the art of awareness

fourth edition

J. Samuel Bois

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a handbook on epistemics and general semantics

fourth edition

J. Samuel Bois

edited and with a forward by Gary David

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other books by J. Samuel Bois

Explorations in Awareness. New York: Harper & Row, 1957.

Communication as Creative Experience. Los Angeles: Viewpoints Institute, 1968.

Breeds of Men: Toward the Adulthood of Humankind. New York: Harper & Row, 1970.

Epistemics: The Science-Art of Innovating. San Francisco: International Society of General Semantics, 1972.

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forward

J. Samuel Bois formulated *The Art of Awareness* over a period of sixteen or seventeen years. Originally published in 1966 as a text-book in general semantics by the William C. Brown Co., it has been through three editions. In 1933 Alfred Korzybski introduced the new human science which he called general semantics without reflecting on the possible shrinking of the field he was introducing due to the confusion around the term "semantics." This term mislead many to limit his work to communications and language usage. The second edition of *The Art of Awareness* disspelled that confusion by introducing epistemics as a further development of general semantics. This edition continues that development.

Technically speaking, epistemics can be described as applied epistemology. Epistemology is the science of our meaning activities; it involves inquiries into how we know what we know, and what are the core assumptions that hold our knowledge of the world, including ourselves, together in a way that makes sense to us. Each culture does this in a unique way. Epistemology, in our growing humility, attempts to put some order in the "towers of babble."

Korzybski wrote in his influential work, *Science and Sanity*, "Not every individual knows or realizes the importance of, or seemingly consciously cares for epistemology; yet every one unconsciously has one and acts and lives by it. Each individual has his own special problems, the solution of which always claims the whole man, and no man is complete, unless he consciously realizes the permanent presence in his life of some standards of evaluation. Every one has thus <u>some</u> epistemology. There is no way of parting with it—nor with air, nor with water— and live. The only problem is whether his standards of evaluation are polluted with primitive remains of bygone ages, in a variety of ways . . ."

Samuel Bois' purpose in developing epistemics was to make the "wisdom of the ages" available to the nontechnical person as well as professionals in psychology, the sciences, education, and the arts. The wisdom being made available was an awareness of our limitations in making sense of what is going on within and outside of us;

that we are never just observers but involved participants in whatever we experience; that life goes on as a whole; and that the *differences* and *similarities* we distinguish and perceive "out there" are the results of our attempts to further our purposes or to measure - they are not inherent in the processes we are paying attention to.

Recent developments in epistemics have shifted its emphasis to *communion as an art*, rather than emphasizing the evaluative, and communication of information processes as general semantics was prone to do. Those aspects are still the basics, but the realm that epistemics covers in addition is the interface (the worlds in which we live) between the movements that shape all life forms (the formative tendency) and the manifest world of appearances as we humans see it.

Bois wrote in a letter, "(The) ultra-modern science as I practice it is not alien to what we call simple faith and religious ritual. Lived in participating awareness, these add the glow and the warmth of educated feeling to the well-articulated structure of acquired knowledge."

"Participating awareness" is a good way to describe the activity of epistemics in action. This kind of awareness does not seek to teach, correct, or change. By its presence, its insights will participate in any activity and modestly bring another kind of order to it; an order that can allow us to loosen our distressed grip on what concerns us. In this way a kindly awareness, not a threateningly confrontive one, emerges between what we say and do. We then have available what we sense at the silent levels of our hearts where we are at one with the whole of existence.

In its own quiet way, *The Art of Awareness* has become a part of college courses; it is being used by professionals in many fields such as sociology, history, communications, engineering, psychology, the fine arts, and literature; and it is also being used by non-professional individuals in their day-to-day living. Many of its users claim that it is still relevant to their lives, and a fourth edition is warranted.

What makes *The Art of Awareness* still up-to-date after thirty years? For one thing, it is not about a specialized branch of learning. Its postulates and formulations can be tested in any field, regardless of content. It is written from a general, structural, and methodological point of view which makes it less susceptible to the changing information of a specialized, technical science. Also, each edition introduces an update of its information and formulations.

In 1975, during the preparation of the third edition, in a letter to his publisher Bois wrote, "I am now eighty-three years of age, and I expect the third edition of *The Art of Awareness* to be the final "summa" of my contributions to my chosen field. (I want to) give you some idea of the changes I am contemplating. They will eventually transform *The Art of Awareness* into a practically different book. I propose a new title, as follows: *Epistemics: a handbook of scientific awareness and progressive self-management*. This will make it possible to introduce the book, not only in courses on semantics and communications, but also in first and second years of college, in professional schools, and even at the graduate level. The new title is for the purpose of singling my work out of the field of epistemological sciences and disciplines."

The publisher rejected the new title for business purposes since *The Art of Awareness* was a title already well-known. But Bois' point was to signal the need for radical revision to stay with the growing tip of cultural developments.

Now a note to current users of *The Art of* Awareness. I worked on the 1978 revision when Dr. Bois was too ill to do it. In considering this new edition, I saw that our previous revision had introduced what I consider extraneous material to satisfy the then publisher's needs. I have weeded some of it out, and reorganized the book.

The book is now divided into three parts: Part I is called **Evaluating**, dealing with conceptual revolutions, epistemology, semantic transaction and the process of abstracting.

Part II is **Innovating**, which includes time-binding, the structured unconscious, the stages of cultural development, a reformulating of objectivity, mental models, the structure of languages, love as a cosmic energy, and practices in awareness.

Part III is called **Participating**. It is here that I made the most radical changes. The original edition did not have a separate section on Participating. The 3rd edition did, but Dr. Bois died before we could finish; I had to use some papers I found in his files to flesh out his views on Participating. In living with that section in the third edition, I found that it needed reorganizing, some material deleted, and some new material from Dr. Bois' files added. The result is what you find in this edition. This is an introduction to stage-5 of the Bois-Bachelard epistemological profile. It covers unifying, or "peak" experiences as stage-5 type experiences, and participating as a way of life.

I moved most of the historical material involving general semantics and epistemics to the Introduction. When Dr. Bois made the transition from general semantics to epistemics, *The Art of Awareness* had already been written. So this book became a transitory work that shows the birth of the new discipline. I have tried to clear up any confusions in this regard through a reorganization of material and chapters.

I call your attention to the bibliography. Both Dr. Bois and I took great care in suggesting books and parts of books to supplement each chapter. I included supplementary material from some of Dr. Bois' other books. I highly recommend all of the material included. Granted, some of the suggested books are out of print, but you will be greatly rewarded if you make the effort to find them. There are some great, neglected gems that have stood the test of relevancy. The dedicated individuals who made these valuable contributions should not be overlooked or forgotten.

One note about the use of this text: it can be taken up as an independent study, but best results are obtained by working with someone who has internalized the material. Our experience at Viewpoints Institute in Los Angeles, and in educational institutions where the book is used is that it takes at least two years of intensive work to prepare a teacher to participate with a group in epistemics.

The spirit of *The Art of Awareness* is in keeping with what Dr. Bois wrote in a letter in 1974: "Writing a book is accepting to enter into transactions with any number of persons to whom you give the right to 'touch' you, to examine your brain and to evaluate whether it is sound, clear and well informed or not; to see whether it is consistent in its logic or confused and erratic, narrow-minded or broad-spanned, prejudiced or fair to all. It is accepting to bare your heart and soul, explicitly or implicitly, to anyone who will feel free to question your motivations, your most cherished values, your camouflaged guilt feelings or your hidden ambitions, your unexpressed views of yourself and of your personal world, your self-centeredness -- if it is showing through -- or your genuine altruism -- if it is strong enough to ooze between the values you present."

Gary David, Ph.D.

preface to the second edition

In the introduction to the first edition I wrote "Advances are made that run parallel to general semantics, or that go beyond its early formulations, and the discipline itself may become submerged in a flood of more daring initiatives."

Seven years have passed since this was written, and, if we take into account the constant acceleration of cultural changes, we may wonder if the time has not already come for something more than a mere re-edition of this textbook. When we see the rash of best-sellers that broadcast the counter-culture, the greening of America, and the future shock, we should expect any time now, should we put aside the original views of Korzybski and their developments contained in the first edition of this textbook, or should we keep most of it as the necessary foundation of a solid structure in which the present sciences of man can establish their headquarters for a few generations?

I feel that this second alternative is the most practical. Of all the literature I have read in recent years, either in book form or in learned periodicals, none has dealt to my satisfaction with the inner workings of the new episteme-in-becoming, with the new general system of knowing-feeling-behaving that makes us view ourselves and our world in a perspective so far unforeseen.

Many writers are vivid in their descriptions of what is happening; many are eloquent in their announcement of what might happen. But I am still looking for a down-to-earth *how-to-do-it* text that tells the young generation how to enter the ranks of the parade of mankind on the march and become the relay team that will be capable of carrying on. Their own fate is at stake. They may think they have, as the saying goes, "discovered America," greening or drying up. They did not. Many individuals of previous generations, some well-known philosophers like Bergson and Whitehead, some statesmen like Jan Smuts, some scientific thinkers like Korzybski and Arthur F. Bentley, and a host of common folk have been aware of what was going on and what was likely to happen. Some of us are still here, very much alive, witnessing a young crowd that is just waking up, has a ten-

dency to be dramatic about everything, and shows signs of getting emotionally involved. It might be good for them to know that some of us, way back when they were not yet born, had the same aspirations they now feel within their breasts. We had time to live with these puzzlements for many years, and we tried various formulations, some of which have proved helpful in our personal life and in our professional work. And that is the subject of this book.

The feedback I have received from the users of the book is most gratifying. This text withstands more than a casual reading or a quick cramming for an examination. Some have used it a second time for advanced studies, and they felt they had not exhausted the meaning buried in its depths. The reading references provided a well-orchestrated accompaniment to the main themes.

We have discovered, however, that both the instructors who teach from the book and the students who learn from it encounter difficulties that are traceable to their lack of familiarity with the overall sweep of our cultural history. It is not sufficient for them to know geographical and political history about kings, governments, wars, battles and treaties of peace. They should have within reach and consult repeatedly such books as *An Intellectual and Cultural History of the Western World* by Harry Elmer Barnes (Dover edition in three volumes, 1965), or the profusely illustrated *Great Ages of Man, A History of the World's Cultures* by the Editors of Time-Life books, including at least four volumes of the *Nature Library* published by the same Time-Life Books: *Evolution, The Primates, Ecology,* and *Early Man.* For those who want more than that, the *History of Civilization* of Will and Ariel Durant, in ten volumes, covers what it says it does, and with considerable erudition, until the time of the French Revolution. Of the additions that make this second edition different from the first, two deserve special mention. One is inserted in Chapter 7, "The Worlds in Which We Live"; it reproduces an article published in *Main Currents in Modern Thought*, (1970) under the title "Mankind as a Cosmic Phenomenon." The editor of *Main Currents* had summed it up in a subtitle: "Human solidarity is an evolutionary emergent to be discovered, experienced, taught."[1] An attempt is made

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[1] Reproduced by permission of *Main Currents*, which is gratefully acknowledged.

to make of this discovery an enrichment of the picture we already have of the full space-time process of cosmic evolution.

The *Art of Awareness* has given birth to many teaching programs that are distinct variations from the original. At the University of Southern California, Dr. William J. Williams has applied it to various aspects of public administrative theory and practice and authored a book entitled *General Semantics and The Social Sciences* (Philosophical Library, 1971) that broadens its scope to all the sciences of man. At the Western States College of Engineering, Inglewood, California, Professor David Muskat introduced a course that competes with the rigor of mathematical logic. At Queen's University, Kingston, Ontario, a teaching text, explicitly derived from the present volume and replete with practical exercises, was prepared by Donald Patrick of Montreal and is used for a course sponsored by the Institute of Canadian Bankers.

This second edition has the same objective as the first; it gives, against the background of our cultural history, an explanation of the changes we are going through and a set of directives as to how to make the most of the opportunities offered by these changes.

J.S.B.

preface to the first edition

The cultural movement called general semantics (GS) can be traced to the 1933 publication of a huge and abstruse volume, *Science and Sanity* by Alfred Korzybski.[1] From this book, as from an overflowing spring, much writing originated that constitutes a definite class of self-help literature. It deals with the application of Korzybski's insights and formulations to various fields of human activity: word usage and communication (as in the works of the well-known authors, S. I. Hayakawa, Irving Lee and Stuart Chase), psychological counseling (Wendell Johnson and Harry Weinberg), education (Catherine Minteer, and Weiss and Hoover), architecture and design (Newton), management skills (McCay), and even Wall Street operations (McGee).

While these and other authors were stressing the *practical* aspects of the new methodology, the mainstream of epistemological thought continued to flow and spread in a literature that concerned itself with the *theoretical* aspects of the change in ways of thinking that had been forced upon us by scientific advances and shifts in values. Most of the authors in this second area ignored general semantics, others criticized and ridiculed it without having studied it thoroughly, and only a few acknowledged its significance as one of the symptoms of our current cultural metamorphosis.

There is now, however, an abundant literature in this area, starting with Bergson, Blondel, Whitehead, and others. Recent authors include Percy W. Bridgman, Karl Popper, Michael Polanyi, Ludwig von Bertalanffy, Gaston Bachelard, Louis Rougier, Floyd Allport, Gardner Murphy, Anatol Rapoport, Arthur F. Bentley, John Dewey, J.Z. Young, Rugg, Benjamin Whorf, Harold Rugg, Laura Thompson, Oliver Reiser, among many. Most of these have written

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[1] Published by the International Non-Aristotelian Library Publishing Co. and distributed by the Institute of General Semantics (Lakeville, Conn); 1st ed. 1933, 4th ed. 1958.

for their colleagues in the academic world about technical matters using technical terms not yet current in everyday speech. They have assumed the reader has a good background of information in contemporary sciences.

The present book belongs to neither the practical nor the theoretical group; it has something in common with both. It belongs to the general semantics family of publications, although it is not mainly concerned with practical applications; it deals with epistemological problems, although it is not directed to a sophisticated audience of scientists and philosophers. It treats the Korzybskian system as a system, by and for itself. It examines it as a system in evolution that was started by Korzybski one generation ago in the cultural climate of the time and that continues to develop today under fast-changing conditions.

I do not equate general semantics with other proposed theories and systems nor do I see it merely as a new science or technology, such as cybernetics. I postulate it as a *system* that, if properly developed, could assume in the future the role that Aristotelian epistemology and logic have played for centuries in the Western world.

Many thinkers recognize that a new set of general principles is necessary if we want to coordinate and utilize the findings of the new sciences of man.

> How are these insights to be brought together and synthesized? This is a task which I cannot claim to have performed here, but I have examined the problem long enough to believe that it cannot be done without some set of broad and informing principles such as is to be found in the general semantics of Alfred Korzybski.[2]

I agree with Professor Hayakawa, and I go one step further. I agree that such a synthesis cannot be achieved without some set of broad and informing principles, as are found in general semantics; but I also claim that the insights and formulations of Korzybski—if consistently developed in the self-correcting manner his system requires—are sufficient to bring about the desired synthesis. They form

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[2]S.I. Hayakawa, *Language in Thought and Action*, rev. ed. (New York; Harcourt, Brace & World, 1964), p. x.

a matrix in which every advance in the sciences of man can find its place for many generations.

The present volume is the outcome of twenty years experience in teaching general semantics, from the days when I was a visiting instructor at seminars conducted by Korzybski in 1947, 1948 and 1949. After his sudden death in March 1950, I was the main lecturer at the first regular summer seminar held without him—at Great Barrington, Massachusetts. Later, I conducted advanced seminars at the Institute which Korzybski had founded, and, as a management consultant, I developed a course of training for business executives that was based on his methodology. For the last seven years, I have been conducting adult-education workshops in general semantics in Beverly Hills, California. Three years ago, we founded Viewpoints Institute, Inc. "a center for the study, practice and development of general semantics," where workshops at the introductory, intermediate and advanced levels are conducted throughout the academic year.

In 1961, I gave thirty half-hour talks on two radio stations owned by Pacifica Foundation: KPFK in Los Angeles and KPFA in San Francisco. The transcripts of these talks have been used as a text for the workshops conducted at Viewpoints and for the credit courses given for University Extension on three campuses of the University of California, at Los Angeles, San Diego and Riverside. This book is a revision of these transcripts after four years of use with some fifteen hundred students, whose reactions and suggestions have been taken into account.

The book is intended for undergraduate and graduate courses in any discipline dealing with human behavior, such as psychology, sociology, anthropology, education, political science, communications, literature. It also will serve a useful purpose in general background information required of students in such professional schools as medicine, architecture, engineering, education, business administration, and the ministry. It already has proved its value in courses, seminars and workshops, and discussion groups organized by local chapters of the International Society for General Semantics and by organizations that are devoted to adult education.

—J.S.B

editor's acknowledgments

My deepest gratitude to Ethel Longstreet, current President and co-founder of Viewpoints Institute with J.S. Bois, for her friendship, help, encouragement, and steadfastness. This edition of *The Art of Awareness* would never have been published without her support. Her dedication for over forty years has justified Dr. Bois' faith in putting his manuscripts in her hands. Ethel is an innovator in the teaching of general semantics and epistemics. I found her experientially oriented approach invaluable. I know I can speak for hundreds of others who had the good fortune of attending her never easy, but invariably rewarding, classes.

I also want to thank Dick Grosslight, a poet and fellow Director of Viewpoints. His humor and encouraging support was invaluable in getting this fourth edition in print.

Finally, I want to thank David Muskat, a scholar and teacher of epistemics, for the long hours we spent going over the book in great detail. His knowledge of how other teachers are using the book, and his enthusiasm for the new edition was extremely helpful to me.

—Gary David

acknowledgments for the third edition

I would like to gratefully acknowledge the collaborative efforts of Dr. Gary David and Annie Muller who helped me in revising this edition of *The Art of Awareness.* It is gratifying for me to have two of my former students, teachers of general semantics and epistemics in their own right, contribute to this work.

Dr. David brought the whole manuscript together. He organized and integrated my revisions and additions into a new order, as well as contributing significant new material.

Mrs. Muller contributed many helpful suggestions, as well as unflagging support and assistance, as we worked together on the first draft of the manuscript.

Special thanks to Verlin Heuton for important research and for our conversations. To Ethel Longstreet, my cofounder of Viewpoints Institute, who has helped me in developing this work over the years, my deepest appreciation.

—J. S. B.

about the author
J. Samuel Bois 1892 - 1978

J. Samuel Bois saw his own life as a three-stage odyssey: priest, psychologist, epistemologist. He was born in Canada in 1892 in a long cabin in the tiny Quebec settlement of Stratford Centre.

He attended Laval University where he received his B.A. He then studied theology and he was ordained a Catholic priest. As a worker-priest, he organized labor unions, founded a weekly newspaper, and as a Jesuit, he worked as a missionary.

Bois said, "I was beginning to be a prominent man in the Catholic clergy in Quebec. I tried to reform the clergy—preached things that could be interpreted differently." He thought things he was not supposed to think, and said things he was not supposed to say, and did things he was not supposed to do. Consequently, after more than twenty years as a priest, he was condemned by a Catholic Tribunal in Montreal for preaching that with love, all will be good. "This translated as 'love, and do what you want.' They thought I meant free love, not God-love." He appealed to the Holy Office in Rome where he was "a prisoner of high offices, under strict supervision." Bois later wrote, "I saw that my appeal would be put off indefinitely." Eventually, the Church granted him a discharge 'by privilege' from the ranks of the clergy.

Meanwhile, he turned his attention to other things. In June 1936, then 44 years of age, he obtained a Ph.D. in psychology from McGill University, Montreal, Canada. In July of the same year, with a younger colleague, he opened the first psychological consulting service in Canada.

He enlisted the attention of some influential people in government and academe in the direction of mental testing, penal reforms and the establishment of clinics. In a 1977 letter Bois wrote, "We were then covering the whole front of advance in services offered to the public: vocational guidance, psychotherapy, measurement of public opinion, communication, administrative practices, group organization, etc. I was keenly aware of those various tasks, and I was searching for some general method of improving our service to the

public." From 1937 to 1941, he published three books in French, *Psychologie pour tous; Le Bonhuer's apprend; and Psychologie et Medicine.*

An issue of the Psychological Bulletin, a publication of the American Psychological Association in 1939, contained an article by Professor A.A. Stevens, of Harvard, entitled "Psychology and the Science of Sciences." Bois read the article which discussed the logical positivism of Ernst Mach and the stir it was making in the scientific research world. Bois was looking for some help in his work. He found no evident help in the article, but his attention was attracted by a footnote that said in substance: "Count Alfred Korzybski, in a huge volume published by Science Press, Lancaster, Pennsylvania, with the title *Science and Sanity*, claims that most of our difficulties in education and professional activities stem from the fact that we are training the younger generation to deal with a dynamic world, using static concepts that date to Aristotelian logic and have continued to dominate our thinking through the ages."

Bois later wrote, "Those two contrasting terms, *dynamic* and *static*, clashed with sonority in my inner space. They were for me both a warning signal and a pressing message to change my basic orientation."

Korzybski's name was unknown to Bois and to most of the psychological world in 1939, but Bois got Korzybski's book immediately and "studied it with feverish eagerness." Bois writes, "The majority of its statements were well nigh unacceptable to me, who had been thoroughly trained in Thomistic philosophy, but, at the same time, the reading of the book was a stirring stimulant and made it possible for me immediately to apply with unexpected success new practices in my professional work. I kept at it, gradually overcoming the inner conflict it had created and obtaining gratifying results in a geometrical progression. *Science and Sanity* was the only book I had brought with me and kept studying almost daily when I joined the Canadian army."

Bois entered the Canadian army in 1941, first as a personnel director in Montreal and Quebec, and later as Lt. Colonel in charge of research and information for the entire Canadian army, at home and overseas. His field of activity was variously described as the morale of men, research and design in army organization, and publisher of the army house organ *KHAKI* in English and in French. He took it

upon himself to prove the value of psychology and the influence of general semantics even to the most lackadaisical officials. At the end of the war, the Chief of General Staff acknowledged the practical value of what Bois was introducing. He asked him to make his services available when he returned to civilian life.

In 1945, Bois took a seminar with Alfred Korzybski in Chicago at a recently founded institute for general semantics. He saw in the new discipline great possibilities for the development of industrial psychology and its application to executive training and management practices. Once the war was over, he shifted his professional work to industrial psychology. First, as the head of the psychological services of the management consulting firm, Stevenson & Kellogg, in Montreal, and later as the senior partner of his own firm, Bois & Howard—later Bois & Mahoney, and as president of Bois & McCay & Associates, Ltd., Counsel in Corporate Growth.

While engaged in these activities, he kept working for the development of psychology as a profession in Canada. He served as chairman of the Committee on Certification of the Canadian Psychological Association, as president of that association, a president of the Quebec Psychological Association, and as president of the Corporation of Psychologists of the Province of Quebec.

In 1947, 1948 and 1949 he lectured at the seminars conducted by Korzybski. It was around 1947 that he first began formulating what he then called Executive Methods, for doing at their level of work something similar to what Frederick W. Taylor had done for the manual worker earlier in the century. A series of mimeographed essays with the general title of *Executive Methods* was published in English and in French. They were the nuclei of what later become *the Art of Awareness*. Four consulting firms, outside Montreal, adopted these methods as the core of their program of work. The firms were in New York, Chicago, Toronto and San Francisco.

In 1950, after the death of Korzybski, he was asked by the Trustees of the Institute of General Semantics to conduct the regular seminar in Korzybski's place. He became a trustee and vice-president of the Institute, where he gave advanced seminars in 1953 and 1954. He was also on the Board of the International Society for General Semantics. He was a frequent contributor to the two publications dealing with the new discipline: *The General Semantics Bulletin*,

published by the Institute, and *ETC*, published by the International Society.

In 1956, he retired from his professional work of industrial psychology and management consulting. He took residence in the semi-desert of Southern California, there to read, meditate, and pursue leisurely his own investigations in the sciences of man that were proliferating all around his own field. That same year, he had his first book in English published by Harper, titled *Explorations in Awareness*. In the introduction he wrote:

> Even when we state principles and develop theories, we are not dealing with objective truths that stand out there for anyone to accept or to reject. We are summarizing in so many words a mixture of somebody else's views and our own. Science and Tradition, as I see them, are the accumulation of the experiences of people who lived before us.
>
> My own experiences are neither spectacular nor epoch-making. They belong to the world of the average man, who is groping through life, trying to find here and there signposts to better roads. In my explorations I have used various maps. Some proved to be obsolete; some were apparently made of dreams and not from actual surveys; some were hard to decipher, but they were well worth the trouble of studying them. All I can do is relate my own explorations. Please don't take as authoritative anything I say. You may decide to put some of my statements to the test of experience. I am confident that they will stand it.

Within his first year in California, he accepted the invitation of Ethel Longstreet, Director of Viewpoints Forum for 'thinkers, scholars and dreamers.' The forum asked its speakers to share with a wide awake audience their views on our cultural world-in-the-making. Ethel Longstreet wrote, "(Bois') talk was interesting, the French accent intriguing, but even our sophisticated audience was not prepared to receive what Bois was talking about, nor was I."

From that meeting emerged Viewpoints Institute: a center for guided awareness, where the recent human sciences, the new art forms, and general semantics were used to facilitate self-understanding, self-acceptance, and self-management. In 1959, Bois became the Director of Education, and Ethel Longstreet became the Executive Director.

General semantics, as taught and practiced at Viewpoints, took its origin in the pioneering insights of Alfred Korzybski, but expanded it in many new dimensions, well beyond the scope of the

early popularizers: S. I. Hayakawa, Wendell Johnson, Irving Lee, Harry Weinberg, Stuart Chase, et al. General semantics had become limited in scope to communication, critical thinking, and to semantics as a branch of linguistics, as ably developed later by such as Professor Noam Chomsky and Professor Osgood, the author of *The Semantic Differential.*

In 1961, Dr. Bois gave a series of talks on the Pacifica radio stations in Los Angeles and San Francisco. The talks were transcribed and became the working textbook for classes at Viewpoints, UC San Diego, UCLA and USC. That privately printed manual eventually became *the Art of Awareness*. Dr. Baxter Geeting of Sacramento State College helped Bois to publish it as a textbook with the William C. Brown Company in 1966.

Dr. Geeting wrote the foreword to the first edition and he wrote, "Having taught courses in General Semantics on the undergraduate and graduate college levels for over twenty years, I have felt the tremendous need for a textbook dealing with the study of General Semantics as a discipline by itself and for itself. Although my classes have been enriched by references to several excellent books using the learnings of General Semantics in relation to various disciplines, they have been denied the balancing influence that only a basic textbook written by a knowledgeable specialist could give. Dr. J. Samuel Bois has solved my problem and, I am sure, that of many professors and students, by providing a reputable, comprehensive, and lively textbook in General Semantics."

During that time, Bois was interviewed three times on the program *Odyssey* on CBS radio, he conducted seminars at UCLA and was a visiting professor at USC. In the almost twenty years he participated at Viewpoints Institute, he wrote *the Art of Awareness, Communication as Creative Experience*, *Breeds of Men,* and *Epistemics: the Science-Art of Innovating*, and also many unpublished essays that he used as working papers in seminars. He and Ethel Longstreet conducted seminars, workshops and lectures through the 1970's, developing other teachers in the process. It was the only institute of its kind, and hundreds of students passed through its classes.

In the years before his death, Dr. Bois sought to eliminate the bifurcation of the Korzybskian tradition by reformulating general se-

mantics as epistemics. He stated it in an article in *ETC,* the official organ of the International Society for General Semantics. In 1978 he introduced that reformulation in the third edition of *The Art of Awareness*. J. Samuel Bois died later that same year at the age of 86.

introduction

Epistemology Past and Present

The *Art of Awareness* describes a methodology or an operational discipline that relates to a practice inaugurated implicitly in the first periods of our cultural history. Socrates, Pythagoras, Aristotle, and other Greek philosophers would be described today as scientists and epistemologists. As scientists, they were concerned with the content of human knowledge, which developed into the various sciences of today. As epistemologists, they were concerned with the tools and the methods they used to discover the world that surrounded them and devising a technology of how to manage themselves and their activities in that world. Aristotle, as the creator of logic, was working in his role as an epistemologist. Busy with developing an awareness of what he was doing in his scientific work and how to improve his doing it, he devised the rules of syllogistic deductive thinking.

In the following generations, a series of people have continued Aristotle's work. To mention only a few, we may cite Descartes with his *Discours de la Methode,* Kant with his various *Critiques* and transcendental philosophy, John Stuart Mill with his work on the inductive process, Percy W. Bridgman with his *Logic of Scientific Discovery*, and a host of others. One writer deserves a special mention in this list. He is William Frederick Ferrier, the Scottish philosopher, who, within a year or so of the *Origin of Species* by Darwin, came out with the newly coined term of *epistemology*, then taken as the *Theory of Knowledge*. It was still described in this manner in the 1975 edition of *Britannica*. We thus come to Alfred Korzybski, the man who greatly influenced me as the author of this book. Korzybski was greatly helped and encouraged by two well-known scientists, Cassius Jackson Keyser, mathematician and philosopher from Columbia University, and Arthur F. Bentley, political scientist and epistemologist.

Alfred Korzybski and General Semantics

General semantics dates back to 1921, when it was called Human Engineering, and its initiator, Alfred Korzybski, was a Polish veteran of the First World War. After the collapse of Russia, Korzybski served in various military capacities in Canada and the United States and eventually became a U.S. citizen; he died in 1950 at the age of seventy. His professional training had been in mathematics and engineering, and he felt that the time had come to apply to human affairs methods of thinking that were comparable to those that had made possible our spectacular advances in technology. Hence the term *Human* Engineering.

At the time, he was practically unknown to the American academic world. He had never published anything—in his native tongue or in the several languages that he knew well—but he felt a strong compulsion to broadcast an urgent message to the world, and he wrote the book he titled *Manhood of Humanity* (Dutton, 1921). For him, the First World War, which he described as a "wanton waste of life," marked the end of the childhood of humanity.

> This childhood, as any childhood *has been characterized as devoid of any understanding of values.* It has been unduly long, but happily we are near the end of it, for humanity, shaken by this war, is coming to its senses and must soon enter manhood, a period of great achievements and rewards in the new and real sense of values dawning upon us.[1]

This new sense of values was to be developed by a more rigorous study of the laws of nature as they apply to human beings.

> I hope to show that, by mathematical philosophy, by rigorously scientific thinking, we can arrive at the true conception of what a human being really is, and, in thus discovering the characteristic nature of man, *we come to the secret and source of ethics.*[2]

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[1]Korzybski, *Manhood of Humanity*, d ed. (Lakeville, Conn.: Non-Aristotelian Library Publishing Co. [distributed by the Institute of General Semantics]. 1950). p.27 (italics added).

