.
Die Sozialtheorie ist ein Hauptthema der *Akten* und es zeigt sich, wie rasant die Entwicklung auf diesem Gebiet vorwärtsschreitet.
Ein spezieller Teil der *Akten* befaßt sich mit der Philosophie Karl R. Poppers und der Philosophie im Umkreis von Popper, z.B. methodologischen, ethischen und sozialtheoretischen Problemen.
Daß das 3. Internationale Wittgenstein-Symposium weltweites Interesse gefunden hat, beweist auch die Tatsache, daß in diesem Band international anerkannte Philosophen aus achtzehn Staaten mit Beiträgen vertreten sind.

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Volume 4

Language, Logic, and Philosophy

Proceedings of the 4th International Wittgenstein-Symposium, Kirchberg am Wechsel, Austria 1979.
Hrsg./Eds. Rudolf Haller, Wolfgang Grassl.
Wien 1980. 619 pp., Pb.
ISBN 3-209-00249-5

The volume contains the proceedings of the Fourth International Wittgenstein-Symposium held under the auspices of the Austrian Ludwig Wittgenstein Society. The contributions provide a survey of active research on the connections between language, logic and human understanding. Specific issues covered include philosophical and linguistic semantics, the private language problem, speech act theory, and the foundations of linguistics. Most of the contributions assess and advance our understanding of Wittgenstein's philosophical positions as well as relating his ideas to current philosophical debate. The proceedings are broadened with papers on philosophy of mind, transcendentalism in Wittgenstein's philosophy, and Wittgenstein in the historical context.

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Band 4

Sprache, Logik und Philosophie

Akten des 4. Internationalen Wittgenstein-Symposiums
28. August bis 2. September 1979, Kirchberg am Wechsel (Österreich).
Hrsg. v. Rudolf Haller und Wolfgang Grassl.
Wien 1980, 619 Seiten, kartoniert.
ISBN 3-209-00249-5

Die *Akten* bieten einen Querschnitt durch die gegenwärtigen Bemühungen der analytischen Philosophie, der sehr klar die wichtigsten Tendenzen und Ergebnisse der Philosophie der Sprache, der philosophischen Logik, der Ontologie und der Linguistik im letzten Viertel unseres Jahrhunderts erkennen läßt. Die wesentlichen Ansätze dieser Disziplinen sind durch Beiträge einiger ihrer Hauptexponenten vertreten. Als zentrales Thema philosophischer Untersuchungen erweist sich dabei die Frage nach der Bedeutung, die im Rahmen verschiedener Disziplinen und mit unterschiedlichen Methoden analysiert und beantwortet wird. Sprechakttheoretische und referenztheoretische Ansätze sind hier ebenso vertreten wie Vorschläge zu einer empirischen Semantik. Neben diesen Arbeiten enthält der Band auch eine Anzahl von Beiträgen, die sich mit Wittgensteins Philosophie im historischen Kontext sowie mit spezifischen Problemen seiner philosophischen Ideen befassen.

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Band 5

Sprache und Erkenntis als soziale Tatsache

Beiträge des Wittgenstein-Symposiums von Rom 1979.
Hrsg. v. Rudolf Haller.
Wien 1981, 147 Seiten, kartoniert (**Alle Beiträge in deutscher Übersetzung**).
ISBN 3-209-00278-9

Der vorliegende Band bringt die Sammlung einer Reihe von überarbeiteten Texten zur Philosophie von Wittgenstein, die ursprünglich bei dem von Istituto di Filosofia der Universität Rom gemeinsam mit dem Österreichischen Kulturinstitut in Rom veranstalteten Wittgenstein-Symposium vorgetragen wurden.
Die Beiträge lassen deutlich die starke Anziehungskraft erkennen, die Wittgenstein heute auf sämtliche geistigen, ideologischen und politischen Strömungen ausübt; entsprechend rege war auch die Resonanz in der italienischen und internationalen Presse.

Gerade wegen seiner Anwendbarkeit bei der Erörterung sozialer Gegebenheiten wird Wittgenstein in Italien besonders geschätzt. Länger schon als etwa in Deutschland und in England, wo die Wittgenstein-Rezeption auf anderen Wegen begann.
(Die Presse, Wien)

Alles in allem schien die italienische Wittgenstein-Rezeption freilich eher vielschichtiger und pluralistischer als die in seinem Heimatland. Man trieb keine Wittgensteinphilologie, sondern knüpfte an Wittgensteins Denken an — entsprach damit letzlich Wittgensteins Auffassung von der Philosophie als keiner Lehre, sondern einer Tätigkeit. In Rom jedenfalls erfüllte sich Wittgensteins eigene Befürchtung weitgehend nicht: „Die einzige Saat, die ich säen werde, ist ein bestimmter Jargon."
(Neue Zürcher Zeitung, Zürich)