[2]Korzybski, *Manhood of Humanity*, p.17 (italics added).

As these statements indicate, Korzybski was not mainly concerned with words and their usage (as many people assume, because the term *semantics* is attached to his enterprise); he was concerned with values and human welfare. "It is the aim of this little book" he said, "to point the way to a new science and art . . . of *directing the energies and capacities of human beings to the advancement of human weal."*[3] His purpose was the development of scientific ethics as a technology of human welfare.

Defining man as a *time-binding* class of life, he used a mathematical analogy to differentiate plants as *chemistry-binders* (first dimension of life), animals as *space-binders* (second dimension of life), and men as *time-binders* (third dimension of life). By time-binding he meant "the capacity to summarize, digest, and appropriate the labors and experiences of the past . . . the capacity in virtue of which man is at once the inheritor of bygone ages and the trustee of posterity."[4]

Manhood of Humanity went through four printings within two years, but this was not an earthshaking event. Cassius Jackson Keyser, hailed it as "worthy of the serious attention of every serious student, whatever his field of study," but few persons gave it the attention it deserved. It almost became one of those esoteric books that reaches a limited public and is soon left forgotten on the shelf of some specialized section of a few libraries.

Korzybski was not the kind of man who would let his views be buried in the dust of library shelves. "He had faith in his message, and cherished the hope that he could stir the scientific world by his projects . . . He began to contact scores, if not hundreds, of well-known authors and scientists . . . and attracted many brilliant men to his ideas."[5]

In 1933, Korzybski published a second book, a huge volume, which was to become the sourcebook for many publications, seminars and lectures on what is now called general semantics. He saw this second book as a continuation of his previous work.

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[3]Korzybski, *Manhood of Humanity*, p.1 (italics added).

[4]Korzybski, *Manhood of Humanity*, p.59.

[5]A.A. Roback, *History of American Psychology* (New York Library Publishers, 1952), p. 348.

> In the present volume I undertake the investigation of the mechanism of time-binding. The result of this inquiry turned out to be a non-Aristotelian system, the first to be formulated, as far as I know, and the first to express the very scientific tendency of our epoch.[6]

In the concluding remarks of his second book, we again see his concern for human welfare and for scientific ethics as the leading theme. There he lists, in a long column, the possible results of the non-Aristotelian epistemology, which he advocates, and, in a contrasting column, the tragic results of the Aristotelian standards of evaluation that dominate most of our culture.[7]

By the title, *Science and Sanity*, Korzybski meant "the scientific methods of 1933 as means of achieving sanity." He had to have the book printed at his own expense, and the sale of it took years to acquire momentum, but it is now recognized as an epoch-making classic. In 1964, at the occasion of its fortieth anniversary, *Saturday Review* asked twenty-seven historians, economists, political analysts, educators, social scientists, and philosophers to list "what books published in the last four decades most significantly altered the direction of our society and may have a substantial impact on public thought and action in the years ahead."[8] Of the 163 titles mentioned, only twenty-four were rated higher than *Science and Sanity*.

In 1938, Korzybski founded the Institute of General Semantics. On the letterhead, he stated that the purposes of the institute were "linguistic epistemologic scientific research and education," and he listed the names of thirty scientists and professionals who had agreed to be honorary trustees. This institute, still in existence in Lakeville,

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[6]Korzybski, *Science and Sanity*, p. 555. This book has had four editions so far (1933, 1941, 1948, 1958), all published by the International Non-Aristotelian Library Publishing Company and distributed by the Institute of General Semantics, Lakeville, Connecticut. The page numbers of the body of the work are the same in all editions; the page numbers of the various prefaces, in Roman numerals, vary cumulatively from the first to the fourth edition. Permission to use quotations and illustrations from *Science and Sanity* and *Manhood of Humanity* was granted by the Korzybski estate, and is gratefully acknowledged.

[7]Korzybski, *Science and Sanity*, p. 555.

[8]*Saturday Review*, 29 August 1964.

Connecticut, sponsors seminars twice a year and publishes a yearbook distributed to the several hundred members who support it with their contributions. In 1952, the institute organized a yearly Korzybski Memorial Lecture, which is held in New York, where such well-known people as F.S.C. Northrop of Yale, F.R. Roethlisberger and the late Clyde Kluckhohn of Harvard, Ashley Montagu, the late Abraham Maslow, James Van Allen, Warren S. McCullough, Henri Labroit and others have paid homage to Alfred Korzybski.

In 1942, a group of general semanticists founded the International Society for General Semantics and in 1943 began the publication of a quarterly called *ETC.*: *A Review of General Semantics* (Korzybski contributed many papers to the early issues of ETC.). The articles published in the review are not only from writers who profess to be general semanticists, or who acknowledge a specific indebtedness to Korzybski's influence; they include contributions from people working in diverse fields of scientific, literary or artistic endeavor who are concerned with the cultural revolution of our time. *ETC.* penetrates beyond the Iron Curtain, and its circulation of 7,500 copies is one of the largest for a magazine of that type.

When Korzybski died suddenly in 1950, he had, according to Roback,

> ...become an institution in himself. His successful teaching is attested by the fact that, all told, he had at his various seminars some two thousand mature and, in many instances, trained people from all parts of the country. He lived to preside at three congresses of general semantics, and if all he had accomplished were only to stimulate the writing of several hundred papers on a large variety of topics, such as medicine, law, chemistry, politics, speech therapy, education, the use of words, marital conflicts, social work, all in relation to general semantics . . . he would have merited a place in the history of psychology.[9]

Except for some rare articles in special publications, there are very few critical studies of Korzybski's views in the light of the developments that have taken place in the philosophy of science since the publication of the first edition of *Science and Sanity* forty-odd years ago. Advances are made that run parallel to general semantics, or that go beyond its early formulations, and the discipline itself may

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[9]A.A. Roback, *History of American Psychology*, p. 351

become submerged in a flood of more daring initiatives. And yet it is evident to whoever has studied it in depth that it is still the most comprehensive system available. It is like a matrix in which one can insert, in a logical order, the innovations in thinking and the findings of research that are coming to us from all directions. It is in keeping with the "new way of thinking" advocated by Albert Einstein, with the "conceptual revolution" of which Percy W. Bridgman spoke in his last book at what Teilhard de Chardin called *The Phenomenon of Man*.

Some critical readers are shocked by sweeping statements that appear here and there in *Science and Sanity*, and a few scientists and philosophers are not ready to accept Korzybski's claims that he was introducing, as he put it, a "new empirical science of man." A careful perusal of his work dispels such an impression; he was as much aware of his limitations as any of his most exacting critics.

> In the present work, each statement is merely the best the author can make in 1933. Each statement is given definitely, but with the semantic limitation that is based on the information available to the author in 1933 . . . Some of the information may be incorrect, or wrongly interpreted. Such errors will come to light and be corrected in the future.[10]

The Art of Awareness is an example of the elaborations Korzybski was speaking of. Its Chapter 3, for instance, is the elaboration of two lines on page 23 of *Science and Sanity* " . . . and psychological occurrence has a number of aspects, an 'affective', and an 'intellectual', a physiological, a colloidal, and what not."

At the time the second edition of this volume was prepared, articles in popular magazines; books dealing with the application of Korzybskian method to such fields as psychotherapy, education, and management; the creation of an international society with its quarterly review *ETC.*; and the occasional nationwide or local seminars and symposia, some held in outlying cities as Honolulu, and Mexico City, had made the discipline generally known; there were practically no educated persons, even in those days, who had not heard of Korzybski and his work. In the 7 June 1971 issue of *Time* magazine was

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[10]Korzybski, *Science and Sanity*, p.142.

an article on the current use of the word *media*, which ended by crying out: "Korzybski, where are you now that we need you?"

The introduction into the world of Academe was much slower. In 1954, Anatol Rapoport, the mathematical biologist, compared Korzybski and general semantics to another pioneer of our times, Sigmund Freud and psychoanalysis.

> Neither was Freud's approach to behavior and personality an empirical science. Freud's work contains many brilliant conjectures, fruitful generalizations, signposts for future workers; and, in the opinion of the writer, so does the work of Korzybski . . . He has pointed the way toward the establishment of such a science. He was a precursor of an intellectual revolution which is just beginning and which promises to match that of the renaissance . . . He was a man of vision and an apostle. Such men are all too rare in our age of specialization.[11]

In 1952, when addressing the Korzybskian followers in a memorial lecture, Ashley Montagu had said:

> Before proceeding to the discussion of this brilliant conception of time-binding, I must say a few words about the dangers of making one's appearance too early. Intellectually, Korzybski was a prematurely born child. The views set out in *Manhood of Humanity* were from 25 to 30 years too early. While in 1921 Korzybski was occupied with science and its relation to ethics, with science and its relation to values, his contemporaries in the sciences and in philosophy were denying that science or philosophy could provide a sound scientific foundation for leading a good life. Scientists were inclined to an ivory-towerism and a hand-washing indifference to the consequences of their work. Thirty years later, scientists are pretty generally agreed that they must take a more responsible view of their place in the world. Korzybski's warning has come home to roost; "If those who know why and how neglect to act," he wrote in 1921 "those who do not know will act, and the world will continue to flounder."

But Rapoport and Montagu were still lonely voices in the world in which they functioned. For instance, in 1965 the American Academy of Arts and Sciences established a *Commission on the Year 2,000*, to provide the public with a "systematic anticipation, some form of thinking about the future." A group of forty-one scientists, all

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[11]A. Rapoport, "What is Semantics?" in *Language, Meaning and Maturity*, ed. S. I. Hayakawa (New York: Harper & Row, 1954). p. 17.

interested in the sciences of man, got together and exchanged their views on a long list of topics, fifteen in all, dealing with such things as governmental structure, intellectual institutions, population and age balance, location and husbandry of human talent, the use of leisure, and the state of the international system. They recognized that the socio-philosophical framework that had largely guided the organization of our society was outmoded and inadequate, and they stated that they were looking for a "bold new framework, a new philosophical view of man and society." Twenty-nine of them had already written books well received by our national intelligentsia. They were all well established in seats of advanced learning, and the mean age of the group was 49, ranging from 36 to 76. It indicated that all of them belonged to an elite of mature thinkers accepted as reliable guides of our population in matters of human survival and progress.

When I read the apparently verbatim reports of their deliberations in *Daedalus*, I was surprised to discover only one short statement, by the oldest member of the group, the late Lawrence Frank, that referred to the epistemological aspect of the present crisis. "We are now finding ourselves," he said, "baffled and frustrated in our attempts to cope with human problems because *we cling to the older deterministic linear formulations.*"[12] Anyone familiar with the now prevalent concern with philosophical issues and aware of the commissioners' wish for a "bold new framework," would expect that statement of a respected participant to arouse a keen interest and become the trigger of a lively discussion.

Nothing of the kind happened. The stream of speculations kept on flowing undisturbed, and nobody even appeared to notice that something of the highest significance had been said.

It is not because general semantics is a "cult," nor because of any learned objection raised against it by well-informed philosophers, it is simply because many teachers have not yet become aware of the cultural revolution we are going through. As Daniel Bell, chairman of the Commission, wrote: "We have not dealt with 'the future of cul-

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[12]Reprinted by permission of *Daedalus*, Journal of the American Academy of Arts and Sciences, Boston, Massachusetts, Summer 1967, *Toward the Year 2000: Work in Progress* (italics added).

ture,' perhaps the most unpredictable of the dimensions of human consciousness . . . The new 'secular religions' and new cults—whether they be post-Christian moods of the theologians or the new hedonism of the young with its rites of pleasure and the pursuit of sensate involvement of psychedelic release—are radical changes in the nature of man's emotions and feelings and require explanation."[13]

Misunderstandings and Rectifications

One purpose of this introduction to *The Art of Awareness* is to end the misunderstandings surrounding the name general semantics and, thus, the limiting of the discipline to linguistics and speech communication. I suggest for the discipline a new name that has no evident commonality with semantics in all forms. As I stated in the Preface, I call it epistemics. This term was formally introduced in 1969. However, I deem it expedient to keep in this introduction, the material from previous editions that dispel the misunderstandings about the name "general semantics." This will serve, at the same time, as a historical account of the gradual transformation of what Korzybski had labeled "a Non-Aristotelian System."

The term "general semantics" has created a great deal of trouble for those who promote the Korzybskian system and a great deal of confusion in the minds of people who have only a casual acquaintance with it. Of the two words, the second is the noun, and we expect the noun to tell us what the entire term "really" means. Semantics is semantics—"general," "special," "limited" or what-have-you—it is a *kind* of semantics. All this is quite erroneous.

The dictionary says that semantics belongs to linguistics that "it is the study of meanings and changes of meaning." General semantics would, therefore, seem to be a form of linguistics, dealing with words and communication skills, and we call it "general" because it probably deals with all kinds of communication media, not only with words. It probably covers other kinds of symbols and other kinds of techniques, such as diagrams, visual aids, and the like; it considers even mathematics as a language.

This interpretation is quite common. Thus, in 1943, Raymond Moley wrote in his syndicated column: "Remember, those Admini-

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[13]Ibid.

stration boys are great believers in semantics, which is New Dealese for the art or science of picking words coated with the right kind of chocolate icing." In a more serious vein, some persons use semantics to mean the science and the art of avoiding verbal confusion, for example: Max Lerner in the *New York Post* in 1950: "By any Western standard of democracy, the Russian elections are a poor semantic joke . . . The word democracy for the Russians does not mean what it means for us. When they call their elections 'democratic', don't let the word fool you; it does not mean free elections as we have them here."

Several personal experiences illustrate the same point. Years ago, while giving a talk to the Montreal Personnel Association, I attempted to answer the ever-recurring question, "What is general semantics?" My explanations were apparently a bit confusing for my listeners, so in the question and discussion period, a good friend of mine—a psychologist who had turned journalist (and was very successful at it)—got up and took it upon himself to translate my rather confusing statements into plain, clear, common sense language. Doing his best to excuse my esoteric approach and to assuage my feelings at the same time, he said (in effect):

> Scientists have a language all their own, and it is not always easy for the common man to follow them. As a journalist, it has been my role to translate scientific language into plain English, and I am sure that my good friend, the speaker of the evening, will not mind my translating what he just said. Semantics, as we all know, is the study of the meaning of words, and General Semantics is the study of the original, real and pure meaning of words and symbols, so that they can be restored to their genuine value. Words could be compared to ships traveling the seas of communication. The job of the general semanticist is to scrape the hull of those ships, to remove the barnacles that have accumulated, and to restore the ships to their original, clean and smooth sailing shape. What is true of words is true of all symbols. Hence the term *general* semantics.

His statement was clear, very clear indeed. His intentions were good. He wanted to help me out, to clear away the fog of misunderstanding that he could see between my listeners and me. But he had done exactly the opposite of what I wanted of a helper. He had brushed aside all the differences I had suggested between semantics and general semantics. He had misled the audience most competently, by telling them that general semantics is just another kind of seman-

tics, of word and symbol study, a bit broader than the commonly accepted branch of linguistics.

Another source of misunderstanding is that many books and publications that have made general semantics known to the public emphasize the linguistic aspect of Korzybski's system. They do not *explicitly* limit GS to what their titles imply, but they do little to correct the restricted view that the casual reader gets from such phrases as the following: "language habits in human affairs," "language in thought and action," "the tyranny of words," "words and what they do to you," "language, meaning and maturity," "the use and misuse of language," "a quarterly concerned with the role of language and symbols in human behavior."

Commonly, the discipline has been accepted and taught in departments of speech and communication, as at the University of Denver, in departments of English, as in the Illinois Institute of Technology, and at San Francisco State's department of education, with emphasis on proper communication between teachers and students. There was even, in 1969, an annual meeting of general semanticists held as a symposium on communications, when a university professor from the other side of the Iron Curtain participated, thus giving to the communication aspect an international sanction. One of my own books, published by Viewpoints Institute, Los Angeles, in 1968, has a title that befogs the issue even more. The title reads: *Communication as Creative Experience.*

In fact, semantics and general semantics hardly belong to the same order of things. Historically, they have nothing in common. In the preface to the third edition of his *Science and Sanity*, which appeared in 1948 (fifteen years after the original manuscript was completed), Korzybski wrote:

> My work was developed entirely independently of "semantics," "significs," "semiotic," "semasiology," etc., although I know today and respect the work of the corresponding investigators in those fields, who explicitly state that they do not deal with a theory of values. *Those works do not touch my field* . . . The original manuscript did not contain the word "semantic" or "semantics."[14]

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[14]Korzybski, *Science and Sanity*, 3d ed. (Lakeville, Conn.: International Non-Aristotelian Library, 1948), p. viii (italics added).

In the same preface, Korzybski calls his theory "a theory of values . . . for educational guidance and self-guidance." In earlier writings he had called it by various names such as Humanology, Time-binding Theory, General Theory of Evaluation, and even Human Engineering. He quickly abandoned this last term when he realized that it had been preempted by psychologists and engineers who work on the adaptation of man to machine and of machine to man. We noted in our introduction that in his first book he described GS as an attempt to develop scientific ethics, and Korzybski comes back to the same theme in the concluding remarks of *Science and Sanity* (pp. 555-557).

Finally, we have to consider another statement of his when he looked at his work from another angle and described it in a somewhat detached manner:

> *General* Semantics turned out to be an empirical natural science of non-elementalistic evaluation, which takes into account the living individual, not divorcing him from his reactions altogether, nor from his neuro-linguistic and neuro-semantic environment, but allocating him in a *plenum* of some values, no matter what.[15]

Semantics and General Semantics

We may visualize the distinction between semantics and general semantics with the help of the figure below. Here we have three men, each represented by a central frame that contains four overlapping ellipses (what these ellipses represent will be described in detail in Chapter 3, Semantic Transaction). The central frame is flanked on each side by two receding similar frames, the one on the left representing their cumulative past and the one on the right representing their future as they anticipate it.

All three men happen to be in the same room in a hospital on a certain morning. From left to right we see, first, a surgeon, Dr. Jones; next, a patient named Jack; and the third man is Fred, a statistician who works for a research project conducted by the local university on the biochemical aspect of certain diseases.

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[15]Korzybski, *Science and Sanity*, 3d ed., p. viii (italics added).

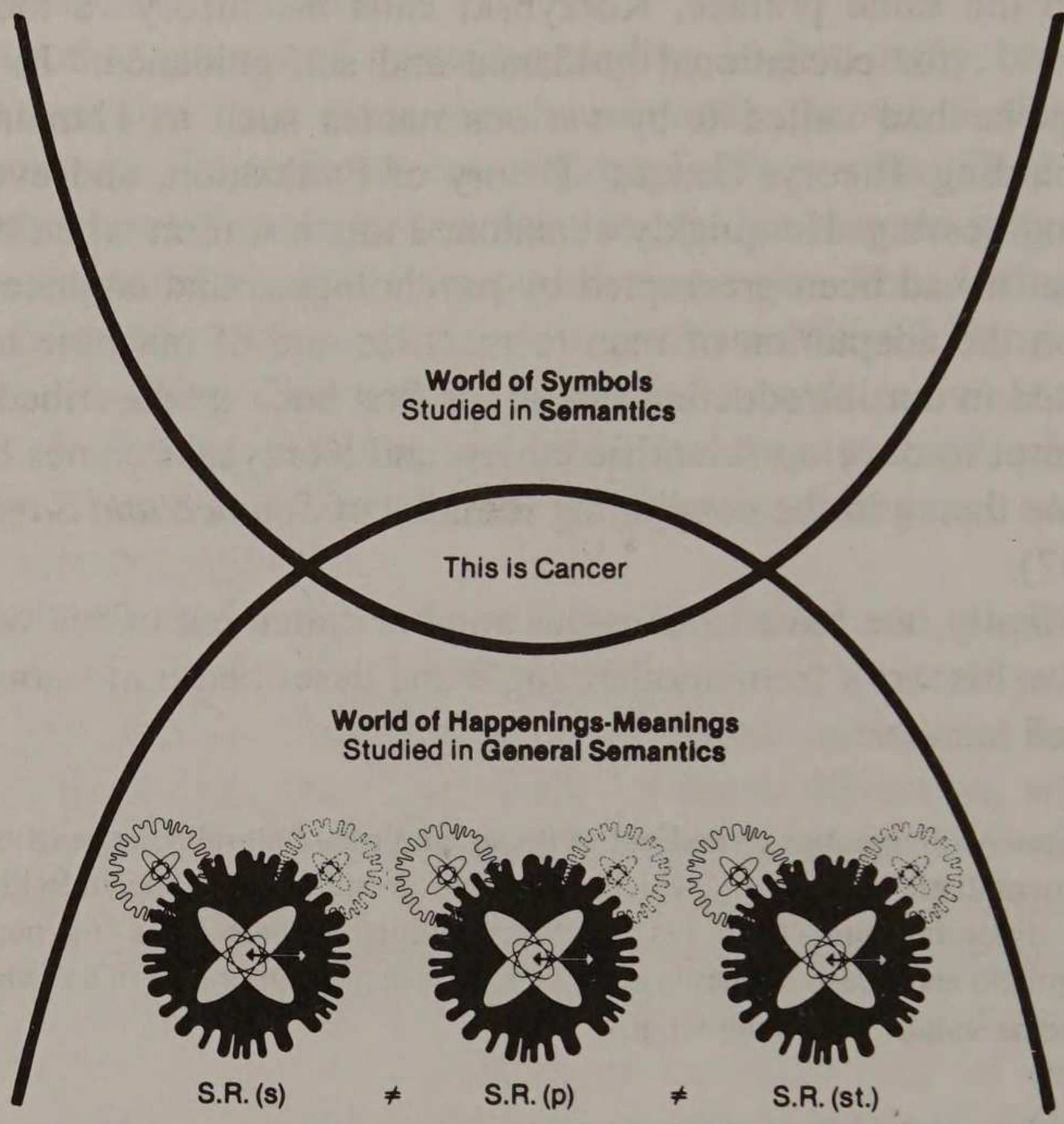

Figure 1. Semantics and General Semantics cover two different worlds. These worlds overlap to some extent, as shown in the statement, "This is cancer." The meaning of the word cancer may be found in a dictionary. The semantic response of the surgeon, S.R.(s) is different from the semantic response of the patient, S.R.(p), and different from the semantic response of the statistician, S.R.(st.) These are "happenings-meanings" not to be found in dictionaries or books (Reproduced from a diagram by J.S. Bois, *Explorations in Awareness*, p. 47, Copyright 1957. Harper & Row, with permission.)

Jack, who has been there for a few days, is under observation and has been undergoing a thorough medical checkup. This morning, he expects the final diagnosis and the decision upon the treatment he will be given. He is in his early thirties, happily married, and the father of two lovely children—Bob, three years old and Nancy, who is a little over a year.

After graduating from college, Jack was an electronic engineer for a large firm, and two years ago he joined the fast-growing company of which he is now vice-president in charge of production. His health has always been excellent; at college he was on many athletic teams, and since he has been at work, he has practically never lost a day because of illness. In the last six months, however, he has been bothered by a series of strange symptoms that don't seem amenable to simple treatment and occasional rest. The medical department of his company, in full agreement with his family doctor, has recommended a thorough checkup in the hospital.

The second person we will observe is Dr. Jones, a well-known surgeon, about fifty years of age, who is highly respected for his knowledge, skill, and his devotion to his patients. He has accepted full responsibility for the case, and he is availing himself of all the facilities of the hospital laboratories and techniques.

Among the persons who are present—Dr. Jones's assistant, the head nurse of the department, and others—we will single out Fred, the statistician. From what he was told, the present case may fall within a category the research team is interested in. He is now waiting for the official diagnosis that will determine where he should make an entry in his statistical table.

A final report from the pathological laboratory deals with a biopsy, a sample of the patient's tissue taken for examination under the microscope. The findings are very definite; it is cancer; and all interested parties are so informed. The surgeon knows, the patient is told, and the statistician is shown the original report.

How do these three people respond to the word *cancer* and to the happening it refers to? What does it mean to each of them—to the surgeon, to the patient, and to the statistician? We can safely assume that all understand what the word means in terms of its dictionary definition, but they surely do not respond in the same manner to what the word and the happening mean in terms of their individual thinking, feeling and planning.

The young executive, his career suddenly stopped short, and possibly ended, thinks of his wife, his children, his job, and his prospects. He may think of the treatment he must undergo, of the fight for his life he has to undertake. His semantic response will probably be experienced at the feeling level, the level of *B* activities. The bright future he anticipated has been blotted out.

The response of Dr. Jones is different from that of his patient; it is mostly a matter of hard thinking, of reviewing his experience with similar cases, and of planning what can be done. He may think of discussing the case with some colleague who is a specialist, of checking a recent report in a medical journal. His response is, primarily: What should be done, when and how?

For the statistician, this is simply one case among hundreds of others. He checks the proper square in a scatter diagram where the type of illness and the age group lines meet as coordinates, and he enters a reference number for the digest he will make of the dossier. Then he is on his way to the next room, where he is likely to find another patient whose data will also fit his sampling.

If we are concerned with the meaning of *cancer*, we are in the field of semantics, and we see that the differences in understanding it are not great: the surgeon, the patient, and the statistician agree on what it means. If we are concerned with their personal response to the word and what the situation means to each of them, we see great differences. The surgeon does not respond in the same way as the statistician; much more than etymological and historical word meaning is involved.

Their thoughts, their feelings, their total organismic reactions, their experiences and memories, their views and expectations for the future, their hopes and their doubts, their professional statuses and their ambitions, their loves and their interests in life, their entire outlook on themselves and their personal values, all that is involved, and gives either a tragic or casual quality to what is said and to what occurs in that hospital room. This world of subjective turbulence is not the detached, objective world of the scientific study of words and symbols, it is not the world of simple semantics; it is the world of what I designate by a hyphenated double word, the world of *happenings-meanings*. It is not the world of what happens "objectively," but the bipolar world of what happens and of how one responds to and is affected by what happens; it is the world of self-awareness and self-management. This world of happenings-meanings is the field of general semantics; it is that plenum of values within which we live and of which Korzybski spoke in the passage quoted in the previous section.

Our purpose is to become aware of our transactions under their various aspects, to learn how to manage them with as little wear and tear as possible, to learn how to make the most of them for our per-

sonal growth and for smoother and more productive transactions with our fellow human beings in our family, our profession, and in public life. Of course, a well-informed and judicious use of words and symbols has its place in such an undertaking, but clearly linguistics, etymology, good grammar and communication skills are not all. We need the information that the sciences of man can offer, and we have to integrate their findings in a balanced program. Semantics deals with words and their generally accepted meaning; general semantics deals with the meaning we find or put in whatever we do and whatever happens to us.

The task is more easily stated than acted. To get the feel of the general semantics orientation, we have to overcome our well-established habits of elementalistic thinking. Korzybski was most insistent on this, and I agree with him wholeheartedly. The philosophy of Jan Smuts' holism and the clinical evidence of Kurt Goldstein—to mention only two distant and very different authors—confirm these views.

What does it mean, exactly? It means that we have to learn not to dissociate thinking from feeling or bodily phenomena. When we try to make sense of a perplexing situation, we are not juggling disembodied ideas that are either true or false, right or wrong. We are tossed about by our semantic responses, alive, sensitive, dynamic, and responsive to space-time pressures, of which we are not always conscious. To master a delicate situation is a laborious process that may wear us out if we don't know how to manage it under the seven aspects of the semantic transaction diagram (Figure 2, p. 32).

The complexity is compounded when two or more persons engage in the study of a practical or theoretical issue. They do not simply fit together the pieces of a jigsaw puzzle, each of which has a predetermined place that will be recognized by all once it is found; they crowd together, in a "fenced-in" area, a diverse group of semantic responses, each with its acquired momentum and direction, its set habits, and its more-or-less conscious purposes. These responses push one another, momentarily clash or join, rearrange themselves in groups and subgroups, help their allies and fight their opponents, stop the struggle in a compromise, or leave the scene hurt and mangled by a battle where no quarter was given nor received. Unless we are aware of what occurs in such an encounter, we cannot deal adequately with the situation.

We have a ringside seat for such encounters when we listen to certain debates on the radio or look at certain discussion programs on TV. Sometimes they are advertised in advance, and highly recommended, because they will be exciting (it seems that "exciting" is a quality that makes a debate worthwhile). The participants are known to hold diametrically opposite views, and they are recognized as able debaters. It will be a verbal fight, but something like a boxing match as well, and in such a game semantics, as the art of manipulating words for offense and defense, may indeed make a winner.

General semantics is not a way to train to fight in debates; it is a method for joint creative work. The purpose is not to beat or win over an opponent; it is to work together to find a solution that will be better than what either of the participants could have invented alone. This calls for the skill of talking effectively, but also for the more difficult skill of listening well.

We can imagine our brain as a radio set on which we can both receive and send, which also works as a combination set, containing a library of records that can be put on automatically. An untrained listener tries to do all three operations at once: while listening to the speaker, he puts on one of his records and plays what he has already registered in his past experience on the subject that is being discussed. If the incoming program does not harmonize with his own record, we know which one will "make sense" to him.

He may also, while pretending to listen, rehearse his answers and objections as he waits impatiently for the other fellow to stop—rehearse on his "brain set" the broadcast he plans to give in his turn. If we observe ourselves closely, we may see that these three activities often go on simultaneously in our brain. We listen to a speaker, we listen to our own pet ideas, and we tell ourselves what to say as a rejoinder.

I was once studying this observation with a group of executives who were training in general semantics and I asked them the following question: "From your own experience in business conversations, which would you rather do: listen to the other fellow or speak your own mind? Which is harder, more unpleasant, less satisfactory?" The general answer was: "Of course, listening is harder. You have to listen to so many stupid things these days!"

Of course, the *other* fellow does not make sense very often, but when we broadcast our own wisdom, what a wonderful message it

sounds—to us! If we could drown out those stupid incoming programs once and for all, what a sensible place this world would be! And we rush to a course on public speaking to master the techniques of putting our ideas across. There will then be one, or two, or a dozen more "expensive" broadcasting sets in our organization, and fewer and fewer receiving sets.

The debater does not stop here; he practices how *not* to listen to the valid arguments of his adversary; he is given his side of the question, or he is chosen to defend what is already his side, and his first task is *not* to accept the version of the other side. He marshals arguments, rehearses his own broadcast while his opponent is speaking, gets up his own story in words as sizzling as he can make them—and the audience admires the side that can jam the other broadcasting station most effectively and that shouts its own program with more kilowatts of verbal noise. Is this training for communication—or is it training for misunderstanding?

I do not claim that all persons who confuse general semantics and semantics are limiting themselves to the skill of debating as I have just described it. I also admit that it is most useful to know the shortcomings and the possibilities of the spoken and the written word—a good deal of training in general semantics is devoted to this—but we must start with a clear statement of what general semantics is *not*. It is definitely *not* the science or art of picking words coated with the right kind of chocolate icing, as Raymond Moley said.

From General Semantics to Epistemics

In the Appendix, titled "A Growing and Expanding System," a subtitle reads, "Epistemics, A Time-binding Emergent from General Semantics." In the June 1971 issue of *ETC.*, the international review of general semantics, which celebrated the fiftieth anniversary of the original publication of Korzybski's first book, *Manhood of Humanity*, in which he introduced his formulation of time-binding, the new science of up-to-date epistemology, often mentioned in the first edition of *The Art of Awareness*, was at last detached from the main stem of the Korzybskian system and presented as the new discipline of epistemics. This new venture does not contradict any thesis proffered by Korzybski. Quite the contrary—it does away with the confusion so often experienced by people who see *general* semantics as a simple

outgrowth of *plain* semantics, or as the art of effective communication. Now they can see an original methodology that takes into account, not only linguistics, meta-linguistics, advanced theories of communication, and their applications, but many other human sciences from paleontology to semantic ecology.

I have passed from general semantics to epistemics to make it clear that I take into account a theory that Korzybski barely mentions in *Science and Sanity*. That theory is evolution.

The word *evolution* comes twice in his big book, and once he speaks of the theory in very strong terms: "Without the theory of evolution, most of the natural sciences, medicine included, would be impossible."[16]

For a sweeping statement, this is surely one. If we accept that the sciences we are now developing are impossible without the theory of evolution, what of their further development, our understanding of their implications, and the applications of their findings? Are they possible without an explicit and frequent reference to the same central theory?

Personally, I don't think so, and I have chosen to make my view explicit by adding to general semantics a characteristic that makes it an entirely different discipline. Epistemics is *structurally more* than general semantics. It is not general semantics plus a few special notions added to it; it is a new discipline, with its own postulates, theorems and applications. (The implications of *structural more* are developed in Chapter 8.)

Evolution means that we see ourselves on the move. We are undergoing a continuous transformation as creators of the significance and meaning that we give to our experience-as-a-whole. Our total environment is undergoing transformation as well. So are our institutions—political, economic, educational, religious. So is our place of abode, the planet Earth; so is the whole universe, of which we are—as far as we know—the self-reflexive element.

It takes time to assimilate that overriding notion, to get, as we say, the 'feel' of it. It is so new, so completely foreign to our well-established way of thinking, so overwhelming in its implications that a mere passing glance at it will not suffice. In my own case, it has

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[16]Korzybski, *Science and Sanity*, p. 271.

taken me years of repeated meditations, reading books and articles that refer to it explicitly or implicitly, writing occasionally—for my own reading—my own speculations about it, eventually to come to where I am now.

Once you have this notion well established in the center of your thinking-feeling self, the image you carry within you of yourself, of your fellow humans, and of the whole world is transformed to something you had never imagined before. You do not only see, as your friends of the hard sciences (viz. physics and chemistry), that the "stuff" of the universe is nothing but ceaseless activity, but you become conscious of the "stuff" of the universe, including yourself and all living things, as pure, constant activity *working itself in a definite direction*.

Its manifestations are most evident in certain well-recorded phenomena; the geological strata that tell of the evolution of the planet Earth, the paleontological fossils that reveal species of plants and animals that appeared at certain epochs and disappeared, the historical sequence of cultures and technologies with which we are all familiar. If we look well, it manifests itself in what we feel, what we do, what we plan, what we argue about, what we strive for or fight for, what we scheme and dream about. In recent years, it has become a new field of scientific activities, the field of futurism.

We are just beginning to become aware of that "formative or morphic tendency" (to use terms coined by the late Lancelot Whyte), of that vectorial push, within ourselves and around us in our human milieu. Some psychologists, few of them but some, like Rogers, Maslow, and others, have discovered a human tendency toward what they describe as self-actualization, toward becoming a fully functioning person. Some individuals may be doing it in inappropriate ways, but they are doing it according to recipes—magic or religious—long outdated; some rage because their deep unconscious desire is thwarted, and they blame the environment. But all are on the move, whether they realize it, understand it, cooperate with it, resist it, rebel against it, or not. It is indeed the human condition, an integral miniature of the cosmic condition.

In epistemics, we are investigating-learning-finding what is the most practical and least energy-wasting way of cooperating with that formative tendency. Right at the start, we quickly realized that we have to question the validity of all theories of human guidance, re-

ligious, moralistic, psychological, or empirical, which have held sway in some segment of our cultural world before this total change in overall orientation became imperative. You don't deal with human beings in inner transformation as you deal with an assumed "human nature" that has remained the same for centuries and will remain the same to the end of the world. If you want a simple analogy, look at a small growing tree in your garden and at the fence post near it. They belong to two different worlds and you do not treat them the same. Willy nilly, we have to abandon for good and forever all static notions, including the one that made you and me a chunk of matter, never changing much, and animated by a soul identical with itself throughout the years and after.

Indeed we are witnessing births of new forms of human life, and it may be more appropriate, from now on, to see these multiplying transformations as manifestations of rapid, intensive, and thoroughgoing evolution.

The present textbook, since its first appearance in 1966, has undergone a parallel series of mutations. It has to be so if we want to keep it a representative expression of what is going on in the world of living individuals and to provide definite suggestions about how to manage our lives in a world constantly on the move.

I suggest that you keep this notion of evolution in the center of your experience as you read about "conceptual revolutions" and all of the formulations and methods that follow.

PART I

EVALUATING

Whenever you ask someone how she or he feels, we are asking for that person to *evaluate*. Liking or disliking a person is a matter of *evaluating* that person. When we move about in space, we *evaluate* distances, shapes, and angles, etc.; our very perceptions involve evaluations. When we are in social situations, we *evaluate* the appropriateness of our actions. Whenever we feel physical sensations such as pain, we *evaluate* the degrees of seriousness. If we are scientists, artists, or scholars working and inventing, we *evaluate*. In human life, all experience, silent or verbal, can be seen as involving systems and standards and methods of *evaluation*. At different times in different places there are different methods and standards of evaluation, different value systems.

Some of these methods are conscious: we had to learn them and practice them. Some are not conscious: we were conditioned to them without ever realizing it. All are human-made to some extent, although we are apt to take them as "natural," as "normal" mechanisms of 'human nature.'

Thus all human activities involve evaluating, and the foundation for the art of awareness is to evaluate our evaluations. This means to not only become aware of our core assumptions, but to become aware of our *methods* of evaluating. I call this epistemic awareness or epistemic inquiry, and the first part of this book is devoted to new models for the development of this kind of *semantic transaction*. "Semantic transaction" is one of the basic notions in the structure of this book. The model of human beings as Semantic Transactors will be introduced in Chapter 3.

In Part I, you will be introduced to the evolution of cultural revolutions, and how the current revolution calls for a new epistemology with new technologies of evaluation. An understanding of the process of Abstracting is basic to putting some order in our evaluating process. We will explore the place and scope of non-Aristotelian systems, psycho-logics, and the important notions of multiordinality and the structural more.

—The Editor

CHAPTER 1

discontinuity in cultural evolution

Evolution is taken today as the general condition to which all theories, systems, and hypotheses have to conform if they are to be thinkable and workable. The development of human life introduced a new form of evolution to our planet. It is a process developing more rapidly than organic evolution. It is called societal or cultural. Just as the fossil records of the earth show the emergence of new evolutionary phases—physico-chemical, plant, animal, prehuman—our humanized world periodically undergoes transformations. We can call these "conceptual revolutions," but they indicate that, on a broader level, our very selves are changing and growing to new forms of existence.

Discontinuity in Western cultural development is a way of saying that the various stages that have historically emerged are not simply manifestations of additive increases. They are definite and differentiable periods in which things are not experienced, valued, symbolized, described, known, characterized, and used in the same manner as they were before. Each period can be seen as a phase in human development from our birth as a species to our anticipated adulthood.

The Evolution of Conceptual Revolutions

The term "conceptual revolution" was coined by the Nobel prize winning physicist and logician Percy W. Bridgman a generation ago. At the time, it was a most appropriate formulation of a phenomenon that we were just beginning to single out as a distinct event in the world of happenings. A conceptual revolution involved the abandoning of well-established rules and procedures in mental work. In a wider context, that is, in the organization of human activities, it

meant the eradication of longstanding conditioning from the brain and nervous system of individuals who were responsible for radically influencing the course of human evolution. In fact, it meant the destruction of generally accepted rules and procedures and replacing them with entirely new ones. Such happenings were new in a world where changes had been infrequent and sporadic, when generation after generation could pass without any major changes in the mode of living. But things are so different today that it seems a new term has become mandatory. The term that I suggest now is the term *evolution*, more in keeping with the relevant scientific mood of these current years.

In 1957, we heard for the first time the electronic bip-bip of the first Sputnik that the Russians had sent aloft to circle the planet Earth. Since then, we have had in rapid succession the various Explorers, Telstar, our first step on the moon, the skylab in which three men lived for eighty-three days, the rendezvous of Apollo and Soyuz in 1975, and the beginning of an exploration of the planet Mars. Each of these happenings could be called a revolution, or better, a significant evolutionary emergence in advanced technology. In the field of mathematical thinking, we have had several generations of computers within a decade. In the field of human values, we have the passage from the friendly roommate of the same sex of the previous generation, to the heterosexual, intimate, life-sharing companion actually accepted on many college campuses, and in private residences. In the economic world, we have the multinational corporations that stretch their tentacles over and across national boundaries.

Thus, while we examine the "conceptual revolutions," I suggest that we see these discontinuities included within a context of human *evolution*. This may help to show that these "revolutions" did not just suddenly "happen" due to events and necessities of a particular time in history. The emergence of a structural innovation in living, while unprecedented, involves a long evolutionary preparation of many individual lives in transaction; individuals willing to risk the hazards of the "impossible" and the censure of those who resist fundamental change.

Conceptual Revolutions

Persons do not all respond in the same manner to what is said or done to them: some have more information, some have less; and this

makes a great difference in the way they think, plan and reach decisions. There is a difference that lies deeper still: persons behave differently relative to their way of looking at themselves and the world.

In simple and obvious matters, understanding and agreement are relatively easy. "Two plus two is four," "the sun is bright," "rain is wet," "a dog is a dog and not a cat": these and similar statements are understood and accepted without discussion; but in most questions of human behavior there are differences in thinking, feeling, deciding and planning. Tell a teenager that when he has reached adulthood he will regret having squandered his time; he will not believe you because he does not see the future as you do. In fact, he may see it as a rosy mist, full of magical opportunities, and not as an irreversible sequence of decisions and actions. Tell some southern senator that blacks did well to organize sit-ins and other demonstrations, and he will be impervious to your arguments. Tell a communist that the single-party system is undemocratic and he will show you—to his satisfaction if not to yours—that you are dead wrong.

Methods of thinking, feeling, planning and deciding are not the same for persons who belong to different cultural groups; these methods also change, from generation to generation, within the same culture. There is a continuity, of course, a thread that can be seen running down through centuries. As heirs of the Judeo-Christian and Greco-Roman traditions, we have a common core of principles and values, but many of these have undergone transformations in the course of time.

The changes are most evident in the technical developments that have made our economic and political life vastly different from that of our ancestors, who gathered fruit and hunted game to survive, and different from that of the Greek citizen of a small city-state and that of the Roman member of a world empire. Between the incantations and potions of the medicine man and the laboratory procedures and surgical techniques of the modern physician, there is also a great difference. These spectacular changes, so evident that we take them for granted, correspond to other changes—less visible, perhaps, but no less important (and much *more* important some will say)—in our ways of thinking about ourselves and about the world in which we live. For example, one of our contemporaries, who had much to do with the recent advances in physics, Albert Einstein, warned us that unleashing the energy of the atom calls for a radical change in our

methods of thinking. And Kenneth Boulding, an economist-philosopher, said:

> If the human race is to survive, it will have to change its ways of thinking more in the next twenty-five years than it has done in the last twenty-five thousand.[1]

The question is to find where we stand as individuals in this unrelenting advance toward more information about ourselves and the world and toward new and more adequate methods of handling that information in our daily life. In what domains are our methods of thinking-feeling-acting antiquated? In what domains are they equal to the new puzzling situations we have to face in our personal life and in matters of education, politics and religion?

To find an answer to these questions, it may be useful to review the development of our methods of relating ourselves to ourselves and to the world within the history of our Western civilization. We will find that they went through two revolutions and we are in the midst of a third one. It is not within the scope of this book to cover adequately the development of *Homo Sapiens* in other cultures, such as the Hindu, the Chinese, and all others known to anthropologists.

Revolutions

The word *revolution* usually recalls a political revolution; it makes us think of Cuba, Algeria, Zaire. It means a radical change in government or a change of the ruling group by methods other than those provided by law. Some political revolutions were turning points in the history of Western cultures; the American, the French, and the Russian revolutions are outstanding examples.

Revolution is also used to describe changes that have no military or political implications. The form of government is not changed, nor does the power to make laws pass from one group to another, and yet a radical change takes place in the life of the people. Insidiously or openly, some new source of social energy makes itself felt through the structure of the group involved; a transformation takes place that

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[1]Reprinted from "After Civilization, What?" by Kenneth Boulding with permission from the October 1962 issue of the *Bulletin of the Atomic Scientists*. Copyright 1962 by the Education Foundation for Nuclear Science, Inc.

cannot be undone. After a revolution, things can never be what they were before.

Such was the Industrial Revolution of 150 years ago. The power of steam and of the machine did away with the artisans' guilds and created the new class of factory workers. It brought about movements of the population, changes in the laws, the appearance of what Marx called the "proletariat," and the emergence of labor unions. Another example is the appearance of the Model-T Ford, which bought the automobile down from the luxury class to the level of an ordinary tool of living for the plain citizen. Consequently, roads had to be improved, highways had to be built, gas stations appeared at intersections, we saw more and more garage mechanics and fewer and fewer village blacksmiths, vacation travel took a different pattern, and the horse and buggy faded out of the picture.

Another example, less tangible, but no less real and far-reaching, took place within the lifetime of some of us: the revolution of the personal income tax. It has made impossible such displays of ostentatious magnificence as Hearst's Casa Grande in San Simeon; it has stimulated the creation of foundations and nonprofit institutions; it has reduced the differences between the standards of living of various socioeconomic classes; it has brought about a clear-cut distinction between wages and take-home pay. And no amount of wishful thinking will ever bring us back to pre-income-tax days.

Other revolutions are religious, such as the Protestant Reformation; others are artistic, such as the impressionist or the cubist; still others are educational, such as the current change in the teaching of mathematics in grade school.

How can we describe the common feature of all revolutions? I suggest the following statement: A *revolution is a radical and irreversible change in a fundamental element of our way of life.* We may compare it to a mutation in the genetic sequence of plant and animal species. We may speak of it as the appearance in the world of a new kind of existence.

Our brains, our hearts, and our habits of living have been going through such a revolution since the last turn of the century. If our age deserves to be called an "age of anxiety," it is not because we have regressed, it is because we are going through a painful transition: we are waging within ourselves a life and death struggle that spells the doom of the past and the emergence of new forms.

The present conceptual revolution is the third of its type in Western history. The first one, which lasted about 300 years, from 650 to 350 B.C., was the age of the Greek philosophers. The second began around A.D. 1500 and ended around A.D. 1700; it was the late Renaissance and the birth of the scientific method. The third revolution began with our century, and is now in its most intensive phase.

Between these periods of conceptual revolutions were periods of relative stability. I call this stability *relative* because it did not prevent minor revolutions in the political, economic or religious sectors of the life of our ancestors. Conceptual stability means that the basic understanding of human beings' relations with themselves and with the universe did not change appreciably.

The Greek Conceptual Revolution

The first period of relative conceptual stability extends from the appearance of *Homo Sapiens* to the Greek philosophers. As far as we know our early ancestors had no conception of logic and science as we understand them today. Their interpretation of the world was animistic and mythological. They explained the operations of natural forces by supernatural agencies: everywhere there were gods.

An example of how people thought in those days is contained in the story of Cadmus, founder of Thebes, as recorded in the Encyclopedia Britannica.

Cadmus, son of Phoenix and brother of Europa. After his sister had been carried off by Zeus, he was sent to find her. Unsuccessful in his search, he came to Delphi to consult the oracle. Ordered to give up his quest and follow a cow, which would meet him, and build a town on the spot where she would lie down. The cow met him in Phocis and led him to Boeotia, where he founded the city of Thebes. Intending to sacrifice the cow, he sent some of his companions to a neighboring spring for water. They were slain by a dragon, which in turn was destroyed by Cadmus. By instructions from Athena, he sowed the dragon's teeth in the ground, and from them sprang a race of fierce and armed men. These assisted him in building the city of Thebes. Because of the bloodshed, Cadmus had to do penance of eight years. Then the gods gave him to wife Harmonia, daughter of Ares and Aphrodite, by whom he had a son and four daughters. At the marriage all the gods were present. Cadmus and his wife eventually retired to Illyria, where they were changed into snakes.

The Greek philosophers, beginning with Thales of Miletus and including such well-known thinkers as Pythagoras, Democritus, Heraclitus, Socrates, Plato and Aristotle gave up these beliefs about the gods and their compelling whims. They looked for permanency and regularity in nature, and theorized about a common element in everything that existed: Heraclitus called it fire; Democritus spoke of the "atom"; Pythagoras thought of numbers and Aristotle devised his explanation in terms of matter and form. They did not agree in their theories, but all held the revolutionary idea that there was such a thing as the *nature of things*, and that whatever existed remained identical with its natural self: a man was a man, and he could not originate from a dragon's tooth, nor could he be transformed into a snake.

On this principle of identity, there was no disagreement, and Aristotle used it as the basis of his system of logic. His was a tremendous achievement. He codified the newly discovered laws of the human mind, and, shortly after his death, his treatises on logic were called the *Organon*, which means the *Instrument* or *Tool for mental work.*

> Aristotle built the technology of science and philosophy; we can hardly speak of any science today without employing terms that he invented; they lie like fossils in the strata of our speech: *faculty, mean, maxim, category, energy, actuality, motive, end, principle, form*—these indispensable coins of philosophic thought were minted in his mind.[2]

The second great achievement of the first revolution was the establishment of the rules of deductive logic. From the known nature of things revealed by common sense—that is, by observation unclouded by superstition—the scientists of the time derived conclusions according to the rules of strict logic. These conclusions were accepted as revelations of the hidden characteristics of phenomena.

From this brief analysis of the first conceptual revolution, we see that it involved four elements.

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[2]Will Durant, *The Story of Philosophy* (Garden City, N.Y.: Doubleday, 1927). p. 66.

1. A radical change in the methods of thinking and valuing, which passed from mythology to philosophy, from superstition to reason, from divination to deduction.
2. Many talented workers and geniuses who made possible a spurt in the development of all the sciences of the time.
3. A codifier, or system-builder, who made explicit the methods of thinking that were characteristic of the age.
4. New terms in the general vocabulary.

The Revolution of Classical Science

The second conceptual revolution took place when people began to question the maxims of common sense. Instead of being satisfied with the nature of things as known, they wanted to find out how things interact with one another. The fundamental scientific process had to work in reverse: instead of going from assumed general principles to particular conclusions, it went from systematic observations and careful experiments to general "laws of nature." Induction took the lead over deduction; it was the birth of what we still call the scientific method.

At the time of the second revolution, many more geniuses and talented workers made their appearance. It was the age of Copernicus, Johann Kepler, Galileo, Harvey, Newton, Vesalius, Liebnitz, Descartes, Fermat, Spinoza, Leeuwenhoek, Mercator, and Francis Bacon.

The last named, Francis Bacon, was not the greatest of these—far from it. He proved to be blind to the significance of the achievements of some of his contemporaries, but he occupies a special position among them. The Royal Society of England, founded in 1662 as the first institution devoted to the advancement of science in our Western World, took him as the model for its members because in the second revolution, Bacon played the part that Aristotle had played in the first; he formulated the methods of thinking that were characteristic of the period. One of his essays was called *Novum Organum* to emphasize the fact that it was of the same type as Aristotle's *Organon*. It was the new "tool chest" for scientific work.

Many new terms appeared and were added to those coined by Aristotle. We find them not only in scientific treatises but also in everyday conversation, such terms as *factor, variable, attraction, repul-*

sion, analysis, field of forces, dynamics, progress, evolution, interaction, vector, environment, and many others.

The Revolution of Up-To-Date Science

A period of stability, almost of stagnation, followed for two hundred years. Then came the third conceptual revolution, which the editors of the *Autobiography of Science* describe in the following manner:

> "The future of physics is the fifth decimal place." Such was the opinion seriously, and a little sadly, held by many distinguished classical physicists just before the turn of the twentieth century. The nineteenth century—the century of progress—they mourned because it had progressed so triumphantly that it had left them with nothing more exciting to do than calculate physical constants to the fifth decimal place. Then abruptly, everything changed. Within ten years the discoveries of Roentgen, Becquerel, Pierre and Marie Curie, Rutherford, Soddy, Max Planck, J.J. Thompson, Albert Einstein and others had completely revolutionized the older classical physics and opened entirely new worlds to conquer inside the atom and outside the solar system.[3]

As this was happening in physics, Freud was upsetting the young sciences of psychiatry and psychology. A host of altogether new disciplines were budding in the human sciences: neurology, sociology, anthropology, psychometrics. For those who (like the author) have been looking for more than sixty years at the stage where the drama of our scientific revolution has taken place, the scene has been crowded with more geniuses and talented workers than it had ever been for a comparable period. Apart from the physicists already mentioned, there are many others, including those who engineered the A-bomb, the H-bomb, and the space technology of today. In the social sciences we have, apart from Freud and his dissident or faithful followers, such people as the Gestaltists, the transactional psychologists, the client-centered therapists, the personal construct clinicians, the transpersonal psychologists, the rational/emotive therapists, the anthropologists, and the metalinguists. In all disciplines, we have the philosopher-scientists: Russell, Whitehead, Bridgman, Bentley,

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[3]F.R. Moulton and J.J. Schifferes, *Autobiography of Science* (Garden City, N.Y.: Doubleday, 1950) p. 484.

Bachelard, Karl Popper, Mach and the Vienna Circle, Wiener, Shannon, von Bertalanffy, N.R. Hansen, Polanyi, Brillouin, among many.

Of all these there is one who, like Aristotle in the first revolution and like Francis Bacon in the second, took upon himself the task of explicitly formulating and arranging into a system the methods of thinking that make our epoch different from the previous ones. He did not limit himself to logic, deductive or inductive. He thought in terms of *psycho-logics*, of a science of thinking, not as an activity that stands by itself, but as a science of our evaluating processes—of how we react to persons, events, and symbols according to what they mean to us at the moment of impact. Alfred Korzybski was not, and never claimed to be, the greatest scientist of his age. He was concerned with the revision of the methods of thinking that were accepted and embedded in our language. He wanted to collect from the writings of his fellow scientists a new set of tools with which we could manage ourselves efficiently in a fast-changing world. He devised a few all-purpose tools of his own and invited his readers and students to experiment with them.

It is interesting to note that Korzybski did not claim that he was offering the world a complete system. His major work *Science and Sanity* published in 1933, is subtitled *An Introduction to Non-Aristotelian Systems and General Semantics*. In the first edition he announced that he had a volume in preparation, with *General Semantics* as the proposed title. We may assume that this was to be the formal treatise for which *Science and Sanity* could serve as an introduction, but Korzybski did not have the time nor the facilities to complete that second volume. What general semantics would have become had he completed and published that treatise nobody knows, and nobody can guess accurately. One thing is sure: he wanted his system to remain open, and he stated explicitly that he expected many "corrections and elaborations in the future."[4]

The *Art of Awareness* is an attempt to further develop an ever-evolving discipline, consistent with what Korzybski stated.

The present revolutionary period has the four characteristics of previous conceptual revolutions. It is crowded with geniuses and tal-

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[4]Korzybski, *Science and Sanity* (Lakeville, Conn.: International Non-Aristotelian Library Publishing Company, 1933, 1941, 1948, 1958), p. 171.

ented workers in the multiplying fields of science, and it has produced a bold pioneer who took it upon himself to devise an up-to-date methodology. The third characteristic, change in the methods of thinking, is not so easy to describe because the system has not yet been fully worked out. Already, a few terms are new and typify the new order of things. We have such words as *multiordinality, indeterminacy, process, multidimensionality, transaction, self-reflexiveness, semantic transaction, thinking models, noise and redundancy in communication*, and the introduction of the hyphen in such compound words as space-time, body-mind, and the like.

A problem is that most of the classical terms have already proved to be inadequate but have not yet been replaced by better ones. As early as 1926, A.N. Whitehead wrote that "The old foundations of scientific thought are becoming unintelligible. Time, space, matter, material, ether, electricity, mechanism, organism, configuration, structure, pattern, function, all require reinterpretation."[5]

The Present Conceptual Revolution

The revolution of up-to-date science has spread itself into every aspect of our lives. Many scholars and thinkers refer to this ongoing revolution in much broader terms than scientific. As the late Percy W. Bridgman of Harvard said,

> The conceptual revolution forced by recent discoveries in the realm of relativity and quantum effects is not really a revolution in new realms of high velocities or the very small, but is properly a conceptual revolution on the macroscopic level of everyday life.[6]

S.I. Hayakawa, the well-known general semanticist and politician, calls it cultural; Anatol Rapoport, the mathematical biologist, calls it intellectual and compares it to the Renaissance and the birth of the scientific method; Peter F. Drucker, the economist and management consultant, speaks of our time as "an age of transition." Profes-

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[5]Alfred North Whitehead, *Science and the Modern World* (New York: Macmillan, 1926), p. 21

[6]Percy W. Bridgman, *The Way Things Are* (Cambridge, Mass.: Harvard University Press, 1959), p.8.

sor Lynn White, Jr., the historian, describes it as "a change in the very canons of our culture," a "general shift more fundamental than any since agriculture and herding displaced food-gathering and hunting as the habit of human existence."

This leads me to make some definite suggestions on what we have covered so far, both in terms of meaning and in terms of how we can manage ourselves as we go through this revolution. Hopefully, this will set the stage for the models, methods and new ways of thinking that I propose throughout the rest of the book.

What Does A Conceptual Revolution Mean?

1. A conceptual revolution does not simply mean new thoughts, new principles, new orientations; it means new patterns of brain work to establish sets of relations that have not been tested so far, to provide orientations in a life-space of many more dimensions that we now consider.

2. It does not simply mean more knowledge of "human nature" as we have known it for centuries; it means a new way of contact and participation with the human phenomenon.

3. It does not simply mean an extension of logic, symbolic, metaphorical, or otherwise; it means asking ourselves whether refined logical consistency is not in the end a self-defeating pursuit.

4. It does not simply mean constructing more elaborate mental models and feeding them to more complex electronic computers; it means asking ourselves if being sensitive to and managing human energies and values is not more important than building intricate models of war games, production games, distribution games, and other simulations of human situations.

5. It does not simply mean the improvement of our present political, economic, educational and religious institutions; it means facing with an undisturbed mind possible changes in the very structure of these institutions and even questioning their relevance as they function today.

6. It does not mean a return to the "faith of our fathers"; it means the recognition of the need for a new faith, and the creation of such a faith.

7. It does not mean better communication and understanding, in the sense of more clarity and precision; it means a revamping of our

best-established practices of communication to facilitate an unprecedented deeper participation.

How do we manage ourselves through this revolution? I suggest a few guidelines in considering such a question. First, the question of "how" ultimately must be referred back to the questioner. By doing so, "how" becomes a question of each individual finding what he or she has become as a performer in the art of living and accepting to develop new attitudes and skills, rather than a question of figuring out what to do and how to do it. This involves the development of commitment that will hold when times are difficult beyond the conditions of the immediate environment. This is important in a cultural transition such as the present one. At times, discouragement, disappointment, and disillusionment can prevent us from going on.

"How" means becoming more keenly aware of our potentialities and responsibilities as participating members of the family of humankind, and not so much a question of learning more facts and theories. Many believe that more knowledge and power can "change the world." I disagree. I see it as gaining a fuller awareness of what each of us takes to be appropriate and necessary to fulfill her or his sense of purpose in the cosmic enterprise, free from self-images and role-playing of our cultural infancy. It becomes a matter of making the most of that limited part of the world that is within my field of influence: MY OWN SELF.

On a more general level, "how" is not a question of imposing on the rest of humankind our technology and our way of life, but one of long-range planning and making available to all inhabitants of this planet the most advanced mental and physical tools that may bring about abundance, peace and self-actualization.

Those who feel themselves in the midst of a transformation to a new form of existence do not belong to any organized group that binds them together in a common religion, profession, pressure group or political party. But they undoubtedly have something in common, not easily expressed in sharp formulations perhaps, but surely effective at the preconscious level. They share a common experience.

Summary

To summarize, we have examined the evolutionary development of the "conceptual revolutions" of Western culture, beginning with the age of the Greek philosophers from the seventh to the fourth cen-

turies B.C.; the revolution of classical science, from the sixteenth to the eighteenth centuries; and the present scientific revolution, which was initiated around the beginning of the twentieth century. I said that these revolutions were more than "conceptual." They signaled a radical and irreversible change of orientation in our way of life.

In the Introduction to this book I sketched the history of epistemology and the emergence of the methodologies of general semantics and epistemics. We can now see them as growing out of the need to manage ourselves through the current epistemic crisis, offering guidelines to innovating—which means to participate in our own evolution. This has brought a wider meaning to epistemology and brings it into everyday life.

CHAPTER 2

the place and scope of non-aristotelian systems

Epistemology: Classical and Up-to-date

The general concern of general semantics and epistemics can be given in two words: *up-to-date epistemology*. Classical epistemology usually is described as "the branch of philosophy that investigates the origin, nature, methods, and limits of human knowing" (*American College Dictionary*). It is the science of our mental activities; and it deals with how we observe with our senses and how we introspect, how we think, how we doubt, how we attain certainty, how we accept the views of others, how we communicate our own views, how we differentiate facts from opinions, how we remember and forget, how we solve problems, how we invent and create. Such was the epistemology as introduced by Ferrier and accepted in scientific literature until recently.

Susanne Langer, in describing a new keynote that has been struck in philosophy in general, and in epistemology in particular, writes:

> To us whose intelligence is bound up with language, whose achievements are physical comforts, machines, medicines, great cities, and the means of their destruction, theory of knowledge means theory of communication, generalization, proof, in short: critique of science. But the limits of language are not the last limits of experience, and things inaccessible to language may have their own forms of conception, that is to say, their own symbolic devices. Such non-discursive forms, charged with logical possibilities of meaning, underlie the significance of music; and their recognition broadens our epistemology to the point of including not only the semantics of science, but a serious philosophy of art.[1]

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[1]Susanne K. Langer, *Philosophy in a New Key* (New York: Mentor Books, 1951), p. 224.