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Band 6

Wittgenstein — Ästhetik und transzendentale Philosophie

Akten eines Symposiums in Bergen (Norwegen) 1980.
Hrsg. v. Kjell S. Johannessen und Tore Nordenstam.
Wien 1981, 193 Seiten, kartoniert.
ISBN 3-209-00279-7

Erste Aufgabe dieses Buches ist es, die komplexen Beziehungen zwischen der Philosophie von Wittgenstein und der transzendentalen Tradition, die auf Kant, Schopenhauer und Peirce zurückgeht, näher zu untersuchen.
Eng damit verbunden ist die zweite Zielsetzung: die Erforschung und Erläuterung der Grundlagen der Ästhetik anhand von Wittgensteins Arbeiten.
Die Beiträge dieses Bandes spiegeln das ganze breite Spektrum der Betrachtensweisen, Schwerpunkte und Arbeitstechniken, die momentan in diesem Themenbereich anzutreffen sind.
Dieses Werk basiert auf Beiträgen zu einem österreichisch-skandinavischen Symposium, das 1980 an der Universität Bergen, Norwegen, veranstaltet wurde.

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Volume 6

Wittgenstein — Aesthetics and Transcendental Philosophy

Proceedings of a Symposium at Bergen (Norway) 1980.
Hrsg./Eds. Kjell S. Johannessen, Tore Nordenstam.
Wien 1981. 193 pp., Pb.
ISBN 3-209-00279-7

The first aim of this book is to explore the complex relations between Wittgenstein's philosophy and the transcendental tradition which goes back to Kant, Schopenhauer, and Peirce.
The second and closely related aim is to explore some of the possibilities of clarifying the basic issues in aesthetics which Wittgenstein's work opens for.
The book is based on the contributions to the Austro-Scandinavian symposium on Wittgenstein which was held in Bergen in 1980. The contributions reflect the wide spectrum of approaches, emphases and styles in the work which is currently being done on the basis of Wittgenstein's thought.

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Band 7

Ethik — Grundlagen, Probleme und Anwendungen

Akten des 5. Internationalen Wittgenstein-Symposiums
25. bis 31. August 1980, Kirchberg am Wechsel (Österreich).
Hrsg. Edgar Morscher und Rudolf Stranzinger.
Wien 1981, 525 Seiten, kartoniert.
ISBN 3-209-00280-0

Ethik war das zentrale Thema des 5. Internationalen Wittgenstein-Symposiums 1980. Neben der Philosophie Wittgensteins wurden in den Vorträgen Probleme aus allen Bereichen der Ethik behandelt. Dadurch vermitteln diese *Akten* einen umfassenden und repräsentativen Querschnitt des derzeitigen Standes der Forschung auf diesem Gebiet. In den Beiträgen werden einerseits wichtige theoretische Fragen der normativen Ethik und Metaethik behandelt, und andererseits wird auch der immer stärkeren Berücksichtigung und Anwendung der Ethik in den verschiedensten Wissenschaftszweigen (z.B. Medizin, Biologie und Ökologie), im Wirtschafts- und übrigen öffentlichen Leben Rechnung getragen. In verstärktem Maße und auf breiter Basis finden außerdem die seit einigen Jahren geführten Auseinandersetzungen mit dem Gerechtigkeitsproblem Berücksichtigung, ebenso auch entscheidungs- und handlungstheoretische Überlegungen, die für eine Ethikdiskussion heute unerläßlich sind.
Den zweiten Schwerpunkt des Symposiums bildete traditionsgemäß Wittgenstein. Über Wittgensteins Auffassung der Ethik hinaus wird seinem philosophischen Gesamtwerk breiter Raum gewidmet, so etwa auch seinen Beziehungen zu anderen Philosophen und insbesondere zu Kant.
Dieser Band ist daher eine unerläßliche Quelle für jeden, der sich über die heutige Ethik und den neuesten Stand der Wittgenstein-Forschung informieren möchte.