The epistemology we are introducing here is much broader in scope. It is not simply the science of knowing, but the science of the totally functioning human being, acting and being acted upon within the culture in which he or she was reared. Michel Foucault, the contemporary French philosopher, greatly influenced me in making that change. This brings us to the following three terms and definitions:

1. *Episteme*, or the general system of knowing-feeling-acting that was dominant in our culture at different times of history. The present one has emerged from previous epistemes that go back to our Judeo-Christian, Greco-Roman origins as a civilization. Each of us has an individual version of it in what I shall call later in this text, our *structured unconscious*. This can be described as the dynamic pattern of attitudes, habits, internalized values: modes of perceiving and thinking by which each person relates himself to the world of things and people, observes and judges their activities, and expresses himself to himself and to the world by what he thinks, says, writes and does.

2. *Epistemology*, or the science of *episteme*. It obtains information from a continuous survey of all the human sciences and arts, organizing their findings in a set of postulates and formulations that aims at being simple and teachable.

3. *Epistemics*, or the discipline derived from epistemology and that emerged from general semantics. It views the whole of humankind and each individual as processes engaged within a process of evolution. It takes *Homo sapiens* as the only form of life that can influence the course of its own evolution. It has for its objective the knowledge and the practice of the skills of awareness and self-management. These skills are basic preparations for innovating and participating in a complex humanized world.

In a sense, this is a new science and discipline. Or, better said, it is an attempt to translate into scientific terms and aesthetic practices the wisdom of the ages, including our own as the most advanced. Epistemics covers the entire range of human activities in the arts, in science, in politics, in religion, in administrative work and business transactions in person-to-person encounters, in family life, in education—wherever and whenever humans are functioning.

It sounds like an ambitious program, and it is; but it is not proposed in a self-complacent or arrogant spirit. It is an endeavor to up-

date and to make more teachable the wisdom and values of the brightest brains and the most dedicated souls of yesterday and today.

Strictly speaking, the practice of general semantics and epistemics cannot be classified as a science, but as a discipline, a set of skills that have to be acquired. We may compare it to medicine, which is a methodology, a study and practice of methods based on sciences that deal with the human body and its functioning—such sciences as anatomy, physiology, biochemistry. There was a time when medicine had to manage without stethoscopes, X-rays, blood counts, electrocardiograms, or any of the instruments and techniques that are now routine in a well-appointed clinic. There was a time, further back, when gross anatomy and elementary physiology, as we know them today, were practically nonexistent. Before Vesalius and the sixteenth century, anatomy was more guesswork than accurate science; and before Harvey, who lived in the same period, the circulation of the blood was a mystery. For centuries, medicine depended on common-sense observations, for which the great masters of antiquity, such as Hippocrates and Galenus, displayed an unusual capacity. To their observations they added speculation, or interpretation—in the light of the sciences of their time—of the symptoms they had observed and classified.

What medicine was doing for the physical activities of human beings, classical epistemology was attempting to do for their mental activities. For generations—in fact, until recently—epistemology had to operate without the help of the recently developed human sciences. It depended on three sources of information: (1) introspection, or what the philosopher observed going on within himself; (2) observation, or the study of what other people said and did; and (3) speculation or theorizing, which amounted to making sense, in the light of the culture of the time, of what the scientist had observed within himself or in others. In short, epistemology was refined common sense, self-guided and self-controlled.

This classical epistemology gave us the rules of logic and rhetoric, or, to put it in modern terms, of sound thinking and effective communicating. These rules were applied in many fields of human endeavor: preaching, teaching, debating in legislative assemblies, stumping in electoral campaigns, pleading in courts of law, arguing with friends or with members of one's family, and rationalizing with others to explain away one's mistakes.

Up-to-date epistemology, like up-to-date medicine, is surrounded by an ever-increasing group of sciences. Each of these sciences brings to epistemology the harvest of its findings. Consequently, epistemology must change and improve every year, sorting out what is of lasting value from what is just passing fancy in the sciences and the technologies that vie for attention. As medicine long ago gave up such practices as bloodletting, poultices and drastic purges, so must epistemology give up thinking and communicating practices that have no other justification than immemorial usage. Debating, as we hear it on radio and television, is one of those practices that belong to the same age as the *purgare* and *repurgare,* which Moliere ridiculed three hundred years ago.

General semantics and epistemics are attempts to organize, in a well-balanced system, the cumulative findings of the human sciences of our time and to derive from this system rules and procedures for self-management and mutual understanding. Instead of depending exclusively on introspection, observation, and speculation, as their predecessors had to, the epistemologists of today can tap the resources of many sciences.

Psychoanalysis has revealed that many of our thoughts, decisions, and actions are determined by unconscious drives and motives that work independently of logic. Psychology speaks of intelligences in the plural and not of intelligence in the singular; so it explains how a person who rates high in musical intelligence will not necessarily rate high in social intelligence, and how it happens that a person who writes books on how to be human fails to observe the most elementary rules of proper social behavior.

Sociology studies groups and their development; it shows how the mental activities of a person are influenced by the pressure of the groups to which she belongs and how these mental activities can be stimulated by interaction with fellow members. Cultural anthropology has discovered that cultures different from our own are not necessarily lower stages of human development; they are simply different; and some of them have potentialities that go beyond our most highly prized mental and emotional habits. Linguistics and metalinguistics show that thinking is directed, in great part, by the language we learned in childhood, and that logic itself is a code of mental etiquette ruled by local symbolic customs.

Neurology, which is mapping the topography of the brain, registers the electrical phenomena that take place in the cortical and the subcortical areas, and it links our old concepts of memory, imagination, and motivation with processes that nobody suspected before. Biochemistry uses drugs that produce hallucinations and tranquilizers that dull emotions; hormonal studies throw light on the stress syndrome; and muscular relaxation shows its direct influence on emotional flareups. Cybernetics and information theory introduce the new concepts of signal-to-noise ratio, redundancy, and feedback. Structural thinking leads us to the building of mental models, and it becomes even more dynamic and fruitful with the notion of consonance and dissonance of analogies.

Finally, there are theories one step removed from experimentation, engendered by the cross-fertilization of various disciplines: the General Systems of Theory of von Bertalanffy and his associates; the cell assemblies and the phase sequences of Hebb; the hierarchy of empirical and theoretical systems suggested by Kenneth Boulding; the epistemological profile of Gaston Bachelard; the life-space postulate of Kurt Lewin; the holistic views of Jan Smuts and Kurt Goldstein; the Gestalt approach of Wertheimer, Koffka, and Köhler; the surveys of creative thinking of Hadamard, Ghiselin, and Sorokin; the motivation theories of Abraham Maslow.

From this multitude of sources, factual information and theories pregnant with possibilities pour into the study of the epistemologists who keep up with the times. Every year new tools and new procedures are invented with which they can survey, analyze, and interpret the behavior of human beings as individuals, acted upon by a culture and acting upon a culture—or as a sample of the time-binding class of life that Teilhard de Chardin calls the *noösphere*, the intelligent thin envelope of the planet that holds the earth under its grip and might destroy it if it so chooses.

The task that confronts us is to put some order in that wealth of information, to sort out the valid and the useful, and to devise methods of application that are practical, easily learned, and efficient.

New Technologies

Our predecessors derived the techniques of logic and rhetoric from old-style epistemology, and these need not be discarded altogether. They serve a purpose, just as the computations of pre-

Copernican astronomers are still reasonably valid for establishing the calendar although they are not adequate for problems of space exploration.

Similarly, we need a new technology based on an up-to-date epistemology derived from the human sciences of today. It will take into account whatever is useful in logic (classical and symbolic) and rhetoric as common-sense communication, but it will be more comprehensive than its former counterpart. Humans are no longer seen merely as rational animals; we don't say with Descartes that our mind is the independent ruler over animal spirits.

Our reactions are subject to cultural pressures, to organismic conditions, to past conditionings, to anticipations of the future, and to environmental factors. The new technology must consider as many of these factors as it possibly can; it will be a technology of awareness and appropriate guidance, similar to the technology of the pilot who faces the instrument panel of his plane and maintains his flight on the proper course. It must tell us what is important to watch and what actions should be taken to correct our own malfunctioning to counteract the buffeting of outside forces and to bring our performance to higher levels.

To label this new technology, some have suggested the term *Human Cybernetics*, an application of Norbert Wiener's epoch-making discipline, which he described as "control and communication in the Animal and the Machine." In the epistemic context, Human Cybernetics as a technology would mean the art of steering the whole person—mind, body and activities, all immersed in a space-time environment—to obtain the most from one's personal resources. By using feedback controls, guidance systems can keep missiles set on their target even if it shifts its course to elude them. Similarly, we can speak of a personal guidance system, which is not automatic because it is human, and is highly responsive and resilient. Its central feature is a guided and guiding awareness of self and of others as autonomous functioning units in a world of purposive clusters of energies.

Our awareness can be trained to consider our cultural and personal assumptions; our processes of abstracting at various levels; our techniques of listening and communications; our motivations and our values; our purposes; the degrees of our emotional maturity; our body capacities, limitations, and habits; the physical, historical, and se-

mantic aspect of our environment; the guiding power of our past experiences and conditionings; and the beckoning pulls of the future as we anticipate it.

One very important element of the culture we assimilated in our infancy is our mother tongue. It has become part of what we call our "second nature," which is a complex assemblage of conditionings and attitudes that form our structured unconscious. We see the world through the meshes of that human-made filter; we project on the world of phenomena the relations that we have learned to observe among the parts of speech; we interpret what is happening in terms of the logic of cause-effect embedded in our grammar.

Any person who is familiar with at least two languages knows that thinking in one language is different from thinking in the other. My own mother tongue is French, and it still seems strange that, in English, a fly is a "he," when in French *la mouche* is so distinctly feminine. Butter*fly* is masculine in French, *le papillon*, and the shift from one gender to the opposite is altogether illogical; nevertheless, it sounds "natural" to a French ear. It seems as if the gender were there, in the outside world, to be discovered and recognized, when it is an arbitrary classification invented by some remote ancestor and has been observed religiously ever since.

There are many other differences, in nouns, in verbs, in tenses, in sentence structure. In English, we *are* many things: hungry, thirsty, right or wrong (I *am hungry*). In French, one *has* hunger or thirst (j'*ai* faim, j'*ai* soif), and one *has*—with respect to what is being talked about at the moment—"reason" on his side (j'*ai* raison [I am right])—or something diametrically opposite to reason, for which there is no adequate English word, the French *tort*. In French, one *has* it (j'*ai* tort); in English, one *is in* it (I *am in* the wrong) or one *is* qualified by it (I *am* wrong).

When we say, in English, "I *have been here* for three hours," or "ten years," or "a number of years," a Frenchman would say, "Je *suis* (am) cici depuis trois heures," "dix ans," or "un nombre d'annees." The French present indicative "je *suis*" may cover any length of time in the past; it asserts a continuity with the past, something like an existential identity. Not to be now what I have been until now is unthinkable, tantamount to saying that I am not. Circumstances may have changed *around* me, but all along I have seen myself as being—in each present moment—what I have been by nature, by inborn

qualification, by right, by some existential quality that makes me what I am.

What difference does it make? The difference is a subtle one, and it is not easy to evaluate its practical consequences, but if you accept the postulate that it is "natural" for France to remain in an everlasting present that encompasses her glorious past, it becomes "natural" to think as de Gaulle did. You may argue that he lived "in the past," but what if your "past" was his "present?"

The moral is that I don't see the same things, don't observe the same events, when I change from my French to my English brain. I inherited my French brain from my mother tongue, and to be at home in English I had to be reborn culturally. Changing my language changes me as an observer. It changes my world at the same time.

When we allow for such differences and remind ourselves that their number is limitless, we are miles away from the old epistemology. In Lynn White's expression, "we are learning . . . to view mankind from vantage points other than the Acropolis."[2] It is, therefore, the purpose of this book to see the world from viewpoints more consistent with humankind on planet Earth at the present stage of evolution than with the condition of the ancient Greeks in the Mediterranean world.

We will study (among others) the following themes:

1. Logic—deductive or inductive, symbolic or classical—is superseded by psycho-logics. Mental activity no longer stands by itself, and it is not studied by itself. It is only one aspect of a greater whole, called semantic transaction, which is our main unit of discourse.

2. There is no one method of thinking that is common to all, and no laws of logic apply to all members of the human race. There are semantic states, now more frequently called *epistemes* by Foucault and others, which vary from culture to culture, or that change within a culture in the course of history.

3. Through our language—and the culture of which it is one aspect—we have developed a structured unconscious in us that involves a metaphysics—the metaphysics of subject and predicate, of substances and qualities, of agent and action.

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[2]Lynn White, Jr., ed., *Frontiers of Knowledge in the Study of Man* (New York: Harper & Row, 1956), p. 313.

4. Our experiences are constructs of our own processes in transaction. Our contacts with the world "inside" and "outside" ourselves can be seen as so many acts of abstracting, and this process of abstracting proceeds at different levels. By being aware of the differences between these levels, we can solve many paradoxes and facilitate agreement.

These are only a few samples. As we go through this book, we will see that the list is much longer; in fact, it could be extended indefinitely.

CHAPTER 3

semantic transaction

Individuals as semantic transactors

As a first step, we put aside the standard definition of *Homo sapiens*, such as, "rational animal," or any of its present-day equivalents, as for instance, "the naked ape." We see a human individual as a continuously transacting and expanding process that includes seven clusters of activities: (1) electrochemical; (2) sensory-motor; (3) feeling; (4) thinking; (5) environing (ecologically and psychosocially); (6) memory guided; and (7) anticipative of the future.

If we examine the current literature that deals with the human phenomenon, we find that the term "man" or "human" is given many meanings. Korzybski, in his first book, *Manhood of Humanity*, speaks of the human species as a time-binder. He means the word "man" to cover, as he states explicitly, a certain "class of life." He differentiates that class of life from the plant class of life and from the animal class of life. It is a meaning quite close to this that we find in the book, *The Phenomenon of Man*, by Teilhard de Chardin. In fact, Teilhard has a small book published in French prior to his well known popular volume, and this book was titled *Le Groupe Zoologique Humain*. When Alexis Carrel published his *Man the Unknown* in 1935, his meaning was less definite. Carrel could be interpreted to mean the individual or humankind as a whole.

Usually, when a "definition" of "man" is given, the actual referent to the term is no more definite than in the title of Carrel's book. Quite often that "definition" implies a whole philosophy as in the small catechism I studied in my Catholic grade school. It read: "Man is a compound of a body and a soul, created by God to His image and likeness."

In this present handbook, I am trying to be more definite about what I mean when I refer to the subject we are studying. I am not re-

ferring to "human" as a zoological group, and neither of humankind trudging along on the road of history. I refer strictly to individuals, whatever their age, sex, profession, or education; condition of health; cultural environment; self-attitudes or attitudes toward the rest of the human race. There are billions of such individuals who lived or are actually breathing on the surface of the planet Earth; they are the definite reference of our discourse.

Also, I use the terms "human individuals" or "human beings" instead of "men" as much as possible. My intention is to explicitly include all members of the human family that do not fall within the limited category of "male," to which the masculine gender of *man* refers. The masculine gender so pervades our thinking and our use of our language that not only do we think of *Homo sapiens* as "he," but we even give a masculine gender to "God Himself." Emmeline Pankhurst, the London suffragist, undaunted by such presumptions, consoled one of her followers wounded in a demonstration by saying: "Don't worry dear, God is with us, and *She* will take care of you."

Thus we can visualize the human race in space-time, moving about all over the earth through prehistoric times and recorded history—multitudes of individuals appearing and disappearing, milling about along the paths of history, all over the continents. Their crafts and their habits are changing as time goes on; their way of life differs from one place to another.

In this space-time multitude, I see groups and subgroups appearing and disappearing; families, tribes, associations, nations—growing at different rates, blending and separating again.

With our referent for "human" established, and with the help of a mental model, we are ready to move into the "inner life" of ourselves as human individuals in continuous transaction.

Systems and Subsystems

Ludwig von Bertalanffy, a biologist, introduced a way of organizing our thinking that we could apply to our present work. He calls it a General Systems Theory. It could be translated in the following manner: Any phenomenon that we single out for observation and study could be seen as a "system," or as an assemblage of many elements interacting upon one another and acting upon the environment as a cohesive group. We can see systems in a hierarchical order, meaning that a system may contain many subsystems, and be itself

contained in a larger container-system. In the present case, the individual is taken as an agglomeration of subsystems, as described in *Communication as Creative Experience*.

The transacting organism is made of an intricate and interrelated network of systems:

a. the nervous system, including the brain;
b. the circulatory system;
c. the chemical system (glands, hormones, metabolism, etc.);
d. the habit system (sensory and motor activities; talking, listening, walking, gesticulating, taking notes, etc.);
e. the semantic system (preferred values, attitudinal sets, purposes, prejudices, etc.);
f. the linguistic and symbol system (mother tongue and acquired languages, mathematical and professional modes of thinking, etc.)

These various systems may be considered one by one, but in the living organism they are meshed with one another in a dynamic symbiosis that makes them interdependent.[1]

It is important to note here that in this way of speaking of the individual as made of subsystems, there is no division between body and soul. Habits and modes of thinking are taken as systems, just like the circulatory system.

Of the various descriptions of the individual as a system made of subsystems, we chose one, casually suggested by Korzybski, as our main unit of discourse. In conformity with the operational thinking that is now in fashion in most sciences, we take as elements of that system, not physical objects like muscles or brain nor old-style faculties as memory or imagination, but *activities*. And so we describe the individuals as systems made of electrochemical, self-moving, feeling and purposing, thinking and deciding activities in ceaseless transactions with their space-time environments.

A Mental Model

We can look at scientific progress as an evolution of mental models emerging in sequential order, each new one correcting and expanding the one it replaces. The atom was first described as the smallest bit of matter conceivable, homogeneous and unsplittable. Later, it was imagined as having tiny hooks that linked it to its neighbors. Nowadays a variety of models are in use—the shell model, the

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[1]J. Samuel Bois, *Communication as Creative Experience* (Los Angeles; Viewpoints Institute, 1968), p.1.

liquid-drop model, the visual model—each serving a different purpose for understanding and managing matter-energy.

In astronomy, the Ptolemaic model of the earth—at the center of transparent concentric spheres—carried the sun, the planets, and the stars in their daily revolution. Then we had the Copernican model, a static sun surrounded by seven planets that turned around it on the circumferences of perfect circles. Later we had the Keplerian model of elliptical orbits with the sun at one of the foci. Finally came the Newtonian model of gravitational masses that moved according to definite laws and that integrated many earthly phenomena with those of the planetary system. Today the Einsteinian model, capable of more accurate predictions than its predecessors, is so abstract that it defies all graphic representation.

Something similar can be observed in the development of our mental models of "man." We can compare the Ptolemaic model of the universe to the Aristotelian model of "man," both of which were acceptable in the same epoch of our cultural history. In its day, each served a useful purpose, replacing superstition with reason, divination with logic, mythology with philosophy, but each has outlived its usefulness. The Aristotelian model of "man" is just as inadequate for solving the problems of our generation as its coeval model, the Ptolemaic theory of the universe, is for guiding the policies and procedures of space exploration.

Our mental model of "man" is nothing but a formulation that dates from the prelogical days of our civilization. "Man is a rational animal," said Aristotle, thus confirming the myth by giving it a place in his classification of the parts of the universe as it was known in his day. Since then, we have taken it for granted that a human being is made of two elements, different in nature and in action: one is the mind and the other is the body; one is spirit and one is matter; one displays rationality and one displays animality. The interaction of these two elements, each belonging to a different order of existence, has remained for centuries one of the most baffling problems of our philosophy. The problem still lurks behind many common-sense dichotomies, materialism versus idealism, psychological versus physiological, and—in a derivative way—between the "two cultures," of which we have heard so much in recent years.

Korzybski was bold enough to announce a new human science, free from Aristotelian strictures and flexible enough to fit nonele-

mentalistic systems. As said above, in his first book, *Manhood of Humanity*, he stated that the major problem of the day was to devise a new definition of *Homo sapiens*, free from the zoological and supernatural implications of the current definition. *"Man is a time-binding class of life*," despite its originality and unquestioned value, was only a new classification of "man" as a "nature" among other "natures." It was well within the framework of Aristotelian thinking.

Later, in *Science and Sanity*, Korzybski became more operational, offering a picture of *Homo sapiens* in terms of human activities under various aspects. It is from this picture, delineated in verbal statements of Korzybski, that I constructed the visual model in Figure 2, p. 32.

Korzybski referred to "man" as a semantic reactor, and his responses as semantic *reactions*. This was consistent with his view then of "man" facing an objective world. In my description, I have not only replaced the word "man" with "human individuals," but I have replaced *reactor* and *reaction* with *transactor* and *transaction*. This introduced the seed notions of epistemics that I described in another book:

> (The word) *transaction* has replaced the word *reaction* that Korzybski used. I continued using it without proper reflection. The word *reaction* reminds us of the Newtonian action and reaction, of the statement about actions and reactions shuttling back and forth. It fits with the standard psychological experiment summarized in the two letters *sr* (stimulus response), as if the impact of a stimulus was the only determinant of the subject's activity. According to the *SR* formula, (humans) have to be set into motion, otherwise they won't budge. It is not so. We are always in activity. In fact, to use Kelly's phrase, *we are movement*. All that a stimulus can do is alter that movement, speed it up, slow it down, or give it another direction in a multidimensional life-space. When the human process relates itself to the relative environment, a transaction takes place, not a simple reaction nor an interaction that leaves both of them unmodified in their inner structure. This transaction is viewed as a joint phenomenon that blends their energies for a while, and from which both emerge different from what they were before the encounter. This transaction is viewed as a joint phenomenon that blends their energies for a while, and from which both emerge different from what they were before the encounter. Since the transaction is continuous, the changes in both the organism and the environment never stop. You may picture that continuity as a sequence of tiny units or quanta to examine it, measure it, evaluate it, modify it; but all this

> fractionalizing is the work of your discursive activity, which is always one step behind the actual transaction.[2]

The approach in Figure 2, is also operational: I do not attempt to define what a human being *is*, I describe what a human being *does*. Neither do I claim to cover exhaustively all human activities, I simply group—under a limited number of headings—the activities I consider most significant in the light of the sciences of today.

The first group is our *electrochemical* activities, from our embryonic immersion in the amniotic fluid to our eventual coagulation at death. It starts with the operations of DNA and RNA in the genes, and includes the metabolism of the cells, the firing of the neurons, the reactions to anesthetics and drugs, the effects of LSD, the energizers and tranquilizers, the adaptation syndrome of Selye, the use of a supporting vital system for our astronauts. It is revealed by laboratory analysis, by electroencephalograms, electrocardiograms, isotope tracings, and other techniques that are beyond the reach of the non-professional. Let us represent them by the area called *X* in the diagram, Figure 2, p. 32.

Soon a time comes when the fetus makes its presence felt by definite movements of its limbs, and its *self-moving* activities become evident. Under this heading we can include sensory perceptions and adjustments, and autonomic movements of the vital organs; the heart, lungs, stomach, intestines, vascular system. We include the skilled movements of the tradesman, the machine operator, the athlete, the artist; muscular tenseness and relaxation, proper posture. We also include group activities; military drill and training, religious rituals, parades, sit-ins, and such. We have multiplied the power of our moving activities by harnessing the forces of nature. We use bulldozers and cranes, we have invented explosives to remove mountains, and we may soon be able, in one quick blow, to smash to pieces the planet on which we stand. We will call these moving activities *A* activities and will put the letter *A* in the second area.

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[2]J. Samuel Bois, *Epistemics: The Science-Art of Innovating* (San Francisco; International Society for General Semantics, 1972) pp. 42-43.

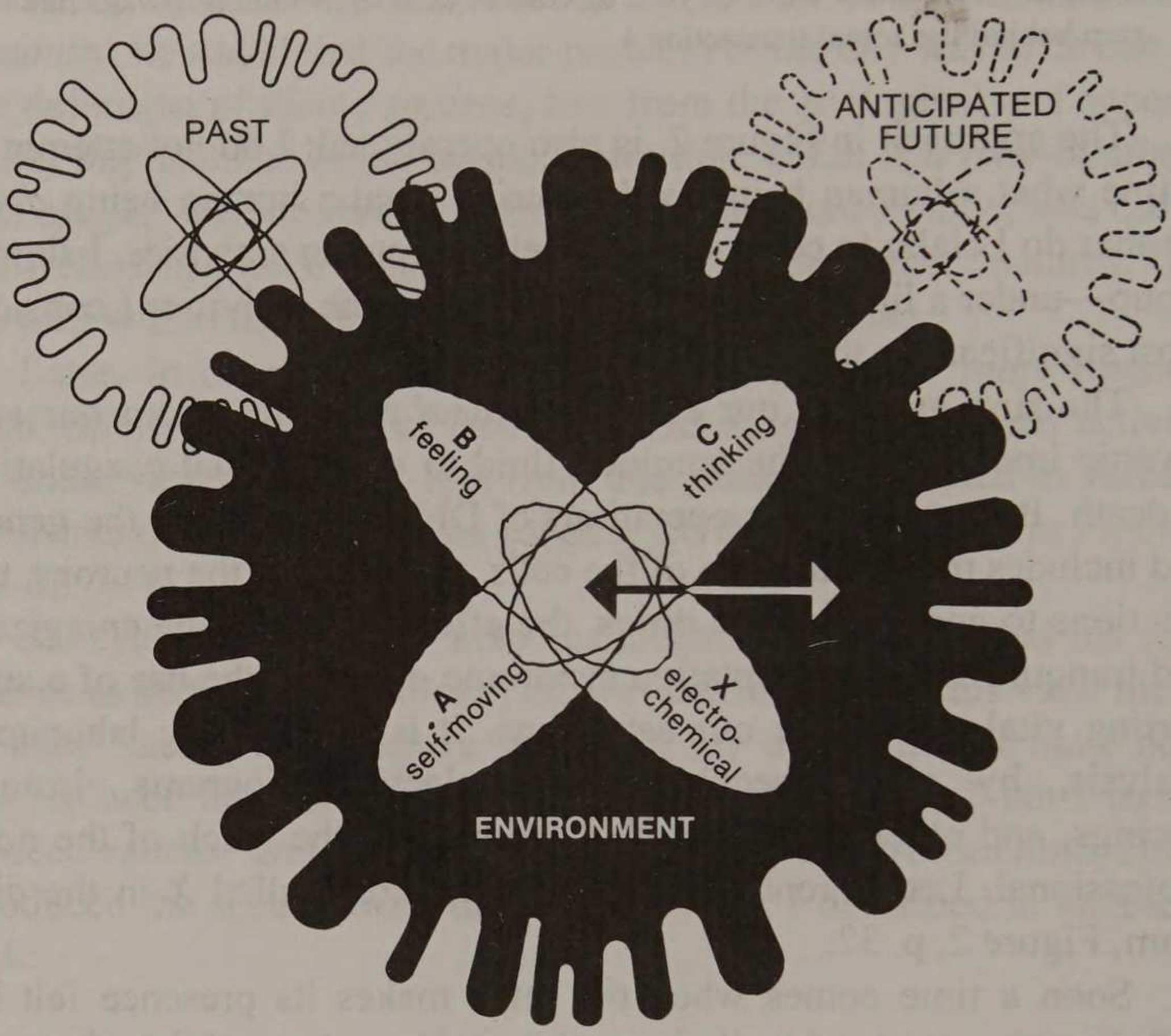

Figure 2. Individuals as semantic transactors. A semantic transaction has at least seven aspects or dimensions: (1) thinking; (2) feeling; (3) self-moving; (4) electrochemical; (5) environmental; (6) past; (7) anticipated future.

The next group of activities is more typically human. We call them *feeling* activities, which includes not only drives and affects but also purposes, ambitions, desires, and responses to values. This is the area of love and hate, indifference and commitment, joys and sorrows, dedication and contempt, of levels of aspiration, of trust in friends, of frustrations, anxieties. To these we also give a neutral name: *B* activities.

Finally, we put all activities that involve symbolization under the heading of *thinking:* conceptualizing or talking to ourselves; talking to others by word of mouth, by writing, by sign language, by diagrams, by statistical curves to show trends, by gesticulation or facial expression; listening, reading, asking questions, solving problems, planning, reaching decisions. We talk, listen, read and write; we have

newspapers, magazines, and books; we receive and send letters and telegrams; we have built schools, colleges, and universities; we have libraries and public monuments with inscriptions on them. Some people, elected or appointed by other people, go to great buildings where they speak, in turn, for hours and hours, and for weeks and months, about the affairs of their state, their nation, or the world. No animal species has anything that compares with this. Thinking, debating, planning and communicating are human activities. Let us also give them a name that is noncommittal, and call them *C* activities.

These four clusters of activities overlap and interact. We see them not as distinct parts of an additive whole but as differentiated aspects—or dimensions—of an organismic process, within which they are interrelated and interdependent in a pattern of dynamic gradients. When we are given an anesthetic, we stop moving, feeling and thinking. When we are emotionally excited, our muscular tonus changes and our thoughts are stimulated or confused. Participating in a religious ritual, a sit-in demonstration, or an organized parade heightens feelings and gives direction to purposes. In other words, our approach to the observation of human beings is holistic; it ignores the old dichotomy of mind and body, spirit and matter.

Humans are not made of two parts, body and mind, that act one upon the other. We may be described as single, complex, integrated organisms whose activities may be described under at least four different aspects: *A, B, C,* and *X*. In general semantics, we call this complex transaction of the whole organism a *semantic* transaction; that is, a transaction determined by what the actual situation—the outside event, the word spoken, the thought that occurs, the hope that emerges—means to the individual at the moment.

This organism does not operate in a vacuum; it is influenced by an environment, transacts with it, and modifies it as it goes along. This environment has many aspects: physical, psychological, social, cultural, professional, racial, national. It is also indefinite at the edges, to the point that our semantic transactions are practically coextensive with our world awareness, clear or dim. We represent the environment by drawing a frame of wavy lines around the four overlapping ellipses.

Humans modify their environment and change it irreversibly. Generations of human beings have transformed the North American continent of the Indians into the highly industrialized nations of the

United States and Canada. The world in which we were born was the joint product of nature and the cumulative transactions of those who preceded us; the world that we shall pass on to the next generation will be, in great part, of our making. This participation involving the organism and the environment may be represented by a double-pointed arrow that links the very center of the cluster of ellipses to the environmental space.

Let us now introduce Time as a dimension into Figure 2, p. 32. On the left side of the frame, let us draw a smaller frame that hides (in part) behind the central frame. In this receding frame, let us draw the four overlapping ellipses. This frame represents our past. In fact, we can imagine a long series of such frames, one for each year of our life. On the right side of the main frame, we can draw any number of similar frames—with *dotted* sinuous lines—to represent the future as we anticipate it. This past as we lived it, and this future as we anticipate it, are presently in our semantic transaction of this moment. They operate in the "now" with their relative intensity, their tensions and their direction. Many of our present reactions have been programmed into our system by the habits we have acquired in the past; they are oriented by what we expect or want our future to be. The individual may be seen as a space-time living totality that transacts with everything he or she has been, is, and anticipates being.

This, then, brings us to the description of the individual that I suggest should be substituted for the standard definition; it does not attempt to reveal the "real nature" of what a human being *is*; it simply tells what I think is important for whoever wants to deal with himself or herself and with others. *The individual may be described as a thinking, feeling, self-moving, electrochemical organism in continuous transaction with a space-time environment.*

This is a rather complex concept, but, with the help of the visual presentation, it is possible to encompass it. Physical scientists have achieved wonders because they see, behind the common-sense appearance of material objects, a complex structure of molecules, atoms, particles, and fields of energy. It is time that we begin to see, behind the common-sense appearance of individuals, complex space-time patterns of ceaseless activities.

It takes time to use, habitually and spontaneously, this complex picture as the foundation of our practical knowledge of ourselves and our fellow human beings. Our language does not help this new ori-

entation; it is elementalistic. It assumes that thoughts, feelings, bodily movements, and biochemical exchanges within our tissues and endocrine glands are relatively independent phenomena. In what we are describing here, they are neither independent nor dependent in a cause-and-effect relation, they are *aspects* of *one* complex process. Instead of saying "I think," "I feel," "I move,"—which are elementalistic terms—I suggest that we say to ourselves "I transact." This means that my whole organism is engaged in a process with the momentum of its accumulated past, the drawing power of its anticipated future—depending on the environment in which it happens to be at the moment.

This transaction itself has a strong tendency to maintain a *status quo*. It asserts the values I hold dear and confirms the ego-image that I have of myself. This is the exact spot where the practice of epistemics intervenes, correcting and reversing that strong tendency. It is in keeping with the *Philosophy of No* of Gaston Bachelard. It introduces the notions of participation and abduction, which are discussed in the more advanced practices toward the end of this text.

How will this eventually be said in one word—perhaps a brand new word—that will contain the whole complex formula? I don't know. In practice, I have often used the word transact, asking people who share my description of a human being "How do you *transact with* this or that?" instead of "What do you *think* of this?" or "How do you *feel* about that?"

The difference may appear slight at first, mere quibbling; but if one takes time to ponder over it he will quickly recognize that it is one of those differences that make a great deal of difference. When we speak in terms of the transaction of the total organism we find it normal, for instance, that a lie detector should register physiological answers that are more reliable than the verbal answers.

Corollaries of the Model

From this diagram and description, taken as a theorem, we may draw several corollaries.

1. The larger frame—that of the present—is the center of gravity of the whole system. To shift that center to the past, in vain regrets or recollections, or to shift it to the future in wishful thinking, can create an unhealthy stagnation in one's living process.

2. Conversely, the past can neither be ignored nor the future left blank as when one has nothing to look forward to. In both cases, some trouble is bound to develop.
3. Within the framework of the present, the various aspects of our semantic transactions tend to keep themselves in a steady state. A state of profitable equilibrium, which if maintained beyond its usefulness, may become stagnation or inertia, and by that prevent needed development. An acquired equilibrium may have established itself and eventually become accepted as permanent. This is the case of a neurosis, and it resists changes as happens with drug addiction and destructive emotional habits. The emergence of one steadying stage to a more complex one will be introduced later in the text as the practice of conscious participation.
4. The whole system itself—past, present, and anticipated future—tends to maintain a balance that is minimal for survival and maximal for self-actualization. A fully functioning person has a high degree of self-acceptance because he has learned to translate into a meaningful structure whatever has happened to him since the beginning, whatever is now within his reach, and whatever he is planning.
5. No two persons experience an event, word, or person in exactly the same manner. In no case do the seven dimensions of their semantic transactions coincide in all respects. The wondrous thing is not that we disagree, but that we so often manage to get along passably well.
6. No response of one person ever repeats itself as an exact duplicate. As time flows, some change, slight or important, is likely to take place in one or several semantic variables. To be rigorously consistent may mean to be frozen to insensitivity, out of touch with oneself and with the ongoing environment.
7. No transaction is exclusively intellectual, emotional, or physiological. We transact as a whole, whether we are conscious of it or not. This is what Korzybski meant when he spoke of psychologics as different from logic, the prefix *psycho* covering all nonintellectual components of the total transaction.
8. Solving a problem or making a decision is not merely a matter of logical analysis, of weighing the pros and the cons, of thinking clearly and logically. It is a labor of the whole process, and it may be greatly helped by such conditions as freedom from undue haste

and deeper and deeper relaxation, both physical and mental, which may appear to have little relation to the task at hand.

9. A conversation is not so much an exchange of objective information between two persons as the encounter of two semantic transactors—of two human capsules in flight, each following its own orbit, with its mass, its momentum, its direction, and its capacity to withstand shocks. It may require advance technology and refined skills, as in the encounter of Apollo and Soyuz, which, starting from very different worlds, joined for over two days in common flight.
10. When several people gather to work on a common interest or to discuss a theoretical issue, there is more than a matching of facts or a comparison of disembodied ideas. It could become a team wrestling match, where no rules are observed, or it could be a cooperative undertaking to live pleasantly together for a while, enriching one another by sharing diversified experiences.
11. The semantic character of our transactions does not depend on the dictionary meaning of the words we use or the "objective" nature of the event; it depends mostly on the meaning we attach to words, events, and persons, and how these meanings are related—positively or negatively—to the values we cherish, respect, or hold in contempt. This suggests that the "feeling" or *B* aspect of our semantic transactions is, more often than not, the determining factor in our behavior.
12. Finally, the world in which we live may be seen as a world of semantic transactions. What really counts, in this world of ours, is not so much what we see, hear, touch, weigh and measure, it is how we transact with what our culture has singled out as natural things, human made objects and other humans. "What are the crude deliverances of sensible experience" asked Whitehead, "apart from the world of imaginative reconstruction which for each of us has the best claim to be called our real world?"[3]

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[3]Alfred North Whitehead, *The Aims of Education* (New York; Mentor Books [New American Library], 1949), p. 162.

Semantic States

When semantic transactions that have much in common gather together in space-time, they become semantic states. These semantic states may materialize into institutions, organizations, or cultural practices. I see religions as institutionalized semantic states with participants from various parts of the world and from many generations. I see Naziism as a semantic state that grew among Germans after the Versailles Treaty, and that it was recognized in its inchoate stage by the sinister genius of Hitler and brought to maturity through his efforts. I see communism as a semantic state conceived by Karl Marx, nurtured by Lenin, and Sovietized in Russia. Who will deny that these semantic states, and similar ones, were real forces in shaping world history?

With the semantic transaction model in mind, we see ideologies that split the world into opposite camps as something more than activities of thinking, for *ideology* implies differences in theories accepted as valid pictures of reality. With the present model, we see that ideologies are semantic systems in which the history of a nation, its acquired attitudes and habits, and its purposes, fears and hopes for the future give dynamism and direction to the planning of its leaders and the day-to-day activities of its common people.

Shortcomings of the Model

"The Map does not represent all the territory," said Korzybski. This is true of all models, and this one is no exception. Its shortcomings are evident to whoever looks at it with a critical eye, and it is important to take them into account.

The figure and the sentence that describe it put the organism and the environment in undue contrast. It gives the impression that a more firmly structured unit, the organism, is within a less solidly organized milieu, the environment. This, we know, is not always true. We have witnessed cases where the environment crushed the individual, and we don't have to bring in the story of Galileo to prove our point. Conversely, we know of cases where the environment—physical, economic, cultural, or social—has helped an individual make the most of his inborn capacities, or even go beyond what could normally be expected.

This tendency to see the organism as a Gestalt against the environment as a background is not due to a shortcoming that is specific

to this model; it is a mental set that we all have, without realizing it fully, and it is consistent with our common-sense thinking about the world that surrounds us. We see the world as made of sharply differentiated objects that stand within an empty space and that move, or do not move, in a measurable time. We can correct this common-sense view by viewing the diagram not as a picture of an individual against a background, but as the fluid representation of a dynamic system, of a space-time ongoing phenomenon of life-action emerging from the changing relationships among factors (activities *A, B, C, X,* the Past, the Future as anticipated, and the Environment), which are themselves happenings-in-flux.

The model is, at best, of the physical type, static in its graphic representation and made dynamic by a conscious effort of the imagination. It does not show the conscious self-reflexiveness that makes self-observation, self-control and self-management possible. It does not meet the requirements of biological models, which would picture a human being as an open, self-maintaining, self-differentiating, and growing system. These various requirements will be met later, when we will devise models of all kinds without worrying too much about their strict consistency among themselves, and when we will place greater reliance on the complementary effect they can produce when used with full awareness of their individual limitations.

We are still far from having a set of human mental models that are comparable to the pictures of the atom or the DNA molecule that are already common in magazines and popular literature. It might help, as a start, to consider all forms of human interaction—in politics, business, courts of law, family life, lovemaking—semantic transactions. Most of the troubles we have can be traced to the obsolete human mental models we persist in using. The Ptolemaic model of the universe is obsolete, so is the Aristotelian model of Man; and Korzybski saw this more than fifty years ago.

> It requires no great wisdom, it needs only a little reflection, to see that, if we humans radically misconstrue the nature of man . . . we commit an error so fundamental and far reaching as to produce every manner of confusion and disaster in individual life, in community life, and in the life of the race.[4]

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[4]Korzybski, *Manhood of Humanity*, d ed. (Lakeville, Conn.: International Non-Aristotelian Library, 1950), p.2.

In this quotation what Korzybski calls the "nature of man" is what we are attempting to present altogether differently. Up-to-date science has given up the claim that it deals with the "nature" of anything. It deals with the phenomena or clusters of activities, as Teilhard de Chardin says in the original French title of his well-known book, *Le Phenomene Humain.*

Logic and Psycho-logics

In their attempt to make general semantics fit within the generally accepted classification of the sciences, some people see it as a new form of logic. The term non-Aristotelian system, which Korzybski often used in describing it, lends itself to such an interpretation. Many questions come to mind: Is it a refined form of symbolic logic, or an extension of Boolean algebra? Is it related to cybernetics? Since Korzybski speaks with enthusiasm of mathematics and calls it "a language similar in structure to the world in which we live,"[5] is not his system an attempt to introduce mathematical rigor into the conduct of human affairs? Is general semantics intended to do for the social sciences what mathematics has done for the physical sciences?

These questions reveal a deeply hidden assumption of our culture, for they imply that to progress as a human being is to devise and practice more sophisticated thinking skills. After all, is it not thinking that makes man different from his animal cousins? And consequently, is not every human advance an advance in methods of thinking?

It is, and it is not. Thinking is *one* aspect of human activities, but it is only *one of many*. It involves special disciplines, and mathematical logic is one. It is one of those highly specialized techniques that are of very little use in simple life situations. It is a refinement of classical Aristotelian logic, a chest of mental tools, reserved to specialists. General semantics is less specialized than this; in a sense, it is a *denial* of logic as an adequate method of self-management.

The word *think* refers to an activity that was classified centuries ago, at the time when our ancestors still believed that the four basic elements of the universe were air, fire, water and earth. It seems that everybody knows what thinking is and what it is not. Long before Mr.

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[5]Korzybski, *Science and Sanity*, p. 247.

Watson of IBM made it a slogan in his firm, it was taken as the supreme characteristic of man. August Rodin's statue, *The Thinker*, shows a man sitting with his muscles tense and working hard with his brain to solve some abstruse problem. Electronic engineers have built machines that do complex thinking by electricity, quickly and accurately. In the computer sciences this is called Artificial *Intelligence* (AI) (my emphasis).

The more we consider thinking in this manner, the farther we are from general semantics. Let us put aside Mr. Watson's slogan, Rodin's statue, the cybernetics of Norbert Wiener, the metaphorical thinking of Synectics as applied to problem solving, symbolic logic, Boolean algebra, and the field of Artificial Intelligence; and let us stop looking at thinking as a distinct entity, dissected out of human beings alive and struggling, and kept functioning all by itself like a tissue culture in a flask of nutrient fluid.

When you and I think, a great deal more than "pure" thinking goes on within us. Our past has much to do with our thinking, and our anticipation of the future influences our thoughts. To say that we are thinking is to speak of only one aspect of our semantic transactions, and it is not always the most important aspect. It is occasionally subservient to other aspects; we rationalize to justify our past decisions, to give vent to our feelings, to make ourselves acceptable to our social environment, or to obey some unconscious urge that we cannot perceive.

There is also a chemical aspect to our semantic transactions: LSD and tranquilizers affect our thinking, as does the nutritional content of the food we eat. There is an electrical aspect as well: an electroshock will destroy stubborn thinking patterns; and through various biofeedback techniques we can also learn to influence our brain wave patterns, thus changing the electrical "weather" in which our thinking activities take place.

Symbolic logic—and all less sophisticated techniques of guided reasoning—deals with only one aspect of our multifaceted semantic reactions whereas general semantics attempts to consider all aspects, concurrently and interrelatedly. An expert in symbolic logic is like an expert in a particular sport, but a well-trained semanticist is a well-rounded "psychological athlete." The latter's model is not Rodin's *Thinker* in its tense attitude, and not the electronic robot that flashes answers in fractions of a second; his ambition is to keep himself

aware of his past and realistic about his future, actualizing himself and his world as he moves from commitment to commitment.

This calls for new skills and techniques. At the thinking level, it takes into account phenomena that standard logic did not bother with; and it introduces terms and practices that are entirely new.

We have already dealt with one of these terms, *semantic transaction*, which we take as fundamental. Other chapters of this textbook will deal with such questions as abstraction, circularity, and multiordinality; additive thinking will be corrected by the structural more. We shall go into model-building, and we shall introduce an epistemological scale for measuring the relative obsolescence of the components of our key notions.

Treatises on logic, elementary or advanced, do not use these terms or their equivalents; they leave it to psychology to study systematically how the mind works. "Logic, as the science of the weight of evidence in all fields, cannot be identified with the special science of psychology," says a standard textbook on logic.[6]

Contrary to this view, Korzybski puts psychology and logic together: he speaks of psycho-logical analysis, of psycho-logical occurrences; and these occurrences are our semantic transactions. We may study them at two levels: (1) the nonverbal level, which includes our unspeakable feelings, emotions, purposes, needs, and is by far the most important; and (2) the verbal level as "auxiliary, sometimes useful, but at the present often harmful because of the disregard of semantic reactions."[7]

Logic is often considered an absolute, an ideal form of human activity that has a value of itself, independent of time and space. This fits well with the Aristotelian view of man, who is taken to be essentially the same at any age, under any condition, and at any time of history.

Psycho-logics is not an absolute. It views each person as an individual, different from everyone else—in age, in bodily condition, in experience, in habits, in purposes—and as having a different physical and cultural environment and occupying a different place in time and

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[6]Morris R. Cohen and Ernest Nagel, *An Introduction to Logic and Scientific Method* (New York: Harcourt, Brace & World, 1943), p. iv.

[7]Korzybski, *Science and Sanity*, p. 24.

space. What all individuals have in common is not so evident as was imagined in previous philosophies: in fact, man is still very much "the unknown," as Alexis Carrel put it several years ago. In our provincialism, we took humans as we knew them—that is, Western humans, who grew within the Greco-Roman culture and in the Judeo-Christian tradition—as the typical model of humankind. All outsiders were atypical; they were underdeveloped or spoiled patterns of true humanity. Their logic, because it did not jibe with our own, was considered imperfect and inconsistent, if not completely wrong.

Psycho-logics is an empirical science of individuals as they exist and function. It sees each human being as a historical product, time-bound and time-binding. A person's history, including physical and cultural ancestry, is part of his or her uniqueness, and it is with this unique living individual that we must deal—not with an abstract human nature that should be the same for everybody, and that should always conform to the rules of some absolute, unerring logic.

Has any area of human endeavor reached that rock-bottom form of invariant human logic? Perhaps mathematics; but, for our day-to-day guidance, we have to understand that this hypothetical core of essential human logic is buried deep in thinking patterns that are not reducible one to the other any more than blood types can be mixed or substituted for one another. Absolute logic is a metaphysical discipline that assumes that we know "human nature." Psycho-logics, on the other hand, attempts to create, test, and improve a mental model that can be used to observe any specimen of the class *Homo sapiens*, to make sense of what one does, and to predict, within a range of probable error, what one is likely to do in particular situations.

In this science, our unit of discourse is not thinking as a separate activity—nor feeling, nor sensation, nor any of the generally accepted bits of human behavior—it is behavior as a whole, taken under its aspect of meaningful value. This behavior is cut into lumps or units of experience; and the cutting and the lumping are not done once and for all, and may vary depending on purpose. I like the way Dr. David Krech, of the University of California (Berkeley), put it: "We must conceive of our fundamental unit of experience (or behavior) as a motivational-perceptual-cognitive unit—no matter how trivial or

momentary, or how important and enduring that experience might be."[8]

In simple language, this means that the most significant "chunks" of behavior, the basic "molecules" of our lives, are like bundles of perceivings, feelings, strivings, thinkings, and understandings that cohere by some strange force that binds them in a package. These bundles may extend in time. They may last a few seconds, as when one bursts into laughter at a good joke; they may last for hours or days, as when one worries over a personal problem.

Now let us try to form some idea of the special force that holds these units together and packs the bits of experience that they contain into a tight bundle like atoms packed into a molecule. What makes a behavior unit different from another that appears just as short or just as long, just as simple or just as complex? According to Korzybski, the force that binds together the atoms of these molecular units of behavior is their meaning to the individual. They form a unit according to what they mean to us at the moment we experience them.

John Dewey, the famous philosopher and educator, once said that "a stimulus becomes a stimulus in virtue of what the organism is already preoccupied with." In other words, our response to what happens, to what we encounter in life, to what is said to us, to what stirs within us, is not determined so much by the cold "objective" facts, words, or events as by what we are concerned with at the moment of impact—by what the impact itself causes to emerge from within us. Our responses depend—in intensity, quality, duration, and relative importance—on what the total experience means to us. The meaning of an experience is not something added to an otherwise neutral experience, it is what causes the experience to be what it is.

The experience then, is shot through with meaning, and this is what Korzybski expresses when he calls it semantic. According to this view, our human world is not so much a world of things, constructions, laws, and institutions as it is a world of human activities and of their meanings, a world of semantic transactions. Psychologics is the science of these transactions.

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[8]David Krech, "Dynamic Systems as Open Neurological Systems", *General Systems*, ed. von Bertalanffy and Rapoport (Ann Arbor: Braun-Blumfield, 1956), p. 150.

In psycho-logics, we take our semantic transactions as our working units of discourse. We see them as complex processes made of unlimited number of subprocesses, interrelated and interdependent. Our means of observation and description are limited to the consideration of seven main clusters of these subprocesses, one of which we call *thinking*. It covers what we say to ourselves or to others about what is going on within ourselves while we transact with our space-time environment. It is a resultant of the whole semantic process, and it gives it a structure and a direction.

If we look for an analogy to help us grasp the dynamic complexity of this semantic mind-body-environment process, we may use a tree that is in full activity. Whether our thinking is simply common-sense or refined symbolic logic, we can compare it to the "greening" of the leaves of the tree. The greening depends on the total metabolism of the tree, and it is a necessary component of the whole process. If the whole process is in harmonious balance with itself and with its space-time environment, the greening of the leaves will be healthy, and it will fulfill its potential development. We can also observe this in an orchard: the bushes and the trees bloom and bear fruit if the conditions are right; if any of the conditions varies above or below an optimum range, there is trouble, and this trouble will show in any of the many aspects of the behavior of the tree.

We went away for a couple of weeks one summer, after instructing the boy who was left in charge of watering our garden to water this new bush every other day, to water these trees once a week, and not to bother with those other bushes—they can wait until we are back. The boy did exactly as he had been told, following our detailed instructions to the letter. But the weather did not follow the course we had expected; it was beastly hot for days and days in succession.

The royal Jasmine on the archway to the patio, the young camellia near the compost pit, and the persimmon tree in the orchard were the worst affected. Their leaves were wilting a bit when we came back and they were listless and old-looking in the burning sun. Their greening aspect was not good, revealing a disturbance in the soil, in the air, within the plant itself, or within the whole plant-soil-air system. It was most evident at the greening level, but it was not exclusively—or mainly—a greening problem.

Here is the case of a wife who recognized that her thinking and that of her husband went awry:

> The main feeling that we both carried with us is fear. Our separate reactions to this emotion are almost diametrically opposed: I freeze all feelings to protect myself, and Fred fights verbally. All our married life we have each interpreted the other's behavior as anger, when it was really fear, and thus a vicious circle has been set up.

What theorem of symbolic logic applies here? Evidently their thinking turns round and round in a vicious circle. The thinking aspect of their semantic transactions has a neurotic character, just as the greening aspect of our trees had a sick appearance when we came back from our trip.

In both cases, we look for the condition that is within our control and that might alter the situation. For the jasmine, I used a rooter and a chemical fertilizer; for the persimmon tree, only a thorough soaking was needed. The young camellia was in critical condition, but we eventually saved it. With my correspondent, it is probable that the couple is doing more "thinking" than is good for them; simple relaxation and sharing experiences at the silent level may be suggested.

Symbolic logic works at the level where the thinking disturbance occurs; it deals with thinking as with a relatively independent mechanism that either works or fails to work. We adjust our thinking as we adjust the timing in our car. The psycho-logics of general semantics may or may not intervene at the level where the disturbance has occurred; it deals with the whole organism-in-a-particular-environment-at-a-particular-time. It is not so much concerned with consistency in thinking as with appropriate semantic growth and effectiveness.

By appropriate semantic growth, I mean the healthy state of a person who develops and participates within the optimum range for his age, his education, his past experience, his anticipated future, and the possibilities of the environment in which he happens to be. "When I was a child, I spoke like a child, I thought like a child, I reasoned like a child," wrote the apostle Paul. The logic of the child is different from the logic of the adolescent. When the gonads become active at puberty, the biochemical changes in the organism cause the face of the world to change. The boy and the girl are not "kids" any more; they think like teenagers, they speak like teenagers, they reason

like teenagers. When one becomes a parent, responsible for the life, welfare and future of children, one assumes a new kind of psycho-logics. He or she thinks like a parent, speaks like a parent, reasons like a parent.

For example, when I withdrew from active professional work, my whole world became different from what it had been. I began thinking, speaking and reasoning like a man who does not struggle any more, who does not compete anymore, and looks at the game from the bleachers and not from his former position in the field. What keeps me in a state of appropriate semantic growth today is different from what I needed for my effective development years ago.

The skill of the psychotherapist is a constant application of that all-encompassing psycho-logics. Psycho-logics is behind the art of the educator, the efficient executive, and all leaders. They are "at one" with the total situation; they think, they speak, they reason as befits the occasion.

In logic, one strives to be consistent with his premises; in psycho-logics, we strive to keep in touch with the situation as it develops.

To summarize what has so far been covered in this chapter, we introduced, as a first step, a mental model that describes the human individual as a thinking, feeling, self-moving, electrochemical process in continual transaction with a space-time environment. Historically, earlier mental models attempted to define what man *is*. The model of a human individual as a Semantic Transactor postulates what an individual *does*; that is, an operational description based on what is considered significant in the light of a survey of today's human sciences.

This model eliminates the split between mind and body as two parts that act upon one another. Our transactions are *semantic*, or what-my-experience-means-to-me at a moment. These transactions are seen as dynamic units of significance that bind our electrochemical changes, our perceivings, movements, feelings, strivings, thinkings and understandings into a valueful whole.

The construct of semantic transaction is fundamental to the beginning of a new understanding of ourselves; it allows whoever uses it to make use of the suggestions of general semantics and epistemics

for self-guidance in a time of accelerating change. In the following section, we will begin an in-depth examination of the various activities within a semantic transaction, remembering that separation of these activities is a matter of verbal dissection only.

CHAPTER 4

nonintellectual aspects of semantic transactions

The many human sciences that are supplying us with information about ourselves are just beginning to study the self-managing aspects of our feeling, self-moving, or electrochemical activities. In these areas our vocabulary is not yet with the technical sharpness of scientific constructs; we are still using common-sense expressions in most cases. When new terms are chosen or invented by a school of psychoanalysis or psychology, it takes some time for them to be accepted, if they are at all, by the general public. For instance, what percentage of people with better-than-average knowledge have a clear idea of what is meant by Lewin's *life-space,* by Murray's *succorance*, by Maslow's *self-actualization*, by Selye's *adaptation syndrome*, by Alexander's *primary control?* How often do we use these terms or similar ones, in ordinary conversation or in thinking about ourselves? How often do we, rather, use plain, common-sense, indeterminate terms to refer to such phenomena or their assumed equivalents?

For most of us, the areas covered by ellipses *A, B,* and *X*, in the Semantic Transaction diagram (Figure 2, p. 32) (electro-chemical activities, time as a dimension of neurological processes, habits, 'feelings') are like regions for which we have no clear geographical map; we have to depend on the often fanciful reports of nonsystematic observers. It is said of Hottentots that they had no number classification beyond one, two and three; whatever was more than three was "a lot," or "infinity"—without any possible differentiation between four, a dozen, or many more. We are still at a comparable stage when it comes to differentiating our feelings and our body sensations.

We quickly stop short once we have said that we love, hate, or trust someone. The various forms of love are lumped together, like all the "more-than-three" were by the Hottentots. Love is easily taken to imply an erotic element when the two "lovers" are of different sexes, and it may well be that this lack of distinction reacts upon the "lovers" themselves, creating problems that are purely symbol-derived. In French, the common-sense vocabulary is even poorer; it does not even include the obvious distinction between "to love" and "to like".

Does this mean that no work is being done in these areas? Quite the contrary. Research reports, experimentation schemes, and theories of all sorts are abundant in professional periodicals. Self-help books appear many times a year that promise happiness, health, power, creativity, to everyone who accepts their psychological, mystical, religious, or *new* "scientific" recipes.

A choice has to be made among these offerings, and it is not easy. Even after we have discarded the schemes that are blatantly advertised, in which we suspect that the purpose is not so much to help the reader or the subscriber but rather to exploit his misery and his credulity, we are left with an abundance of theories and methods that overlap or clash, or that require the help of an expert for their application. In the pages that follow we shall describe theories and methods that our experience has shown to be of some use.

1. Neurological Aspects of Semantic Transactions

Space -Time Dimensions of Nervous System Activities

A standard experiment that students of psychology have to perform in the laboratory is to measure the individual differences in reaction time. Reaction time means the time, measured in fractions of a second, that it takes for a person to press a telegraphy key after he is given a visual signal to do so. It is the time that it takes the nerve impulse to travel from the retina of the eye, through the brain, the spinal column, and along the arm to the finger tip that actuates the telegraphy key.

There are individual differences: some are slow at this, some are fast; but all take a certain amount of time to react. In no case is pressing the key simultaneous with the signal flash. Everyone has a reaction time that is relatively long or short, but that is measurable in

fairly large fractions of a second. It is assumed that this simple reaction time experiment measures the rock-bottom individual speed of the nerve impulse in its undelayed flow along the reflex arc, from the eye to the finger.

In a second experiment of choice reaction time, the subjects have to decide which key to press—in a set of four—to show the color of the signal they are responding to (of four possibilities): red, green, yellow, or white. This involves a certain amount of rudimentary thinking, at least enough to differentiate colors and to react accordingly. The nerve impulse has to follow a more complex path and find its proper direction in a network of nerve cells. In all cases, the choice reaction time of an individual is longer than his simple reaction time. Thinking and choosing, even of the most rudimentary kind, is not an instantaneous affair.

Perceiving, reacting, thinking, choosing, learning, remembering, feeling, planning, evaluating are processes that have observable dimensions in time-space. They have a beginning, somewhere, somehow; they follow a certain course on a network of nerve fibers; they repeat themselves in cycles, or they string along as chain reactions that spread all over the organism or die out for lack of proper stimulation.

Obviously certain organismic processes take time. We know that digestion and assimilation take time and distribute themselves in space. From the moment we put solid or liquid food into our mouth to the moment when that food becomes part of our tissues and organs, many physical and chemical transformations take place. We know that breathing is also a time process; the oxygen of the air enters our nose, penetrates our lungs, fixates itself on red corpuscles, travels down our body where it is needed, and it changes place with carbon dioxide that travels back in venous blood to the lungs and out into the air. In fact, all body activities are time-space processes, and many of them can be observed directly.

But when it comes to what we still call "mental" activities—according to the old distinction between body and mind, flesh and soul, matter and spirit—we are easily led to think that they can be instantaneous processes. As activities of the spirit, they are assumed to be spiritual and independent of matter, space and time. We obey, unconsciously, an assumption that we seldom reexamine or criticize. This assumption—of the immateriality of our thinking and feeling

processes—is at the bottom of many misunderstandings and unhealthy practices in communication, education, and self-management. It leads us to geometrize our mental processes as phenomena taking place in pure abstract space. In up-to-date science, our thinking about such phenomena is less simplistic.

Mental activities are not independent of organismic activities; thinking has a physical aspect, just like digestion or respiration. The main difference is that instead of going slowly along a series of visible organs, such as the mouth, the stomach, the intestines, the blood, or the lungs, mental activity goes along a series of microscopic nerve cells at a speed that has to be measured in fractions of a second. This, however, does not change the basic nature of the process: it is not a spiritual happening, independent of matter, it is not straight like the path of an arrow, and it is not instantaneous, but dependent of variable timing. It follows a course that new methods of investigation can detect, at least in its main characteristics.

The organs through which our mental activities are processed—as our metabolic activities are processed through the stomach, the intestines, the digestive glands, and the circulatory system—are nerve cells, billions of them, which connect every part of our organism with every other part. There are differences among nerve cells, but all may be described as made of three essential parts (1) a cell body with (2) dendrites on the receiving side and (3) an axon on the transmitting side. The nerve impulse is a wave of electrochemical energy that enters through the dendrites and goes out through the axon. Nerve cells are interconnected and form a most complicated network: one cell may receive impulses from many cells, and it may, in turn, fire nervous impulses to a whole group of sister cells.

Today, thanks to the progress made with computers, we speak of the activities of groups of nerve cells as programming. For instance, it is assumed that in the motor area of the brain, there is a programming of the three individual letters *m-a-n* when I write the word *man*. This directs the movements of the hand and finger muscles as they trace the letters, seeing that *m* has three legs and *n* only two; and that *a* requires the tracing to turn around the loop and not go up in the longer stem of the letter *d*.

This is the way we acquire skills. With time, the operation becomes easier, faster, and smooth-flowing. These growing series of such cell-assemblies are called phase sequences. The disturbance in a

phase sequence can be shown to be not only a thinking happening, but simultaneously a physical, often unpleasant, disruption of an acquired habit. You may find those cell-assemblies and phase sequences under other names in the literature. Some may speak of reverberatory circuits, and new terms may be invented and put into circulation as time goes on. The important thing for the lay person is to have some idea of the phenomenon and thus recognize allusions made to it.