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Volume 7

Ethics — Foundations, Problems, and Applications

Proceedings of 5th International Wittgenstein-Symposium, Kirchberg am Wechsel, Austria 1980.
Hrsg./Eds. Edgar Morscher, Rudolf Stranzinger.
Wien 1981. 525 pp., Pb.
ISBN 3-209-00280-0

Together with the philosophy of Wittgenstein, the central theme of the Fifth International Wittgenstein-Symposium is Ethics. This choice of theme reflects the significance that Ethics enjoys in contemporary philosophy, and the increasingly clear relevance of philosophy to public affairs. The many-sided nature of ethical discussion is reflected in the contributions to this volume, which deal with questions of normative ethics as well as metaethics and practical applications of ethics. Among the contributions, which number approximately a hundred, the following are especially worth mentioning: on Ethics, the contributions of Kurt Baier, Bengt Hansson, Bernard Harrison, Risto Hilpinen, Norbert Hoerster, Franz von Kutschera, Wolfgang Lenzen, Harald Ofstad, Amartya Sen, Gary Stahl and Bernard Williams, and on Wittgenstein, the contributions of Jaakko Hintikka, Hidé Ishiguro, Stephan Körner, David Pears and Ralph C. S. Walker.

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Band 8

Sprache und Ontologie

Akten des 6. Internationalen Wittgenstein-Symposiums
23. bis 30. August 1981, Kirchberg am Wechsel (Österreich).
Hrsg. v. Werner Leinfellner, Eric Kraemer, Jeffrey Schank.
Wien 1982, 544 Seiten, kartoniert.
ISBN 3-209-00422-6.

Die Ontologie wird heute als eine traditionelle, ja sogar antiquierte Disziplin der Philosophie angesehen, von der man sagt, daß sie den Anschluß an das zwanzigste Jahrhundert und die rasante Entwicklung der Wissenschaften verloren hat. Daß dem nicht so ist, zeigt der vorliegende Band, ,,Sprache und Ontologie", dessen Beiträge das Ergebnis des 6. Internationalen Wittgenstein-Symposiums (23. bis 30. August 1981, Kirchberg am Wechsel, Österreich) sind. Das Symposium, das — wie immer — von den bedeutendsten internationalen Vertretern dieser Disziplin besucht wurde, zeigte, wie man die historischen und die gegenwärtigen Probleme der Ontologie in eingehender und klarer Weise diskutieren kann. In diesem Band wird die Ontologie als die bedeutendste Interdisziplin zwischen den Wissenschaften und der Philosophie angesehen, als eine Interdisziplin, die sich mit Grundlagenproblemen, Grenzfragen und den allerallgemeinsten Strukturen der Welt, wie sie wirklich ist, befaßt; ihr Ausgangspunkt sind die Ergebnisse der modernen Wissenschaften. Mit dem Wandel der Wissenschaften hat sich die Ontologie nicht nur gewandelt, sondern auch gänzlich neue logisch-semantische und strukturelle Modelle und auch Methoden entwickelt, die in diesem Band im Detail analysiert werden. Viele Kapitel, z.B. ,,Traditionelle und gegenwärtige ontologische Systeme", ,,Ontologische Probleme", ,,Formale Ontologien", ,,Erkenntnis und Ontologie", ,,Ontologische Grundlagen der Naturwissenschaften", ,,Ontologische Grundlagen der Sozialwissenschaften", befassen sich mit diesen neuen ontologischen Problemen. Neben diesem — man kann ruhig sagen: vollständigen — Überblick über die heutige Ontologie findet man auch einen Überblick über die gegenwärtige Wittgenstein-Forschung und insbesondere die Wittgensteinsche Ontologie.

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Volume 8

Language and Ontology

Proceedings of the 6th International Wittgenstein-Symposium
23rd to 30th August 1981, Kirchberg am Wechsel (Austria).
Eds. Werner Leinfellner, Eric Kraemer, Jeffrey Schank.
Vienna 1982, 544 pp., Pb.
ISBN 3-209-00422-6.

Today, ontology is often perceived as a traditional, even antiquated, philosophical discipline and many philosophers contend that it has lost touch with the 20th century and the rapid development of the sciences. This volume, entitled *Ontology and Language*, demonstrates that this is not the case. The papers of this volume thoroughly explore and develop the problems of ontology. In this volume, ontology is viewed as an important interdiscipline between philosophy and science, and not as a discipline which is separate and independent from science and other disciplines of philosophy. This perspective is not really a novel one, but is to be found throughout the history of ontological investigation. This volume contains a wide range of the most current work in ontology. Some of the chapters are: "Traditional and Contemporary Ontological Systems", "Ontological Problems", "Formal Ontologies", "Knowledge and Ontology", "Ontological Foundations of the Natural Sciences", "Ontological Foundations of the Social Sciences", and others. *Language and Ontology* is the printed result of the Sixth International Wittgenstein Symposium which was attended by distinguished scholars, philosophers and scientists in this field. Beside the general area of ontology, new advances and research in contemporary Wittgensteinian philosophy and especially Wittgensteinian ontology are included.

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