The study of the nervous system, from the brain to the outer and inner organs of our body, is one of the most fascinating fields in the modern human sciences. Like all contemporary sciences, it is in a state of constant flux and rapid progress; only specialists can keep up with its findings and theories.

Some scientists are also writers who try to inform the public about up-to-date findings in nontechnical, even poetic language. One of these is Dr. Lewis Thomas, a physician and medical researcher. In his excellent little book, *The Lives of a Cell,* he writes:

> A good case can be made for our nonexistence as entities. We are not made up, as we had always supposed, of successively enriched packets of our own parts. We are shared, rented, occupied. At the interior of our cells, driving them, providing the oxidative energy that sends us out for the improvement of each shining day, are the mitochondria, and in a strict sense they are not ours. They turn out to be little separate creatures . . . they have maintained themselves and their ways, replicating in their own fashion, privately, with their own DNA and RNA quite different from ours . . . Without them we would not move a muscle, drum a finger, think a thought.
>
> ...But what of the other little animals, similarly established in my cells, sorting and balancing me, clustering me together? My centrioles, basal bodies, and probably a good many other more obscure tiny beings at work inside my cells, each with its own special genome, are as foreign, and as essential as aphids in anthills. My cells are no longer the pure entities I was raised with; they are ecosystems more complex than Jamaica Bay.[1]

It is possible, however, for those of us who are not specialists to grasp a certain body of knowledge, which seems to be well established, that we can use for our own guidance. This knowledge corre-

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[1]Lewis Thomas, *The Lives of a Cell* (New York: The Viking Press, 1974), pp. 3-4.

sponds to today's almost universal knowledge about bodily health: the existence of microbes; the importance of vitamins and minerals in our diet; the need to count calories in case of overweight. We do not claim to replace medical experts when we consider these factors in matters of personal or public health; similarly, one does not claim to be a neurologist when studying a few simple facts about the functioning of the nervous system. This knowledge brings down to earth the discussion of many problems of human behavior that are so often described in such mentalistic terms as neuroses, complexes, fixations, repressions, abreactions, misunderstandings, resistances, habits, personality traits, mental blocks. It clears up the mist of abstruse theories that hide the simple mechanisms of organic functioning, and it makes "mental" health a matter of teachable skills in self-management.

We have already mentioned, in discussing reaction time, that no human activity, mental or otherwise, is instantaneous. We shall now discuss the three main neurological aspects of our semantic transactions: their speed, rhythm and pattern. Let us remind ourselves again that, when we speak of semantic transactions, we avoid the old distinction between mental and physical activities. Semantic transactions have at least seven aspects, and probably many more; they can be observed under their thinking, feeling, self-moving electrochemical, environmental, historical and purposive aspects—separately or in combination. At this moment, we are concerned mostly with their electrochemical, their self-moving, and their thinking aspects.

Let us first consider the speed of the nerve impulses along the nerve fibers and across the synapses—or jumps—from one cell to the next. Because nerve impulses travel at an average speed of 155 miles per hour, or 225 feet per second, we may feel that, even if a person is six feet tall, a speed of 25 feet per second will cover one's whole nervous network in practically no time at all. But 225 feet per second is an average speed on a single, continuous nerve fiber. It includes much slower rates (in some cases), and it does not cover choice reactions, problem-solving, or changes in dynamic patterns—all of which multiply the time required for a reaction to complete itself. Even in the simple case of direct transmission of a physiological message, however, the time element should be considered. For instance, the speed of the nerve impulses does not approach the speed at which a voice travels from a broadcasting station to a receiving set.

The following analogy is a vivid example of the time dimension in a simple semantic transaction:

> In earlier times, the rapidity with which an impulse was conducted along a nerve fiber was considered the quintessence of speed, hence the expression: "quick as thought." This idea has been superseded, however, by the accomplishments of modern technology: an airplane flies faster, not to mention the achievements of the telephone, the telegraph and the radio.
>
> If a giant were stretched out over the earth so that his feet lay in the water at the southern tip of the South America at Cape Horn, while his head lay in Alaska, the bite of a shark that had attacked him Monday morning would first be perceived by his brain Wednesday evening. And should he now wish to withdraw his foot "rapidly" from the water, his desire would avail him little, for it would take until the end of the week before the volitional impulse would have reached his foot. After having withdrawn his foot, he would still have a feeling Sunday, Monday and Tuesday that his foot was in the water and was bitten, for it would take so long before he would receive the news that the foot had been drawn up on the dry land.[2]

None of us has the size of that giant, of course; but we shall see later—when we discuss patterns of nerve impulses and how difficult it is to change them—that the slowness of transmission is an important factor.

To the slowness of transmission, we must add the slowness of fixation. A neural pattern takes time to impress itself on the brain and to become a permanent "taping" on our electrochemical network.

> There may be (this is still hypothetical) a difference in the amount of time taken (that is, the amount of activity that has to reverberate around the brain) between the time a message comes in and the time it has fixed a memory. We have been able to measure this time as something like fifteen minutes. A blow on the head can give a lasting amnesia for the preceding minutes; an animal given an electroshock each time after running a maze shows no progressive learning if the shock occurs within fifteen minutes after the experience. The failure is not due to damage by the shock, because if it is given four hours after the maze running, learning is perfectly good.[3]

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[2]Fritz Kahn, *Man in Structure and Function* (New York: Knopf, 1943), p. 471.

[3]R. W. Gerard, "Panel Four: The Evolution of Mind," in *Issues in Evolution*, ed. Sol Tax and C. Callendar (Chicago: University of Chicago Press, 1960), p. 202.

What was "hypothetical" at the time of the first edition of *The Art of Awareness* is now generally accepted. In other words, a statement covering information or an opinion with which we are unfamiliar takes on the average fifteen minutes to be "heard." It is only after that time that its assimilation begins.

The second aspect of the nerve impulse is its rhythm. Who today has not heard of brain waves, those sinuous lines on paper that show the variations of electrical potential, even during sleep? These sinuous lines change shape when the subject awakes, starts thinking hard, is given certain drugs, and when certain local tumors or disturbances are present. The brain cells function like the instruments in a symphonic orchestra; they stop and go, they play loudly or softly; the needle that registers the overall rhythm in biofeedback gives a very inadequate picture of what is actually going on. To enrich that picture, we have to consider the pattern aspect of our neurological functioning.

If we go deeper into this phenomenon, we will find that each nerve cell has a refractory period that alternates with a responsive period; its chemical exchanges cannot go constantly in one direction, they have to slow down and go into reverse (refractory period) if the proper metabolic balance is to be maintained—just as the larger organs of our body have their own rhythm of activity and rest, absorption and elimination.

Take habitual handwriting, for instance; it is a personal pattern of movements traced down on paper and are easily recognizable, at least by handwriting experts. These movements are controlled by a set of nerve cells in the brain that fire one another in a definite sequence. This sequence has become habitual for these cells and for the arm and the hand muscles that they control.

If we want to find out by an actual experiment how hard it is to break that pattern, we can write at our normal speed, and for half a minute, the following sentence: *The Declaration of Independence was signed in 1776*. Don't stop, keep writing it repeatedly until the half-minute is over; then turn the sheet over so that you will not be guided in the next phase of the experiment by what you have written. Now write the same sentence for another half-minute, omitting every other letter as you write and linking whatever letters are left that belong to the same word—also doing your best to keep your normal

handwriting style. If you count the number of letters written in the first phase and compare it to the number written in the second, you will see that your output was reduced to 20 or 25 percent of its normal rate, and that your handwriting in the second phase was hesitant, perhaps childlike, and contained errors.

What happened? The speed of your nerve impulses was slowed, and their pattern was interfered with. They had to come to a stop at each jump from one letter to the next—from one cell assembly to the next, as the experts would say—and a new connection had to be established over the gap created by the omission of a letter. A similar disconnecting and reconnecting of nerve cells and groups of nerve cells takes place whenever we have to modify our train of thought on any central issue in our life, such as our relations with our spouse, family, our professional work, our status in the community.

If, to the relatively minor motor disturbance that took place during this writing experiment, we add the fact that something similar must be happening at the deeper level of the autonomic systems where our feelings have their own neural patterns, we realize that thinking and feeling are not simply matters of the soul, or the spirit, or what-have-you; they are, as well, a physical function of our organism. They are actual disturbances of the chemistry of the body, because the synaptic jump from one nerve cell to another is both an electrical and a chemical process. It is no wonder that the accumulation of such disturbances in very delicate parts of the organism eventually brings about all sorts of physical derangements; headaches, bad digestion, loss of sleep, stomach ulcers, heart seizures.

Apart from their limited speed, their rhythm, and their patterns, our nerve impulses have another characteristic of which we have to become aware. When we think of our nervous system, we may take it for granted that our nerve cells are at rest most of the time, waiting for a stimulus to stir them into action. We already know that their action will follow certain patterns, most of which are determined by our cultural and personal experiences. But even between spurts of activity, they are not at rest and neutral. An authority in these matters, the late Karl S. Lashley, a psychologist, said in 1951:

> Neurological theory has been dominated by the belief that the neurons of the central nervous system are in an inactive or resting state for the greater part of the time; that they are linked in relatively isolated conditioned re-

> flex arcs and that they are activated only when the particular reactions for which they are specifically associated are called out. Such a view is incompatible with the widespread effects of stimulation . . . also with recent evidence from electrical recordings of nervous activity. It is now practically certain that all the cells of the cerebrospinal axis are being continually bombarded by nerve impulses from various sources and are firing regularly, probably even during sleep. The cortex must be regarded as a great network of reverberatory circuits, constantly active. A new stimulus, reaching such a system, does not excite an isolated path but must produce widespread changes in the pattern of excitation throughout a system of already interacting neurons.[4]

To get the full meaning of the sober quotation from a scientist, let us use our imagination. As I narrate an experience of mine, revive in your own memory, a similar personal experience.

I remember a day in New York, when I was in the corridors that connect the subway to the lobby of the Pennsylvania Station. It was during the traffic rush, when a turbulent flow of humanity was pouring out of the subway and racing madly for the commuter trains. They did not have to look for the direction signs on the corners, they knew where they had to go; and they went headlong, without a glance to the right or left. I, a stranger, coming in the opposite direction, wanted to find my way to the Statler Hotel across the street, or to some outlet to the surface. I would walk a bit, then stop, look around to orient myself, and glance above the crowd to read the signs. I eventually made it, after having been jostled about for many unpleasant minutes and after having lost my way more than once.

All brains are active, some more, some less; and their nerve impulses are like the crowd of commuters at the rush hour. Nerve impulses race headlong to their familiar conclusions, their long-range purposes, and their immediate objectives; and to introduce a countercurrent in that flow is like trying to stop the crowd that races blindly from the subway to the commuter trains. When we realize that this is the way things go on in the human brain, we understand how artificial are the measured steps of formal logic, which assumes not a crowd pouring through in a mad rush, but a team of ballet dancers ready to follow a well-prepared choreographic design.

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[4]K.S. Lashley, "The Problem of Serial Order in Behavior," in *Cerebral Mechanisms in Behavior*, ed. Lloyd a. Jeffress (New York: Wiley, 1951), p. 130.

Professor Lashley had a different analogy, almost poetical, to illustrate the relative stability of brain patterns:

> I can best illustrate this conception of nervous action by picturing the brain as the surface of a lake. The prevailing breeze carries small ripples in its direction, the basic polarity of the system. Varying gusts set up crossing systems of waves, which do not destroy the first ripples, but modify their forms . . . A tossing log with its own period of submersion sends out periodic bursts of ripples, a temporal rhythm. The bow wave of a speeding boat momentarily sweeps over the surface, seems to obliterate the smaller waves yet leaves them unchanged by its passing . . . [5]

The prevailing breeze, which eventually wins over disturbances caused by contrary gusts of wind, tossing logs, and speeding boats, is the general orientation of a person's method of thinking and guiding values.

Sir Charles Sherrington, the famous British physiologist and writer, used a simile that has become a classic. "The brain appears as an enchanted loom where millions of flashing shuttles [the nerve impulses] weave a dissolving pattern, always a meaningful pattern, though never an abiding one; a shifting harmony of subpatterns."[6]

None of these three analogies exactly represents what goes on in our nervous system, but all help correct the old-standing errors that fail to give thinking its time dimension, its biochemical features, and its dynamic patterns. The conclusions we can draw from the previous considerations are many, and they apply to mental hygiene understood not as a technique to ward off neurosis and psychosis but as a technique of self-management, self-development, and self-training for a more sensible and more productive life. Here, at random, are a few of these conclusions:

1. We need not feel stupid if we cannot understand—let alone accept—a new idea or theory. It takes time to disconnect our habitual nerve cell patterns and reconnect them in a different order.
2. We need not strive too much for speed in mental activities. To get speed, we have to keep the same patterns of thought; and if

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[5]Lashley, "The Problem of Serial Order in Behavior", p. 133.

[6]Charles Sherrington, *Man on His Nature* (Garden City, N.Y.: Anchor books [Doubleday], 1953), p. 184.

we do so, we renounce all possibility of being original and creative.

3. It serves no useful purpose to complete the thought of another when he speaks to us or when we read the first part of his statement. If we do, we may have switched to our own patterns of thought, which were aroused by what he began saying, and we may miss the point he is trying to make.
4. It is an illusion to expect to change people quickly by a clever demonstration or a logical argument. Many people are like sailing ships; they obey the breeze that prevails in their cultural, professional, or social environment; they are not powered with the critical sense that is necessary for bucking the waves.
5. The interval between "understanding" what we read or hear and "internalizing" it—to the point that it becomes an integral part of our thinking-feeling orientation—takes at least fifteen minutes, or perhaps much longer. It is therefore a sound practice to stop occasionally and meditate on what we read or hear that sounds different, challenging or questionable.

These conclusions give us a striking example of the difference between what was taught as effective communication two or three generations ago and what is now accepted as scientific practice. In my undergraduate years in the first decade of the present century, I was taught that to practice effective rhetoric was first to convince my opponent by an appeal to reason, and second to persuade him by an appeal to his feelings to achieve my own aim. The feelings to be stirred in him were those of his personal self-interests and those of whatever group to which he belonged: family, profession, or nation. It was, in fact, reinforcing selfishness and self-centeredness on both sides, his and mine. Today, I propose altruism as a passion. I am aware that without such a radically different orientation the whole human family may be heading for its doom.

2. Feeling Aspects of Semantic Transactions

Affects and Values as Integrators

We often contrast thinking with feeling, and values taken to be subjective with principles viewed as objective. We sometimes speak of the brain versus the heart, and we claim that the brain should rule—and some philosophers advocate the primacy of the intellect.

An international business enterprise takes the magic word THINK as the epitome of practical wisdom; and a common expression is "Use your brain!"

We are dealing here with a firmly rooted assumption of our culture, with one of those "of course" verities that no one questions in earnest, which is implied in the mental picture suggested by our standard definition of a human being as a *rational animal*. If humans are distinct from animals because they are endowed with reason, must they not then assert superiority by using reason? Whoever sides for feeling against thinking, for the heart against the brain, must be trying to justify some weakness or is indulging in mushy sentimentality.

The higher we go in praiseworthy performance, the tighter we must keep, we assume, our feelings in check, and we must make greater use of our reasoning powers. When we climb the pinnacle of human endeavor in scientific achievement, we are expected to have purified ourselves of all subjectivity; we deal with a universe of cold, colorless, translucid objectivity, from which all human passions have been exorcised. We weigh, and measure, and feed these data into our logical computer, and the answer comes out with a tag that tells us the relative respectability of the prediction.

The dream of Laplace is on the verge of becoming a reality; "An intelligence that knows at a moment of time and embraces in one formula the largest bodies and the lightest atoms would possess complete scientific knowledge of the universe." We have not quite reached that stage, but we are heading for it. Give us a few more years, and the human brain—aided by super electronic gadgets—will be like the God of the unenlightened believers; it will know all, perceive all, control all. The dream of the medieval metaphysician will come true; we shall reach the supreme level of what they called "first principles," "eternal verities," "ontological absolutes." Of course, we have changed the names; now we speak of "invariants under transformation." It may sound better; but, if we are honest, we have to admit that we share one basic belief with Aristotle, Aquinas, Kant and the rest of them: we regard "thinking" as the supreme human achievement.

While Korzybski stressed the need for "cortico-thalamic" integration, he does not seem entirely free from these assumptions. People interpret many passages of *Science and Sanity* as meaning that we must look forward to a late-model messiah, a *Homo mathematicus*,

who will be a super-expert in symbolic logic and high-order abstractions. He will know how to translate into firm and unchanging categories the shifting dynamics of sensation and emotion.

> The value is chiefly in the fact that such higher abstractions represent a perfected kind of memory, which can be recalled exactly in the form as it was originally produced . . . Thus critical analysis, and therefore, progress, becomes possible. Compare this perfected memory, which may last indefinitely unchanged, with memories of "emotions" which, whether dim or clear, are always distorted. We see that the first are reliable and the others are not.
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> Another most important characteristic of the higher-order abstractions is that, although of neural origin, they may be preserved and used again and again in extra-neural forms, as recorded in books and otherwise. This fact is never fully appreciated from a neurological point of view. Neural products are stored up or preserved in extra-neural form, and they can be put back in the nervous system *as active neural process.*[7]

A library is a repository of the products of the brains of previous generations. These products, even in their dried-up state, remain alive and they will grow again if planted in the minds of today—just as the seeds kept for centuries in the tombs of Egyptian mummies sprouted and bore fruit when sown in fertile soil.

But this, perhaps, is not the only explanation of human dominance and progress. Some scientists are not so definite about the supremacy of the brain as is the lay person or the devotee of superlogic. These scientists, in fact, seem to feel quite differently about the whole thing.

> Science can no longer hope to survive as an island of positive facts, around which the rest of man's intellectual heritage sinks to the status of subjective emotionalism. It must claim that some emotions are right; and if it can make good such a claim, it will not only save itself but sustain by its example the whole system of cultural life of which it forms part . . . I want to show that scientific passions are no more psychological by-products, but have a logical function which contributes an indispensable element to science.[8]

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[7]Korzybski, *Science and Sanity*, p. 291.

[8]Michael Polanyi, *Personal Knowledge* (Chicago: University of Chicago Press, 1958), p. 134.

This brings us back to the beginning. Since the assumption is that "brain" and "heart" are exclusive of each other but have to live together, which has the deciding vote in a tie? This is an old and out-of-date question. Instead of using the terms brain and heart, let us use two terms sometimes used in the neurosciences: the cortex and the thalamus. And instead of "opposing" them, we will begin to look at them functionally in terms of self-development. The cortex is the new brain, as opposed to the thalamic region (or old brain). The new brain is more fully developed in humans than in other animals, a sure sign of our higher complexity. The cortex is the outward layer of the brain mass, folded in convolutions that form a surface of rounded ridges and deep grooves. The thalamus and its neighboring ganglia are somewhere in the center of the brain mass, where the spinal column joins the cerebrum proper.

These two regions are interconnected, of course, but their functions are different. The cortex has centers of sensation and movement linked to one another by a complex crisscrossing of associative fibers. The cerebral cortex is further differentiated into two halves or hemispheres that communicate by means of a mass of fibers called the corpus callosum. The left hemisphere controls the right side of the body, including the right side of the visual and auditory functions. The right hemisphere controls the left side of the body. For most people, the hemispheres tend to specialize in function, with the left side appearing to predominate. For some left-handed people, the brain organization is reversed.

It was previously believed that the cortex was the region associated with rationality and logical thinking and that it functioned as a whole. For over one hundred years, neuroanatomists and neurophysicists have known that verbal functions mainly involve the left hemisphere; only recently has it been demonstrated that the right hemisphere is responsible for spatial abilities. This research eventually led to the present acceptance of the cortex as processing in two different modes. One mode, the left side, processes analytically, rationally, logically, verbally, and mathematically, and is linear and sequential in operation. The other mode, the right side, processes tacitly—its verbal articulation is quite limited—spatially, and can integrate many inputs simultaneously. It operates in a holistic, relational manner and is usually referred to as intuition. Of course, it must be remembered

that all these distinctions are not so clear-cut in the actual functioning of the whole person.

The thalamic region, which involves the limbic system, is the center of affective reactions. It has a great deal to do with our emotions, our blood pressure, and our autonomic nervous system generally.

When Korzybski wrote his big book in the early thirties, he saw the cortex as the regulator—although some authors he quotes are not so definite. For instance, Henri Pieron says:

> The thalamus, which in the lower vertebrates deprived of the cortex ensure the general reactions of the organism and the elementary mental functions, possesses an affective excitability in relation with the profound biological tendencies of the organism; among the higher mammals, indeed, it seems to preserve this role of affective regulation, whose importance in the behavior of the organism and mental life is so often misunderstood.[9]

Many present-day theories for managing our emotions are little more than the old "use your brain," put in different words and accompanied by modern-sounding techniques. Many are advances beyond "When excited, count to ten," such as the general semantics recipe of "Delay your reactions." The trouble is that there are times when counting to ten and "using your brain" do not work, and one eventually discovers that the thalamus keeps running the show. Our most sophisticated logic is still at the service of our feelings; or our logic fails to influence our feelings. We understand and accept—intellectually—a new idea, but we do not apply it to our behavior. We protest that we want the truth and nothing but the truth, when, on closer examination, we must admit that we want to have it our way and no other. In the meetings at the United Nations, viewpoints are different because feelings, ambitions, fears, and purposes are different. All contestants appeal to some form of logic, giving implicit adhesion to a "League of Sound Logic," and it makes the cold war a permanent institution. They do not yet know how to bring about a League of Human Solidarity that would make peace the only acceptable form of international life.

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[9]Korzybski, *Science and Sanity*, p. 188.

There are times, however, when our acceptance of a new idea goes much deeper. It actually makes a difference in our life. We *feel* for it. We feel different about certain things, certain persons, certain ways of behaving. We no longer have the "heart" for certain things that we evaluated highly, or at least accepted willingly; we are ready to do things that previously meant very little to us.

Such changes involve an affective element. Something has happened within us that is not purely and exclusively intellectual that reaches to the vital parts of our inner self. This can occur in psychotherapy, in a general semantics seminar, in any insightful experience. Is this new integration of our thoughts and behavior mostly a question of logic at the psychological level? At the neurological level, is it mostly a cortical activity dominated by left hemisphere functions?

Although I have learned that it is not always safe to take the latest pronouncements of neurologists as the final and deciding dogmas in such matters, it is interesting to note that recently they have repeatedly stated that the integrative center may very well be in those subcortical areas that Korzybski called the thalamic region. They speak of the reticular formation and of the centrencephalic system or organization. Listen to Dr. Wilder Penfield as he addressed his colleagues at the close of the International Symposium on the Reticular Formation of the Brain (at Ford Hospital, Detroit) in March 1957.

> Neurosurgeons have been forced into the realization that the very existence of consciousness depended upon the integrity of subcortical mechanisms rather than cortical ones . . . For a long time I have been thinking of the "old brain" . . . as the place where the organization mechanisms were to be found—the mechanisms that made the cortical functions possible, the mechanisms without which conscious processes and voluntary action could not exist . . . I proposed the term "centrencephalic system" . . . to describe the coordinating and organizing fiber and cell connections . . . The phrase "centrencephalic organization" was intended as *a protest against the supposition that has satisfied some neurologists and physiologists for too long, namely, the cortical association and cortico-cortical interplay was sufficient to explain the integrated behavior of a conscious man.*[10]

Elsewhere, Dr. Penfield writes:

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[10]Herbert Jaspers, et al., eds, *Reticular Formation of the Brain* (Boston: Little, Brown 1958), p. 740 (italics added).

> The human cortex is made up of many functional areas, each of which has its most important connections with areas of gray matter in the brain stem, including the thalamus. Thus, each functional area in the more recently evolved cortex makes possible the elaboration of the function of a portion of the older brain. Expressed in another way, the subcortical areas of gray matter, by means of their projection fibers, serve to coordinate and to utilize the functional activities of cortical areas and to integrate that activity with the rest of the brain. Transcortical association fiber tracts are important, no doubt, but certainly less of essential importance than *subcortical integration.*[11]

Translated into nontechnical language, this means that our "logic" and "intuition" or cortical activity is an elaboration of the basic drives, feelings, and purposes that fire the nerve cells of our thalamic region. When a change takes place at the affective level, the thinking orientation follows, and not vice versa. The integration is not due to the cortex regulating the thalamus by means of high-order abstractions, but to the thalamus giving all activities a unified meaning that involves value and purpose.

So much for the neurological interpretation—but what of the psychological aspect? Is the theory that gives primacy to the intellect the only acceptable theory? I am convinced that it is not.

The *B Feeling* aspect of our semantic transactions has an importance of its own. Our contacts with our environment are always colored with feeling-tones; they are pleasant or unpleasant, boring or interesting, threatening or encouraging, dull or lively—with degrees between these extremes, of course. We are not insensitive machines that register occurrences without evaluating them. Our brain is not a radar screen that is unaware of the significance of what it perceives. Our reactions are affective reactions; our mood gives a color, an intensity, and a direction to our cortical processes whether rational or intuitional. It determines, in part, what we plan and what we do.

Often the mood is before the reaction. We abstract from our environment what we feel will serve our purposes. Our motivation facilitates certain modes of behavior and inhibits others. We do well and repeatedly what is gratifying to us. And we derive new energy from a sense of achievement.

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[11]Wilder Penfield and Lamar Roberts, *Speech and Brain-Mechanisms*, (Princeton, N.J.: Princeton University Press, 1959), p. 205.

A strong drive to reach a certain goal is occasionally described as dedication; but when such a drive goes *against* our plans we may call it fanaticism. Dedication—or fanaticism—is what Hitler stirred up in the Germans before World War II; it is what many observers recognize as the driving force behind the Russian advances in science and technology; it is what accounts for the achievements of the Chinese people; it is what some persons claim we lack in our Western democracies. We see it in the individual who is "all wrapped up" in his profession, be it painting, baseball, science or bullfighting. When we say, "It means so much to me!", we are expressing the affective aspect of our semantic transactions.

We usually put feelings in two contrasting groups. Some are evaluated as positive and constructive; they increase our alertness, our efficiency, and our *joie de vivre*. Some are evaluated as negative and disruptive; they sap our energy, dull our wits, impair our very health. On the positive side, we make such differentiations as mutual appreciation and trust, acceptance of self and others, cooperation, readiness to compromise, willingness to give credit to the other person, sense of humor, empathy, love and so on. On the negative side, we differentiate such emotions and moods as hostility, guilt, self-defensiveness and self-disparagement, criticism of others, suspicion, jealousy, worry, cynicism, tension, fear, resentment, hate and the like.

The point is that we cannot dissociate efficiency from positive feelings. Whether we are aware of it or not, the human organism works as a whole; there is constant and immediate interaction between the various aspects of our semantic transactions. It is very difficult to be "below par" at the feeling level and remain creative at the thinking level, energetic at the muscular level, and healthy and vigorous at the electrochemical level. Positive feelings do more than release our energies and ensure whatever productivity we can achieve, they actually increase these energies and bring them to a level that they otherwise could never reach. If educated, they impart a refined sensitivity for what is important and what is not, for what is of lasting value and what will not stand the test of time.

Feeling is therefore an indispensable element of creativity, as is clearly evident when we observe great scientists at work. They have described themselves as animated by what Johann Kepler called his "sacred fury" and what Michael Polanyi describes as "intellectual passions."

These passions involve a deep sense of, and belief in, the universal appropriateness of one's personal experience. They are selective, heuristic, and persuasive. Selective, they choose what they feel is important and interesting; heuristic, they guess in advance what they are going to discover; persuasive, they want all people to share a new outlook on the world.

> The discoveries of science have been achieved by the passionately sustained efforts of succeeding generations of great men, who overwhelmed the whole modern humanity by the power of their convictions.[12]

Korzybski was also aware of the fact that all creative work starts, continues and completes itself within an affective state.

> We can only speak legitimately of "meanings" in the plural. Perhaps we can speak of the meanings of meanings, although I suspect that the latter would represent the unspeakable first-order effect, the affective, personal raw material, out of which ordinary meanings are built.
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> The above explains structurally why most of our "thinking" is to such a large extent "wishful" and is so strongly colored by affective factors. Creative scientists know very well, from observation of themselves, that all creative work starts as a "feeling," "inclination," "suspicion," "intuition," "hunch," or some other unspeakable affective state, which, only later, after a sort of nursing, takes the shape of a verbal expression, worked out later in a rationalized, coherent, linguistic scheme called a theory. In mathematics we have some astonishing examples of intuitively proclaimed theorems that, later, have been proven to be true, although the original proof was false.[13]

It is easy to see the parallel (at the psychological level) between these statements and the statements of the neurologists when the latter assert that the centrencephalic system integrates the activities of the cortex around our drives, feelings, values and purposes. I want to strongly emphasize that the area of human values and purposes as reflected in or through the affective system is the primary factor in the integrating action of the brainstem. The latter is postulated here as "the indispensable substratum of consciousness," in the words of Wilder Penfield, and lies outside the cerebral cortex. This centren-

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[12]Polyani, *Personal Knowledge*, p. 171

[13]Korzybski, *Science and Sanity*, p. 22.

cephalic system is regarded as the functionally "highest level" of integration of the brain.[14]

If we look at science as an organized cultural activity, we will also see it as an exchange of trust between neighbors who are working in adjacent fields, none of whom has any organizational control over the entire enterprise. The scientific consensus is

> a joint appraisal of an intellectual domain, of which each consenting participant can properly understand and judge only one small portion . . . Its operation is based on the "transitiveness" of neighboring appraisals—much as a marching column is kept in step by each man's keeping in step with those close to him.[15]

An appraisal is an evaluation. It is the subjective answer to such questions as—Is it true or false? Is it good or bad? Is it acceptable or not?, and Is it useful or not? The transmission of an appraisal is an act of confidence in one's own judgment: We feel that our view is worth being communicated. Its acceptance is an act of trust in the transmitter. In the case of scientists, we may call it enlightened trust, but clearly the assent has a strong element of implicit belief, which takes us far away from the "primacy of the intellect" of certain philosophers. Not that we should despise intellectual capacities and achievements, far from it; but we want them to stay where they belong, at the service of "humanness." Cortical activities make possible a finer discrimination of the means and methods of being truly human in a world where the stranger of today may become our immediate neighbor overnight.

It is their humanness much more than their superior intelligence that made creative scientists what they were. Korzybski recognized this when he wrote that "the greatest men of science have always had wide human aims and interests. From the *non-elementalistic* point of

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[14]The development of our use of this center I see as essential to the future of humankind. There are those who have created and introduced in the human mass the values entire populations have lived by for centuries. They are such people as Buddha, Jesus, Ghandi, and the like. To become a center of such irradiation of human values I see as something that can be developed, and involves skills that can be learned and practiced.

[15]Polanyi, *Personal Knowledge*, p. 217.

view, they probably became productive *because of that broad human urge*."[16]

A similar view has been held by many essayists and philosophers. For example, Count Hermann Keyserling, in his *South American Meditations* made statements that anticipated the findings of Penfield, the neurologist.

> The prejudice that everything must needs follow the laws of reason and intellect has obscured the true meaning of their own inner experience for most moderns. It is to feeling, not to reason, that the idea of humanity, as everybody involuntarily understands it, applies. Not the stupid man, but the man devoid of feeling has always been called "inhuman." In fact, all progress in the sphere of humanity, such as the abolishment of slavery, the recognition of fundamental rights belonging to all men, laws more accordant with justice, etc., has its origin in growing sympathy.[17]

Keyserling goes even further. Instead of thinking of the order of the universe as the result of a superlogic that transcends human capacity, he sees it as an order of a different type.

> The structure of the universe as a whole is entirely different from what corresponds to the demands of the intellect . . . With man, natural ties between those nearest each other precede all that we call "order." These ties endure even through states which for Reason would mean absolute disorder . . . This is the sole reason why there are recoveries after wars and revolutions and economic crises. This explains why the ways in which these recoveries take place always differ widely from those prophesied by scientists.[18]

3. Self-moving Activities and Habit Systems

Primary Control and Relaxation

We are now dealing with what we called, in our semantic transaction diagram (Figure 2, p. 32), our *self-moving activities* (ellipse *A).* They include the autonomic functioning of our organs, our voluntary

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[16]Korzybski, *Science and Sanity*, p. 728.

[17]Hermann Keyserling, *South American Meditations* (New York: Harper & Row, 1932), pp. 251,256.

[18]Keyserling, *South American Meditations*, p. 246.

movements, our sensory experiences, and our muscular skills. We have a recording in our writing. We may meet a friend on the street, and a noticeable change in the way she walks, holds her head, shakes hands with us will reveal that something important has happened in her life. Our moving activities reflect, and by circularity, influence our semantic transactions.

Persons who are trained in observing human behavior, who have learned to detect the slight differences in muscle tone that escape the common observer, are able to see conditions of which the subject herself may be unaware.

It is possible for the unskilled person to develop an awareness of his *A* activities from the inside, as it were, so that he may learn to manage these self-moving activities much as he learns to manage his thinking and his feeling? Do moving activities, voluntary and involuntary, fall within the range of awareness, as the subtle changes in the face of a sitter fall within the range of observation of a painter?

I think so. The art of awareness includes the awareness of our physical self, of the quality of our sensations, of the balance of our posture, of our muscular tension or relaxation, of the way we move, walk, and gesticulate. A certain degree of this general awareness is desirable for anyone who wants to save his energy and be fully productive.

We may quote here a statement of John Dewey:

> It is not such a simple matter to have a clear-cut sensation. The latter is a sign of training, skill, habit.[19]

Was this statement of the great educator-philosopher influenced by his personal experience in the training he received from F. M. Alexander, the Australian discoverer of primary control, who was practicing his art in London at a time when Dewey, George Bernard Shaw, Sir Stafford Cripps, and other outstanding people were consulting him? It may well be, for the same book has ten pages of comments on Alexander's method.

Alexander's technique of primary control appealed to such persons as those we have cited because it was based on sound scientific

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[19]John Dewey, *Human Nature and Conduct* (New York: Modern Library [Random House], 1930), p. 31.

observation, which was later confirmed by independent experiments in laboratories. In a 1924 treatise entitled *Korperstellung* ("Body-sstructure"), Professor Rudolph Magnus of Utrecht, Holland, announced that he had discovered what he called "central control" in animals of all kinds. This control exists in a complex of muscles in the region where the head joins the neck. From this point the entire system of animals is controlled, as can be seen in slow-motion pictures of falling cats always reaching the ground on their four feet.

Dewey quickly saw how the discoveries of Alexander, confirmed by the experiments of Magnus in Europe and later by Coghill in this country, threw a new light on Pavlov's conditional reflex theory. Alexander's work demonstrated that certain basic and central organic habits and attitudes condition *every* act we perform, *every* use we make of ourselves. Hence a conditioned reflex is not an arbitrarily established connection, such as that between the sound of a bell and the eating reactions of a dog; it goes back to central conditions in the organism itself.

Here is the point where general semantics and the Alexander technique meet: both agree that the organism works as a whole, and that we have to think about it in a nonelementalistic manner. Its activities are integrated in a central pattern that reveals the general orientation, the style of living of the individual. To develop awareness is to unearth this central integrating pattern that is buried in our cultural unconscious. Once it is brought to light, we can take control of it. At the thinking level this pattern is the system-function of our subject-predicate language; at the feeling level it is the set of values that we do not question; at the self-moving level it is the primary control that is lodged in the muscle system where the head joins the neck.

My personal experience with the Alexander technique is limited to five training sessions under Dr. Frank Pierce Jones, of Boston, which I took many years ago, and to prolonged private training by means of the exercises devised by Dr. Robin Skynner of London, a medical practitioner who applies general semantics to his work.

One of the interesting points made by Alexander, and emphasized by his American disciple, Frank Pierce Jones, is that our organism is misused because our culture has developed habits of posture that do violence to our bone, muscle and organic structure. I see a parallel between this and the habits of strict logic that have taken over in the thinking areas. In the feeling areas, we either disregard the con-

structive function of sentiments and emotions, or we shamefully admit that we are neurotic when they get beyond control. The art of awareness is the art of living in full consciousness of these energetic drives and habits, seeing that they stay in tune and in harmony with one another.

According to Dr. Skynner, it may take up to eighteen months of practice for a person to train himself in primary control by means of the program he suggests. It may be so, but I can report from personal experience that noticeable results can be achieved earlier. These exercises have nothing in common with the usual setting-up exercises; they are not a strain on the system. George Bernard Shaw was eighty years of age when he first went to Alexander, when he could hardly take a step without agony because of angina. In less than three weeks he was able to walk a mile and to resume the daily swim that he had given up. He lived another fourteen active years, and died of a fall while pruning a tree.

There is no doubt that the help of an instructor makes a great difference in the training for any skill. The better the instructor, the better the training, of course; but even if the former acts merely as an observer and encourager, he or she—or a training pal—may be of value.

I have acted many times as an instructor in training people in organismic awareness by means of another technique: Dr. Edmund Jacobson's progressive relaxation. Dr. Jacobson, a physiologist at the University of Chicago, began to study the effects of muscular relaxation about fifty years ago and has published many reports of his experiments in scientific journals. In 1929 the first edition of his scientific treatise, *Progressive Relaxation*, was published by the University of Chicago Press. In 1934, he published a popular description of his experiments and techniques under the title *You Must Relax*, which has gone through several editions. A few years ago a foundation was established to promote the application of Jacobson's findings to business and industry. In 1964, he published a book intended principally for his confreres in the medical profession, *Anxiety and Tension Control*. In it he introduces "Self-Operation Control" or self-training in habits of efficiency by means of neuromuscular control.

Jacobson's main theme is the cultivation of the muscle sense, of the ability to differentiate—at the silent level—how our muscles feel when they are tense or relaxed, and he insists on a daily practice from

one to two hours over weeks and months. It may be that some persons have the persistence to keep at it that long, but I have never met a person who did it all by himself with the help of only the book. With an instructor, the practice time can be reduced to half an hour a day, and the initial phases of training—to the point of clearly differentiating between tenseness and relaxation—take no more than three or four sessions. From that moment on, trainees are on their own; all they need is encouragement to keep practicing until they have reached the degree of expertness that is indicated in each case. This proficiency, once obtained, requires further practice of course, as does expertness in any other skill. There is an anecdote about Paderewski in the days when he was acknowledged as the top pianist in the world. "If I fail to practice one day, I notice the difference. If I stop two days, my friends notice it, too. If I abstain for a whole week, everybody in the audience detects it!" The same is true of relaxation: this skill requires constant practice if one is to reach the virtuosity that certain situations demand.

There is no attempt to use suggestion or hypnosis in the Jacobson method; quite the contrary. It is a matter of conscious muscular training, like learning to swim, to dance, to typewrite, or to play a musical instrument. In my own practice, the results were uniformly good and had a marked influence on the clients' ability to face their problems with an easier mind. This ability, with the use of report language to describe situations instead of interpretive language to evaluate them, made it possible to face the most touchy issues without going into emotional panic. No patient who had been in the habit of taking sleeping pills felt the need to continue taking them after three or four exercises in supervised relaxation.

Dr. Jacobson has made the claim that, with enough practice in the relaxation of the muscles of the eye and the throat, one may eventually stop one's thinking at will. I agree, but I insist that it takes much practice. What is of particular interest to me in this, from the point of view of general semantics, is that this achievement becomes quite understandable once one agrees that thinking is not simply an affair of the mind, the spirit, or what have you. I cannot resist quoting a rather lengthy passage from Jacobson's popular book concerning this. It shows that earnest workers in the human sciences are not general semanticists in a formal way, but they are participants in the con-

ceptual revolution of our time. Listen to this, and ask yourself what your thinking has in common with that of John Doe.

> All of his life, John Doe had been accustomed to distinguish between his mind and his body. When he worried, he believed that he did so with his mind, not with his body. No doubt, he assumed, worry occurred as an act of the brain. To this extent, worry, was something, he reflected, that went on in the body but it was in a particular part of the body, namely: the skull. What was true of worry, he believed, was likewise true of his memory and his attention, his fears and other emotions and especially his imagination. He yielded to the belief that mental activities occur in the mind and when muscles become tense, this is only a result or expression of what goes on in the mind. He maintained, therefore, that while relaxing might do him a lot of good, it could hardly be expected to take care of his mental ills. To this he added a further objection and difficulty. He found that when he was emotionally upset, he could not relax. From this he concluded that he lacked the willpower to relax. From this objection he passed on to another, namely: that he could not be expected to relax in the presence of so much distress unless something was first done to improve his mental state.
>
> John Doe came by his views honestly. He inherited them from his forefathers, including those of the nineteenth century. As he learned to observe accurately what took place at moments when he worried, imagined, recalled or engaged some other particular mental activity, he became enlightened...Experience taught him that the mind was not what he had believed it to be, following tradition. He acquired a new working conception and with the aid of a little explanation, he no longer assumed that whenever he worried it was an act of the brain alone. For one thing, he learned that as he relaxed, he ceased to worry! This surprised him![20]

Yes, as you relax, and the better you have trained yourself to relax, the less you worry. There is no magic or miracle in this: the organism reacts as a whole. If we are too upset to think logically, and if we have practiced the art of muscular relaxation, there is a fair chance that we may be able to relax in spite of the mental and emotional upset. For the time being, this is the most direct way of controlling our thoughts and our motions. Learning muscular relaxation is like learning to swim. If we are an accomplished swimmer, the chances are that in an emergency we will be able to do almost automatically what a nonswimmer could not possibly do even if he tried hard.

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[20]Edmund Jacobson, *You Must Relax* (New York: McGraw-Hill, 1934), p. 159.

One of the most interesting features of the Jacobson method is what he calls *differential* relaxation, or relaxation while being otherwise active. We may identify relaxation with lying on a couch or lounging in an easy chair, but this is not necessarily so; and there are many things we can do without engaging all the muscles of our body. We can read, write, sew, engage in a conversation, or even in a debate, without having to tense up the large muscles of the limbs or the trunk. What often happens is that we let a generalized tension run over our whole organism when a limited effort is all that is needed. The consequence is that we spend more nervous energy and we perform less effectively. A good acrobat, or ballet dancer, or musician performs with ease because his or her whole system, instead of stiffening in an generalized tenseness, relaxes where it should and when it should. Similarly, most of our work calls for less expenditure of energy than we exert. Once we have learned, by experience and practice, the difference between a tense and a relaxed muscle, we can let part of our organism rest while some other part is active.

If while at our desk—writing, telephoning, conversing, or reading—we make sure that the unused muscles of our legs, thighs, and arms are in a state of relaxation, we will soon notice that we do not tire so easily, we remain more habitually calm, and our thinking is more alert. If we try do to all this before a basic training in the fundamentals of relaxation, of course, it won't work; we will have added one more preoccupation to what we are busy with. Remember the swimmer: he feels at home in the water because he has learned to manage his movements in the fluid element; a nonswimmer may become frantic and might drown. Relaxing is not a matter of good intentions and willpower; it is a matter of simple learning and constant practice.

ED. NOTE: Since the last edition of "The Art of Awareness" (1978), there has been a soaring of approaches to the self-moving activities. Rolfing, Feldenkrais, and the Cranial Sacral work of John Upledger are examples of the better known therapies with a structural emphasis rather than a functional one. The work of Charlotte Selver (who has been doing her work for many, many years), and Contact Improvisation, are two examples of explorations in awareness. Continuum, developed by Emilie Conrad-Da'oud in the 1960's, involves both theraputic and awareness experiences, but brings them into a larger order of aesthetic, non-manipulative, open-ended

movement that seems to be an outgrowth and an expression of the third conceptual revolution. Then there are the wealth of approaches to the "A" activities offered by other cultures, such as Tai Chi, accupuncture with its meridian map of the organism, various forms of massage, and new approaches to dancing that do not require the skills of an experienced dancer.

Summary

In this chapter we have outlined some of the non-intellectual aspects of semantic transactions. It was shown how "time" plays a primary role in our awareness of self-moving and perceptual activities and that the affective system gives our semantic transactions their direction. The neurological basis for this lies in the findings of brain research, which shows the integrative function of the higher brainstem. Changes in behavior must be effected here before there is a change in thinking, and not vice versa. Finally, we briefly discussed primary control and relaxation in our self-moving activities. We now pass to the "thinking" or C activities in the process of abstracting.

CHAPTER 5

the process of abstracting

We relate ourselves intelligently to the surrounding world that we know only in part; and from the parts that we know, we attempt to construct a world that makes sense to us.

To "abstract" means to leave out certain features of a situation; we register only features that are relevant to our needs, our purposes, or our habits. We do this "silently" and verbally, and between these two levels there is no common measure. Our mental model constructs are not pictures of an "objective reality," but schemes of how we can participate in our life experiences and situations as aspects of an on-going cosmic process.

Korzybski often said that the main aim of his work was to bring about self-realization through a *general consciousness of abstracting*[1]. One of his best-known commentators, Wendell Johnson, describes the process of abstracting "as a natural process . . . that provides a basis for human progress, for personal cultural adjustment."[2] Practically, all books that deal with general semantics and its applications have a reproduction or a special version of the Structural Differential (Figure 3, p. 80), a diagram that has become the equivalent of a trademark for the entire discipline.[3] Two hundred pages of *Science and Sanity* are devoted to abstracting and training in abstracting.

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[1]Korzybski, *Manhood of Humanity*, d ed. (Lakeville Conn.: International Non-Aristotelian Library, 1950), p. li.

[2]Wendell Jonson, *People in Quandaries*, (New York; Harper & Row, 1946), p. 167.

[3]For versions of the Structural differential, *see* J.S. Bois, *Explorations in Awareness* (New York; Harper & Row, 1957), p. 124; S.I. Hayakawa, *Language in*

Early in the book, Korzybski says of the Structural Differential:

> This diagram, indeed, involves all the psychophysiological factors necessary for the transition from the old semantic reactions to the new, and it gives, in a way, a *structural summary* of the whole non-Aristotelian system.[4]

Korzybski describes his invention, the Structural Differential, in the following words. (*See* Figure 3, p. 80).

> For the event we have a parabola in relief (*E*), broken off to indicate its limitless extension. The Disk (*Oa)* represents the animal object. The label (*L*) represents the higher abstraction called a name (with its meaning given by a definition). The Lines *(A_1, A_2, A_3)* in the relief diagram are hanging strings that are tied to pegs. They indicate the process of abstracting. The free hanging strings *(B_2)* indicate the most important characteristics *left out*, neglected, or forgotten in the abstracting. The Structural Differentials are provided with a number of separate labels [L_1, L_2 . . . L_n] attached to pegs. These are hung, one to the other, in a series, and the last one may be attached by a long peg to the event, to indicate that the characteristics of the event represent the highest abstractions we have produced at each date.[5]

In our own discussion of the process of abstracting, we do not comment on what Korzybski called the *animal object*, and very few commentators insist on it. It seems that the distinction made by the author of *Science and Sanity* is now taken for granted and has passed into the stock of our cultural acquisitions. It is interesting to note, however, that the Differential illustrates how the animal starts with the object, without relating it to the whole event, of which it has no mental model.

Thought and Action, d. ed. (New York; Harcourt, Brace & World, 1964), p. 179, T.M. Weiss and K.H. Hoover, *Scientific Foundations of Education* (Dubuque, Ia; Wm. C. Brown Company Publishers, 1960), P. 13.

[4]Korzybski, *Science and Sanity* (Lakeville Conn.: International Non-Aristotelian Library, 1933, 1941, 1948, 1958), p. 13.

[5]Korzybski, *Science and Sanity*, p. 399. The diagram for Figure 6.1 is from p. 471 of the same volume. Both are reproduced with permission from the Korzybski estate.

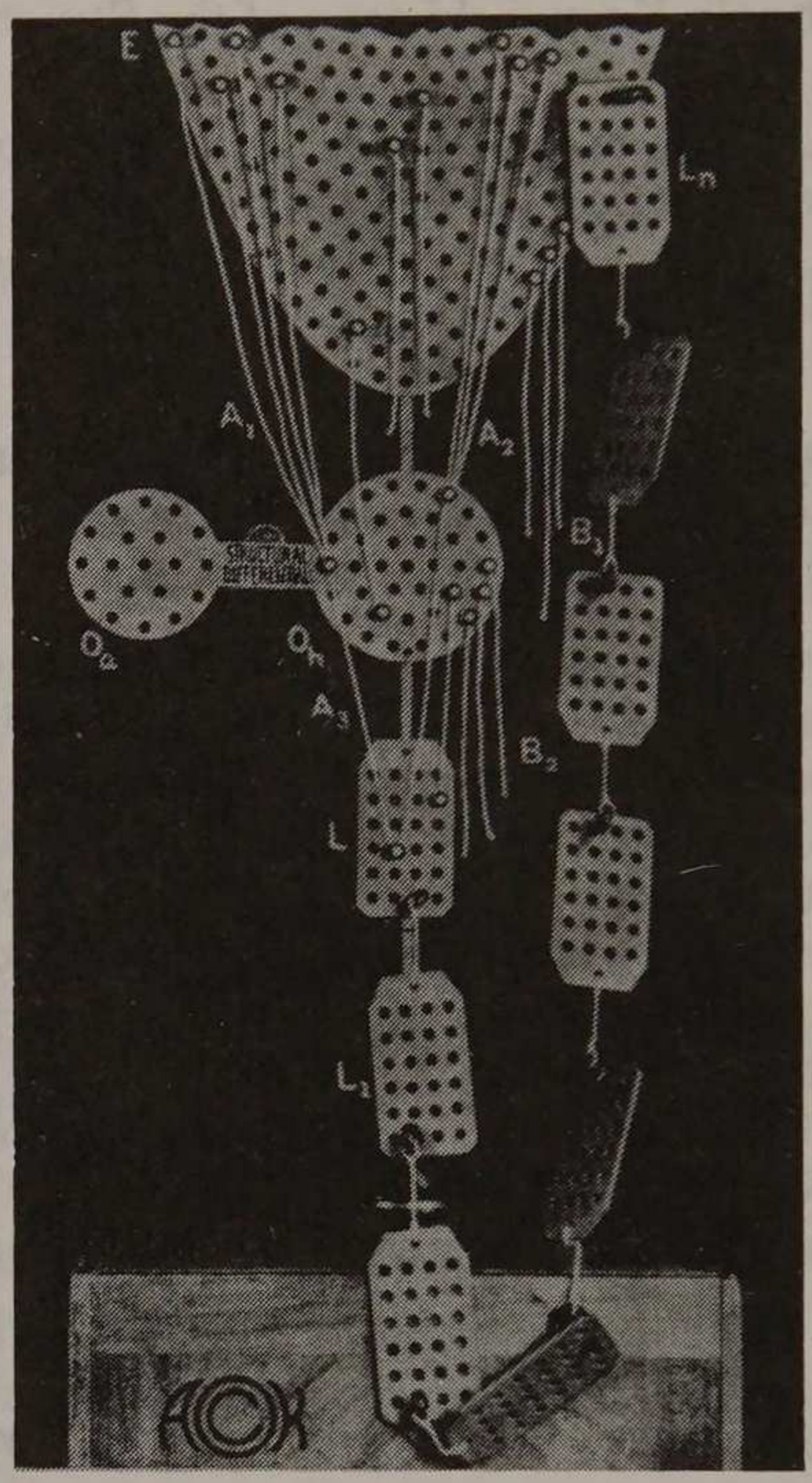

Figure 3. The Structural Differential

In the present treatise, we do not present consciousness of abstracting as the most important notion of the whole program, and we do not take the Structural Differential as the summary of the whole system. Awareness of our total organismic functioning is our main theme, and the diagram that pictures man as a semantic transactor (Figure 2, p. 32) becomes central; however, we hold that a thorough understanding of the process of abstracting is necessary.

We Pick and Choose What We Observe

Abstraction and *abstracting* belong to our everyday language, and it is necessary that we divest these terms of their popular connotations if we want to use them as technical words in an epistemological system. The *American College Dictionary*, for instance, gives four definitions of *abstract* as an adjective, five as a noun, and four as a verb. As a noun, it may mean "summary, essence, idea conceived

apart from some material basis, ideal" and in the phrase *in the abstract*—it means "without reference to special circumstances or particular applications." As a verb, it denotes actions associated with the nouns. The other term, *abstraction*, covers two mental conditions, "reverie" and "absentmindedness," and it is discussed at length in its relations to the fine arts.

Abstract, abstracting and *abstraction*—as used in general semantics—are not identical with the dictionary's categories. In the new discipline, they are both more simple and more comprehensive. Many words used in serious discussions of scientific subjects have become unintelligible—in the sense that they lead to misunderstandings if we content ourselves with the current dictionary definition. In each science and in each school of science, they assume meanings that have to be explained if we want to make sense of what is to follow. From these new special meanings, a new "average meaning" often emerges that is current in scientific circles but unknown to the lay person. The terms we are now studying, *abstracting* and *abstraction*, are striking examples.

Once we have rid our minds of the dictionary definitions of these terms, including our personal variations, we can start building—piece by piece—the mental model that fits the present purpose. It is quite simple, after all, and it will include many popular meanings.

When we observe something, that is, when we see, hear, taste, touch or otherwise sense what is going on within ourselves or without, we can give our attention to only one or to very few elements at a time. By "at a time" we mean a very short fraction of a second. (After all, we are in the scientific age, and today, in ballistics and in other technologies, we must consider intervals as short as a few thousandths of a second.) Our nervous system takes time to operate, and what appears continuous at the level of gross observation is discontinuous and quantum-like at the level of scientific measurement. Training may increase the speed of scanning and the size of units that we can register in a flash, but it does not do away with the quantum-like nature of all perceptions. To use a simple analogy, our brain is not like a film that registers an entire scene simultaneously, it is more like a blank sheet on which we sketch—rapidly or slowly—the features of the situation, the person, or the object that we are observing. These details are taken in some order of preference, conscious or unconscious, but they are taken one at a time.

That is what is meant when we say that we "abstract." We pick and choose the elements that we assemble to form the picture of a limited totality, object, person, or scene. From what is happening—from the universe of processes that flow incessantly, and of which we ourselves are a moving part—we abstract, collect, and put together some features that are within the range of our attention to form a consistent whole. We do not abstract all the features that we can perceive, we select those that we are interested in, those that we are in the habit of paying attention to, or those that suit our purpose at the moment; and we ignore the rest. For instance, as you read this page many sounds impinge on your eardrums; some are faint, perhaps, but if you stop and pay attention, you will hear them distinctly. Before my suggestion, you did not abstract them; now you do.

The parabola in Figure 3, p. 80 represents the limitless number of point events that make up every situation, or the entire cosmic event at the moment we are considering. We can say that it is the symbolic picture of *what is going on* at all known levels of existence, from atomic elements to galactic spirals racing away from one another. With the four initials of this phrase, we create the word *WIGO* (*W*hat *I*s *G*oing *O*n), and it is from this WIGO that we abstract whatever falls within the range of our sensory organs. The features that we thus abstract are represented by the strings that stretch from the parabola to the circle below. Korzybski called this circle the *object*, but now we call it *first-order experience*—or we describe it as *what we are paying attention to, what we are busy with, what we are concerned with.*

So far, we have spoken of features that almost everybody can abstract, but there are persons whose sensory system is either less or more sensitive than the average, whose range of abstractions will vary accordingly. If a person is tone-deaf, he will never abstract certain musical themes; if he is color-blind, he will miss certain shades; if he has lost the sense of smell, he will not be impressed by the most bewitching concoctions of the art of perfumery. What we cannot abstract because of sensory defects simply does not exist for us as individuals. On the other hand, a musician with refined sense of pitch or a winetaster with a refined sense of taste will notice differences that do not exist for the average person.

Some aspects of situations, events, persons and objects are beyond the range of human perception and can be detected only with

the aid of instruments. If we do not have the proper instruments, we cannot abstract them. By using a certain instrument and by calibrating it accurately, we can select the features that we are going to take in. For instance, when we listen to a radio station, we know that other radio waves are also spreading through our living room, but we did not tune our set to receive them. For some reason or other, or by mere happenstance, we are abstracting from a complex tangle of radio messages the one that our set is receiving. Many other things are going on within us and around us that can be detected—or abstracted—only by using proper instruments. In ordinary life, we cannot take them into account unless we infer their presence from scientific information.

Finally, there are features of situations or characteristics of objects that none of us can abstract directly or with the help of instruments. Yet we know about them, and we have good reason to believe that they are real. In fact, they are the most powerful sources of energy known to man. We are speaking here of atoms, nuclei, and particles that nobody has ever seen, but their effects can be observed and measured. Before they were discovered by scientists, very few thinkers suspected their presence. The list is increasing every day; and their potential number and variety is beyond all imagination.

Therefore, when we say that we abstract, we mean that of the different point-events that fill the flow of what is going on, we can come in conscious contact with only a few of the most simple ones. I perceive some things that are within the range of my unaided senses or made more powerful by means of instruments, but I do not pay attention to everything that happens within that range at any moment.

My contacts with the world are limited in a variety of ways. My span of attention is limited, and, of the infinite number of features of the total situation, I can take in only a few at a time. These are pictured by the lines that link first-order experience to WIGO. There are other features that I could take into account, but I neglect them either because they do not suit my present purposes or because something distracts me from them. They are represented by the lines that hang from the parabola without reaching the circle of first-order experience.

Finally, there are a limitless number of features of the total cosmic event that are altogether beyond the reach of my senses, working without or with the aid of instruments. These are represented by the

very large number of holes in the parabola to which no lines are attached. It is the limitless world of *et cetera* (ETC.), the world that lies outside the field of my awareness. We abstract only a tiny portion of what is going on. We are like someone trying to find their way at night in a dense forest, having only a small flashlight to direct their steps and discovering—one at a time—very small areas of the forest they are groping through.

This simile misses an important aspect of the situation, however, for it assumes more stability than there is. The forest may be a jungle, the night may be very dark, the flashlight may emit only a thin shaft of illumination; but we see the forest as relatively unchanging—and we see ourselves as having relative permanence. All this is true at the level of gross observation, but the underlying reality is quite different. Both the world that surrounds us and our own organism undergoes subtle changes from moment to moment, and the relationship between the observer and the observed constantly varies. There is no real permanency anywhere but in our delusional static picture of what is going on in the world and in us. Our acts of abstracting are passing pointed contacts between two moving "realities," or ongoings, the world and ourselves, and the relation between them is an undetermined variable.

This is not easy to accept; it may sound highly theoretical and utterly impractical, and so far from the common-sense view of the world that one may feel we can ignore it. In fact, we ignore it most of the time. In the world of thinking and of evaluating human situations, we are still at the age when medicine limited itself to common sense, when it did not even suspect the circulation of the blood, existence of bacteria, vitamins and hormones. We are still at the stage when physics spoke of atoms as round balls with hooks on them. In those days, the views that are now accepted in medicine and in physics would have sounded highly theoretical and contrary to practical sense. But our new views even influence policies in public health and sanitation, and—when it comes to atomic physics—they loom large in our discussion of world affairs. A conceptual revolution, such as we are experiencing, means that we have to replace common-sense notions by ideas that are bound to appear strange and farfetched for a while; we must probe much deeper into what is going on and review our views of what is "evident" and "obvious."

Being conscious of abstracting means that we now know that what we observe, what we are concerned with, what we take into account is only a small fraction of all that is going on. We abstract—that is, we select from among the characteristics of the total ongoing world of processes—what lies within our capacity to observe with our unaided senses or with instruments. The immensity of the characteristics that we ignore, or that we cannot reach, is described in general semantics as the limitless world of ETC., the world that we don't know, that we don't perceive, that we deliberately neglect, that we may not even suspect exists—and that may have a direct influence on what is happening to us.

The first step of abstracting takes us from what is going on to what we take into account, or, as Korzybski would have said, from the event to the object of our attention, from E to O_h in the diagram (Figure 3, p. 80).

The second step of abstracting takes us from what we are concerned with to what we say about it, either to ourselves or to others—from first-order experience to description of experience, from the unspoken level of reflexes, feelings and organismic reactions to the level of words and symbols. In the first step we saw that there is no common measure between the total cosmic event and the present object of our attention. In the second step we see that there is no common measure between an actual experience and the description of that experience. Who will say that making love and talking about making love are identical? From the experience, we choose the features that we consider relevant, and we utter words that are generally accepted as descriptive of these features. The words we use are not the experience we have: what we say of our feelings is not what we actually feel, but only a report of what we feel.

In the second abstracting step, as in the first, there is a reduction, a simplification, a fractionation, a translation; and a great deal is left out at each step. What is left out is lumped together at every step into an ETC., the dimensions of which are indefinite. In Figure 3, p. 80 the strings (B_2) that hang from the disk and are unattached to the first label represent those characteristics of the first-order experience that are not covered by the verbal description of that experience. The choice of the features that we include in the description may be due to a variety of factors; the limitations of our vocabulary, the relative im-

portance—in our personal judgment—of the details to be mentioned, the limit of time allowed for a description.

When we described the two abstracting steps that we have already studied (there are many others, as we shall see later), we had to use a personal pronoun. We said: The first abstracting jump is from what is going on to what *I* experience (what *I* am concerned with, what *I* see, touch, taste, etc.). For the second step we said: it is from what *I* experience to what *I* say about it. In both cases, the personal pronoun is used; a choice was made of what to take in and what to leave out. The choice is made by a person; it is subjective; and it cannot be otherwise.

This choice will vary from individual to individual. Whenever I say *I*, I speak only for myself; when another says *I*, he speaks only for himself. I am different from you; also, you are different from me. From the semantic transaction diagram that we discussed earlier, we see that in our past, our present, and our anticipated future we are very different from each other. We are different in age, in education, in experience, in habits, in interests, in environment, in ambitions, and in purposes. My abstractions are filtered through a series of psychological meshes made of the elements I have just enumerated and of many more; your abstractions are filtered through a different set of meshes; therefore, our abstracting processes are different from each other. Suppose we participate in the same event; we see the same motion picture, or meet the same celebrity, or see the same accident, or hear the same speaker. Your experience will be different from mine, and our descriptions of it—if they are descriptive at all—will be more different still.

Shall we ask which of us is right, which is wrong—or look for a so-called "objective" report? Of course not. If we understand what happens in the process of abstracting, we realize that these "common-sense" questions do not make sense at all. Experience and verbal report are filtered through different semantic transactors, and no two of these are identical in their space-time makeup.

To give up the delusional search for absolute objectivity is not as simple as might appear; it calls for more revolutionary changes in our habits of thinking and speaking than most of us are ready to make. If we begin practicing such a change consistently, our friends may begin to wonder what is "the matter" with us. We may have to explain,

and our explanation may be taken as a rationalization, a defense, an escape, an excuse, something that will reflect on us unfavorably.

When I wrote *Explorations in Awareness*, I made it a point to state clearly that I was not speaking in the name of objective science but was simply describing my own experiences, and I quoted a friend, Professor Elton Carter, who had written something that, I felt, justified my attitude. He had said: "Did you know that, in all our talking, we are always in a sense talking about ourselves, no matter what else we believe we are talking about?" I liked his statement because it suited my semantic orientation, but some reviewers of the book felt differently. For the few who approved what they called my courage in using the pronoun *I*, there were many who warned the prospective readers that the book was mostly "autobiographical," which, in the context, meant something like "not of general interest."

What else could it be? The only semantic filter that one possesses is oneself; and whatever one sees, learns, explains or talks about is an abstraction that emerges from that process. Why not be candid about it?

I was singularly comforted when I discovered later, that at least one prominent scientist shared my views, the late Percy W. Bridgman, the famous physicist from Harvard, wrote:

> My feeling of the desirability of giving my analysis in the first person has been with me for a long time, and I have in the past not infrequently used first person reports and have argued to justify it. This argument, and related arguments, I feel has to a large extent been misunderstood, and criticisms of my writings have frequently accused me of solipsism. These criticisms have always puzzled me. However, it is only recently that I have come to appreciate that the use of the first person, which is all that I am urging, need involve no commitment whatever to a solipsistic "ego" or "self," the implied existence of which is what I suppose has principally disturbed the critics. My use of the first person has the neutrality of grammar. That it can have such neutrality I regard as an important observation.[6]

The neutrality of grammar, of which Bridgman speaks, matches the detached study of our process of abstracting. No two of us see the world in the same manner. To paraphrase the great diplomat Tal-

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[6]Percy W. Bridgman, *The Way Things Are* (Cambridge, Mass.: Harvard University Press, 1959), p. 4.

leyrand: "If it goes without saying, it goes better if we say it explicitly and face the consequences."

If we apply this to the present study of general semantics, we accept the fact that no two authors present the system in exactly the same manner. The point is not to decide who teaches "true" general semantics, but for each of us to find which version gives us the most satisfactory results when we honestly experiment with it.

Orders of Abstraction

We have already studied the first step in abstracting, from the cosmic event to the object of our attention. The second step is from the object of our attention to our description of it. This short study has made us aware of the fact that what is actually going on within us and around us—to the limits of the universe—is so complex and so immense that we can grasp only a tiny portion of it at a time, and that this tiny portion is made of smaller bits that we select one by one. When it comes to describing that first-order experience, we have to use words, each word corresponding to an element of that experience. As we string words one after another in writing or in speaking, we stretch—as if on a line—the pieces of a picture that is always a step behind what it is expected to represent. Korzybski described the process of abstracting by using the analogy of a "map" and a "territory," and he often repeated two statements, which he called the premises of his system. *The map is not the territory, and the map does not represent all the territory.* What did he mean by "map" and "territory?"

In the first step of abstraction, the "territory" is what is actually going on; it is the total cosmic event at one time, which is represented by the parabola in the Structural Differential (Figure 3, p. 80). The "map" is what we abstract from it; it is the imprint that our transaction with a fraction of the universe of processes makes on our psychophysiological organism. We have already called it our first-order experience, which is represented by the disk or circle in the diagram. This map, this live picture of a portion of the ongoing world of processes, is not of the same order of existence as the territory, as the world of processes itself. It is something different, something brought into existence by our own activity. It is a distinct happening, which emerges from that transaction between "subject" and "object" world; it is a human event that creates and manifests a new cosmic event.

Korzybski calls this human event the map. He reminds us that it is not the territory, not the cosmic event in its totality, but only an abstraction from it.

This transaction between our semantic self and the "objective" world is now taken as a territory in its turn, as an event that has a certain type of existence of its own. We map this new territory when we draw a picture of it. The picture may be a word picture, a sketch, a pantomime—or any form of representation. This picture or map is not the territory it represents, nor does it represent all the details of the territory. It is an abstraction from it, a translation of its features into a different medium, as when one draws the ocean, the shoreline, the plains and the mountains on a piece of paper and says "This is California." No quibbling is possible here; we know that the map is not the territory, and we know that a geographical map, being a flat reproduction of a curved surface, distorts the territory to some extent. A map is a reduction and an approximation.

In the same way, each level of abstraction may be taken as either a map of what it is abstracted from or as a territory in reference to what can be abstracted from it. At each step there is a transformation. A more advanced stage of abstraction is not an extract, like the juice squeezed from an orange; it does not contain any elements that were in the territory. The component parts of the territory are *transformed* into elements of a different order of existence, and it is these new and different elements that form the map. It is not a matter of more of the same elements in the territory and fewer of them in the map; it is a matter of *radically different* elements, features, or characteristics. In word maps, the relation between the first-order experience (the circle in the diagram) and its description (the labels) is very arbitrary,[7] and Korzybski sums this up in a statement that sounds like a paradox: "Whatever you say it is, it is not." This could be translated, "Your describing it is not your experiencing it."

The string of labels that hang from the disk in Figure 3, p. 80 represents the various names and statements that can be used to de-

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[7]The abstraction ladder diagram in Hayakawa's *Language in Thought and Action* (p. 179) fails to emphasize these differences between the process and the object and between the object and the words. The characteristics, represented by small geometrical figures, appear to remain of the same kind all the way up, and the text speaks of "characteristics left out" as if it were a matter of subtraction.

scribe, interpret, evaluate and generalize our first-order experiences. These labels could be grouped under three headings, beginning with those that are closest to the circle: (a) description, (b) interpretation, and (c) conclusion or generalization. This classification is not absolute, and these activities may overlap (as we shall see later); but it is a working device that puts a certain order in our study of the differences among the names and statements that may be used in speaking of first-order experiences. For this purpose, we introduce Figure 4, a slightly modified drawing of the Structural Differential

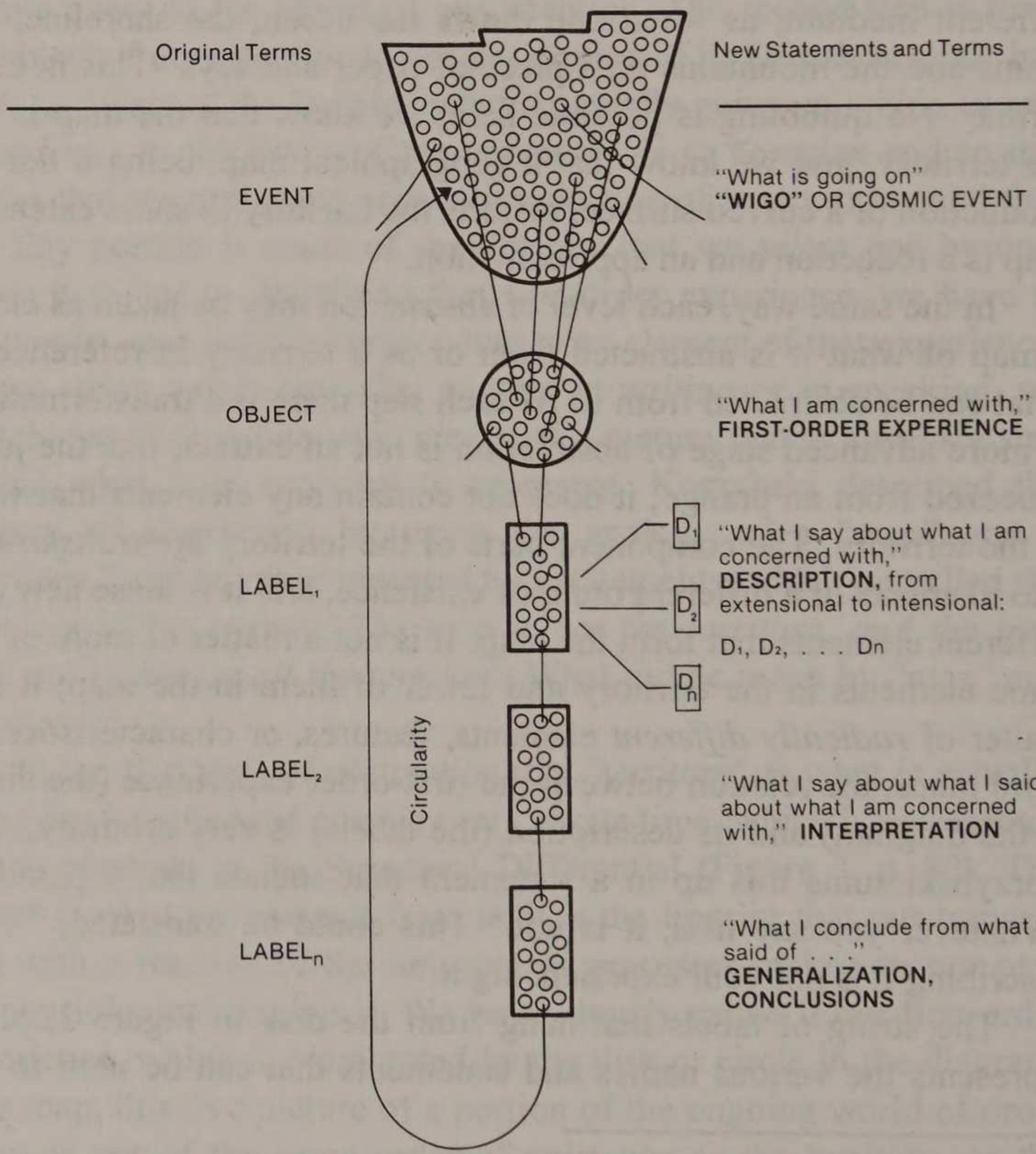

Figure 4. The structural differential. Original terms and new descriptive statements.

In this new diagram, the description is spread over three levels: D_1, D_2, and D_n. (Three is not an absolute number here; there could be fewer or more levels of description). Level D_1 is the most explicit, the most "specific" as we say in popular parlance. Levels D_2 and D_n are said to be of a *higher order of abstraction*; they describe the experience with fewer details, though sometimes they may be sufficiently explicit. Next to description comes interpretation, at a higher level of abstraction. Finally, we reach a conclusion for what to do as a consequence of the experience, or we make a generalization that puts the experience, interpreted and evaluated, in a class with similar ones that are already filed in our memory.

Here is an example of a description that belongs to a higher order of abstraction than would appear at first sight. Suppose we agree that "Both the United States and Canada have a democratic form of government." This statement is sufficiently descriptive if we simply mean to compare these two countries to say, Cuba or Saudi Arabia. But if we want to be more explicit, and compare the first-order experiences of a lawmaker—or even of the ordinary citizen-voter—in the two countries, we have to bring our description to a lower level. We have to speak of the checks-and-balances system in this country as different from the parliamentary system in Canada, and of the registration of party members here and of the absence of such registration there. High-order descriptions, of the D_n type, may be deceptive; they oversimplify and do away with differences that make a difference. If we confuse them with low-order descriptions, we run the risk of misunderstanding. If, in the present case, I take it for granted that the words *democratic government* are rigorously descriptive, of the D_1 type, I may draw unwarranted conclusions from the statement.

Here is another example, which starts at a high-order description and comes down to a lower one. If I say "I bought a new automobile last fall," I give very little information about the car I am now driving. *Automobile* is a very general term, a term of high order, not at all specific. If I say "It is a sedan," you begin to see a more definite picture; I have limited the field by eliminating sports cars, convertibles and station wagons. If I also say "It's a Ford," I move one step lower on the abstraction ladder and I limit the field even more.

Another way of evaluating how high we are in abstraction is to figure out how much guessing a statement will require of a person who wants to have an accurate picture of the situation it describes.

The more guessing, the more distant is the description from first-order experience. If I say, for instance "We have a wonderful pet in our house," I am not telling you much. You may ask "What kind of pet?" By this question, you invite me to come down a few rungs on the ladder of abstraction. If I answer "It's a dog," your guessing will not have to cover such possibilities as cat, turtle, parakeet, canary or what have you. If I say "It's a big dog," Chihuahuas are eliminated, of course.

The main trouble is that we often confuse the orders of abstraction, and we take our guessing as a reliable way of supplementing our information. What we actually do when we guess is to confuse our past experiences with the present one. We really abstract from two distinct sources: (1) from the present situation that lies open to our observation, and (2) from an unsorted stock of memories, interpretations, and prejudices that have accumulated within us in the course of life. From this mixture, we form opinions and utter statements that we take for reports of facts, when they are mostly fancies of our imagination.

Suppose you wanted to tell someone about the following incident. You were walking through an office and you saw a young woman sitting at a stenographer's desk just outside Mr. Brown's office. Her face was unfamiliar; she was holding a magazine open in her hands; and there was a pile of papers on both corners of her desk.

A D_1 statement about this situation could run like this. "There was a young woman sitting at the stenographer's desk outside Brown's office, holding a magazine open in her hands." This statement contains no guessing; it describes without comments; it could easily be checked, and it leaves very little room for disagreement. It is couched in low-abstraction report language.

This statement may sound just as factual: "Mr. Brown's new stenographer was reading a magazine as I passed by her desk." This may appear to be a description, but it is not; it contains some guesses. First, you guessed that the young woman is "Mr. Brown's new stenographer," she could be just waiting to see Brown, or she could be a friend of Brown's stenographer, and so forth; and second, you guessed that she was "reading" the magazine. Both guesses might be correct, but we are not at this point concerned with the truth or falsity of the statements, we are concerned with their guess content. Generally, the more guess content, the greater the likelihood that one is in

error. If we happen to be right, it is a matter of coincidence; it is not derived from an awareness of the abstraction process as it is meant here.

Another statement, which might include even more guess content, is: "Brown's stenographer is letting her work pile up on her." We would be guessing not only that the young woman is Brown's stenographer, but assuming that holding the magazine is not part of her work, that the papers on her desk are part of her work, that these papers are unfinished work. This is an inferential statement; it draws much more from our accumulated stock of memories, interpretations, and prejudices than from a reliable abstracting of what we see.

We can go even farther from the evidence at hand and say: "The efficiency in Brown's department is dropping." Or we may find that the present situation is "proof" of some set of our ideas that we take as a basic principle of acquired wisdom. We might say "People don't work the way they used to." This level of generalities is so high in abstraction that its meaning has disappeared in the clouds.

There may also be a great amount of guess content in a question. Our son comes home for the weekend, and he occasionally uses some tools I have back of the workbench in the garage. Once he left my good hammer in his car and went away with it. I searched for it all week, and when he came back I told him plainly to leave my tools where they belong. Two weeks later, I again missed my good hammer. When he came home, I asked him: "What did you do with my good hammer this time?" My question included the guess—quite reasonable, it seemed to me at the time—that he had mislaid or taken away the hammer. As it happened, he had nothing to do with this—in fact, had I not guessed as I did, I could have found the tool early in the week. I should have started with a statement—to myself—that would have been strictly descriptive and without guessing. "I do not see my hammer in its usual place. Let us find out who used it last, when and where." This would probably have led me to where I had left my hammer a few days before.

When we ask a question, we are often responsible for the level at which the answer will come. If we invite an interpretation, at a high level of abstraction, we should not expect a description that is close to a first-order experience.

In four lines of *The Elephant Child*, Rudyard Kipling listed the six standard question words.[8]

> I keep six honest serving-men,
> They taught me all I knew;
> Their names are What and Why and When
> And How and Where and Who.

Of these six questions, four are definitely of a low order of abstraction; they ask for a descriptive answer and leave very little room for interpretation or fantasy: *who, what, when,* and *where*. One of the six, the ubiquitous *why*, asks for an interpretation; and *how* could be placed almost anywhere between these extremes.

When we ask "Why did you do this or that?" we are obviously not looking for a neutral statement of fact. We are, in effect, saying, "Give me your interpretation of what happened"; and we have no right to be surprised if the interpretation seems biased or in favor of the one who gives it. This is the result of abstractions processed through one's own semantic transactions. Do we expect another to be self-destructive? If our own interpretation does not agree with the one we are given, we should not accuse the answerer of lying, of being self-defensive, of avoiding responsibility; if we do, we are indulging our own interpretations—which may be just as groundless as the one we were given. Both persons are up in the air, out of contact with reality, and tossed against each other in a full-blown hurricane of emotional conflict. *Why* is a dangerous question, unless both of us are ready to take the risk of digging into our motivation, and this is not easy. Most of our statements and actions are the result of many contributory antecedents, some of which are quite evident and some of which are buried in our habits and in our subconscious. Asking *why* is asking for a theory, and no theory—even the most respected in today's science—is an exhaustive explanation of what happens.

Another common practice that goes against the principles we are now studying is asking, at the start of a meeting—as is often done in business—"What do you think of this plan?" Here, again, we are asking for an answer of a high order of abstraction, assuming without

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[8]Rudyard Kipling, "The Elephant's Child" in *Kipling - A Selection of His Stories and Poems*, ed John Beecroft (New York; Doubleday, 1956), p. 383.

reason that all participants have the same facts on which they can base their conclusions. This is not a *what* question in the strict sense. It amounts to saying: Give us your interpretation of what you know of the situation under study. It really comes to a *why* question. It means: Give us the reasons why you reached whatever conclusions you did in the present situation. This sharp division between data reporting and opinion giving was emphasized once at the annual meeting of executives of a firm with offices all over the country and outside. They were put in two rows, one for data reporters and one for opinion givers, sitting in front of a huge blackboard on which the answers were inscribed in verbal or diagrammatic form. At least one data giver and one opinion giver came from every center of operation. First data were asked for and no opinions were allowed to be inserted in the answers. If an opinion giver felt he had an important fact to include in the deliberations, he had to move bodily into the reactor's row and describe the fact without any comment or evaluation. Then he was allowed to go back to the row to which he belonged from the beginning. Once the members were satisfied that as many data as were considered necessary had been put on the board, the opinion givers came on the scene and were invited to give their views based on these data. The results were spectacular. Instead of having to spend three full days in deliberating as expected, they were through at the end of one day and a half. There had been practically no arguing, no speech making, no hard feelings expressed.

In brief, consciousness of abstracting brings about an awareness of the fact that thinking is a multilevel affair: our statements may travel close to the ground of first-order experience or they may soar to the stratosphere of almost limitless generalizations. Thought traffic is more like air traffic than like ground traffic. If two theories go in opposite directions or at an angle with each other, they do not have to come into collision; they may be at different levels of abstraction, and they can pursue their courses without interference with each other. If, on the other hand, we keep to the practice of flat thinking and want no disturbing theories, we have to keep our ideas, theories, and doctrines moving along parallel lines, all in one direction, which for us is the only right direction. We become followers of a leader or assume that everyone should follow our own advice.

Paradoxes, contradictions, and dilemmas are often plain delusions because we take our thinking as movement on a flat surface. In

any book on classical logic the opposition of statements—or propositions, as they call them—is described in terms of contradictories, contraries, subcontraries, and subalterns, which implies a comparison on a level of abstraction assumed to be the same for all of them. Or, to put it differently, we may say that in Aristotelian logic—and in popular common sense guided by it—the vertical aspect, the high and low levels of our statements are not taken into account. There is no ladder of abstraction in this Aristotelian world. An original thinker of our generation, Rudolph Jordan, says:

> In the realm of more advanced philosophy, most logic is satisfied with two dimensions, so that lines of thought can be related and drawn on paper . . . Three-dimensional thought in philosophy is new and without precedent and cannot be found in textbooks. It must be thought and explored anew.[9]

We have said that we are going through a conceptual revolution, and the passage from two-dimensional to multidimensional thinking is part of the present revolution. We no longer content ourselves with syllogistic steps from premises to conclusions, we use mental models of ever-increasing degrees of complexity. Our whole world of thought becomes a complex structure in which consciousness of abstracting in a hierarchy of orders, from first-order experiences to all-embracing generalizations, is essential for whoever wants to keep his sanity.

Circularity

> You insist that you are seeing the black-and-white page of this book, do you not? You're not. You have a brain centered television set, and the light is bouncing off the page. The resultant comes back through your optical system and is scanned and actually goes back into the brain, and you are seeing the page in your brain. You are not seeing the page in front of you. We have gotten used to the idea that we see outside ourselves, but we just don't do so. It only takes about a billionth of a second for the light to bounce off the page and get in the brain to be scanned, so the child is fooled into thinking that he is seeing outside himself. And we are misin-

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[9]Rudolph Jordan, *The New Perspective* (Chicago: University of Chicago Press, 1951), p. 23

> forming ourselves in discounting the lag and assuming that we see it "over there."[10]

The above statement by Buckminster Fuller can serve as introduction to circularity in the abstracting process, and the role we have given to perception in our contacts with the world. But since perception is only one activity within a whole semantic transaction, let's examine what happens in the journey of light through the humanized brain.

"Seeing is believing" is a popular saying that is seldom reexamined. It is usually, but not always true; it is part of our accepted theory of perception, and we use it as a reliable principle not only in common observation but also in scientific work. What we see with our own eyes has an acknowledged character of objectivity and stands in opposition to pure imagination. What normal people see is really there, and what they don't see does not exist. When an alcoholic in delirium tremens sees pink elephants, we know that he suffers from hallucinations because normal people do not see them. The alcoholic sees what his disturbed condition causes him to believe is there, but a healthy individual has no such belief.

By using such instruments as microscopes and telescopes we increase our capacity to see, and we extend our knowledge of the world in the realm of the very small and in the realm of the very distant. We can see microbes in a microscope and double stars in a telescope. The electron microscope lays bare before the scientist a whole world in which we believe, and with good reasons. What may appear on a radarscope may decide the fate of the world some day.

Seeing with our own eyes has, indeed, a tremendous influence on what we do, and we have the word *evidence* to express our age-long belief in the validity of visual perception. Its etymology stems from the two Latin words, *ex* meaning "out of," and *videre* meaning "to see," which, when combined, imply that evidence is what grows out of the act of seeing. The word is a condensation of the aphorism "seeing is believing." The same could be said of other sensory activities, such as hearing with our own ears, touching with our own hands, tasting with our own tongue, smelling with our own nose.

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[10]Buckminster Fuller, *Synergetics* (New York: Macmillan, 1975) p. 440.

When I studied Aristotelian philosophy in my college days, I learned that "our senses, within the limits of their proper objects, are valid criteria of truth." General semantics, which is a non-Aristotelian system, agrees that our sensory perceptions have some value, but it insists that perceptions are gross approximations; in more cases than we ordinarily suspect, they may be a source of error. These errors multiply fantastically when we fail to pay attention to orders of abstraction and when we confuse interpretation with first-order experience. A time often comes when we see not what is actually there but what we believe is there, because our cultural unconscious causes us to believe that it is there. In such a case, believing is tantamount to seeing.

To make more sense in all this, we have to come back to our fundamental description of ourselves as semantic transactors. Our activities of thinking, feeling, moving and sensing are not separate activities, relatively independent from one another; they are different aspects of a single organismic phenomenon, which we call semantic transaction. When I say that I see, I am describing one aspect of a complex totality and am neglecting the others that are there all along—and just as real, and sometimes just as important. I see with my eyes, true; but I see also with my feelings, my past habits, my belonging to a cultural environment that I have internalized and that is now part of myself as a transactor. If I fail to see what you see, you may call it a visual illusion, but this does not change my perception at the moment. I may agree that it is an illusion, but it will not prevent my seeing it as I do. To change my vision I would have to reeducate my whole semantic transaction, correct past habits embedded deep in my nervous system, renounce some of my past, and contradict the culture or the subculture I have appropriated. I am a space-time process that reacts as a whole, not a loose assemblage of parts that can be replaced or adjusted one by one.

We can illustrate this by inserting between the parabola of the Structural Differential and the circle that stands for first-order experience a diagram of the semantic transactor given in Chapter 3. In fact, we can imagine such a diagram between any two consecutive orders of abstraction (Figure 5, p. 100)[11] A member of the New York Bar, in

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[11]You will notice, in addition, that the position of the differential is reversed. This may make it easier to visualize the "high" and "low" order implications

an article entitled "The Unreality of Accident Litigation: A Plea for a New Approach," put it this way: "What an individual perceives is the result of his personality, his environment, and his history filtered through his experiences."[12]

Hundreds of experiments have established the appropriateness of this proposition. A psychologist employed seven assistants and one genuine subject in an experiment in which all were asked to judge the length of a straight line that they were shown on a screen. The seven assistants, who were the first to speak and to report what they saw, had been instructed to report, unanimously, an evidently incorrect length. The eighth member of the group, the naive subject, did not know that his companions had received such an instruction, and he was under the impression that what they reported was really what they saw, and in one third of the experiments he reported the same incorrect length that they had. The pressure of the environment had influenced his semantic transaction and had distorted his vision. When one assistant, under the direction of the experimenter, started reporting the correct length, it relieved the pressure of the environment, and the perception of the uninformed subject improved accordingly. This shows that the environment that we usually see outside the subject, is really a component element of his semantic transactions. It plays a part in our thinking, our feeling and in our sensory activities.

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of the diagram. Wendell Johnson in his book, *People in Quandaries*, has a similarly positioned diagram.

[12]James Marshall, "The Unreality...", *American Bar Association Journal* (August 1964), p. 714.

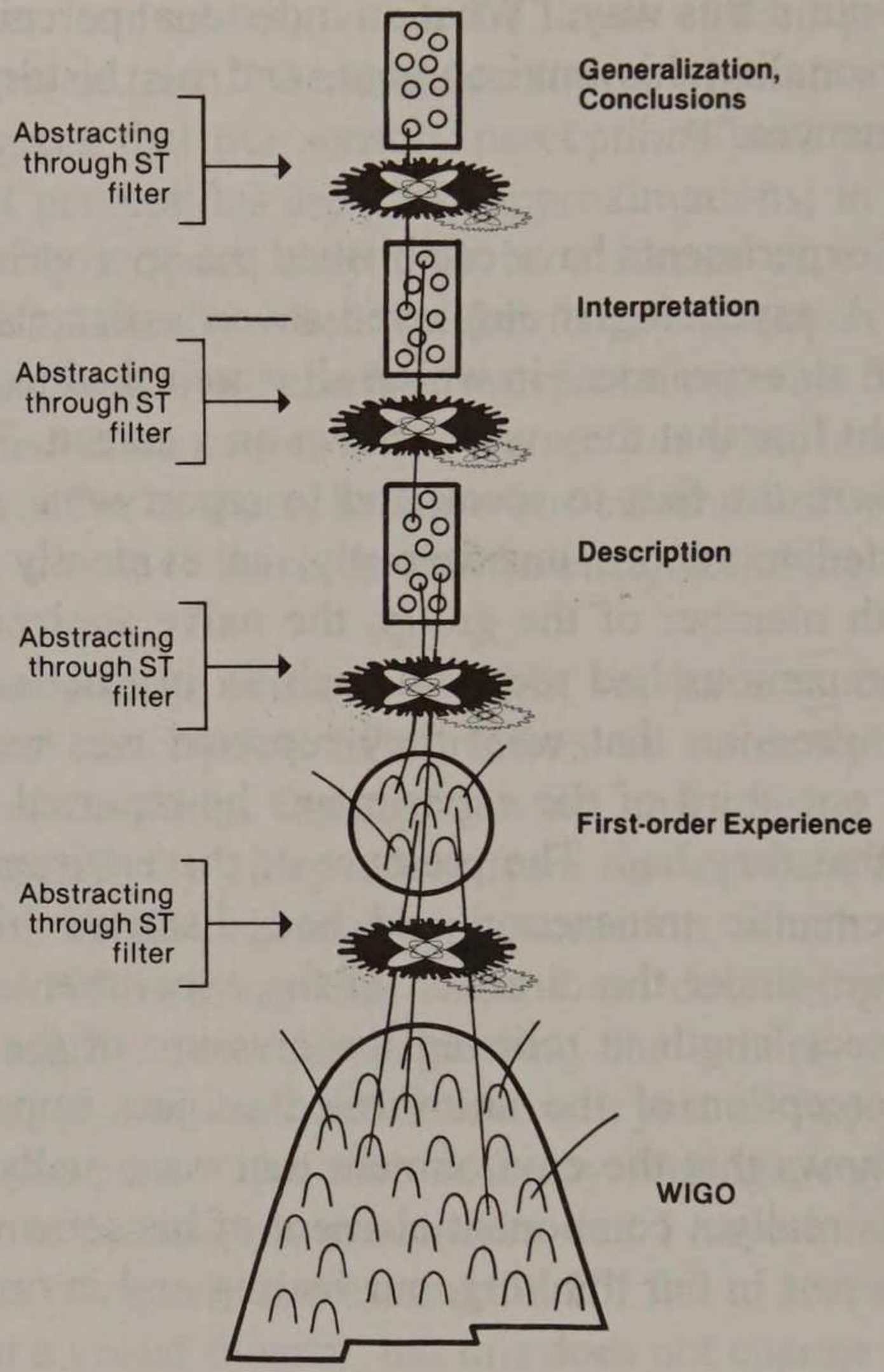


Figure 5. A new version of the structural differential.

1. WIGO—the cosmic event, shown as made of a limitless number of "infinities" of lower order.
2. First-order experience includes limited number of "infinities" of a lower order (parabolas).
3. The abstracting process shown as filtering through the sieve of semantic transactions.
4. Circularity not expressed by returning arrow, but implied in ST filtering.

Our organismic activities interact among themselves—or, better, the variation of one aspect often means the variation of another aspect. The following list of statements is based on reports of psychological experiments.

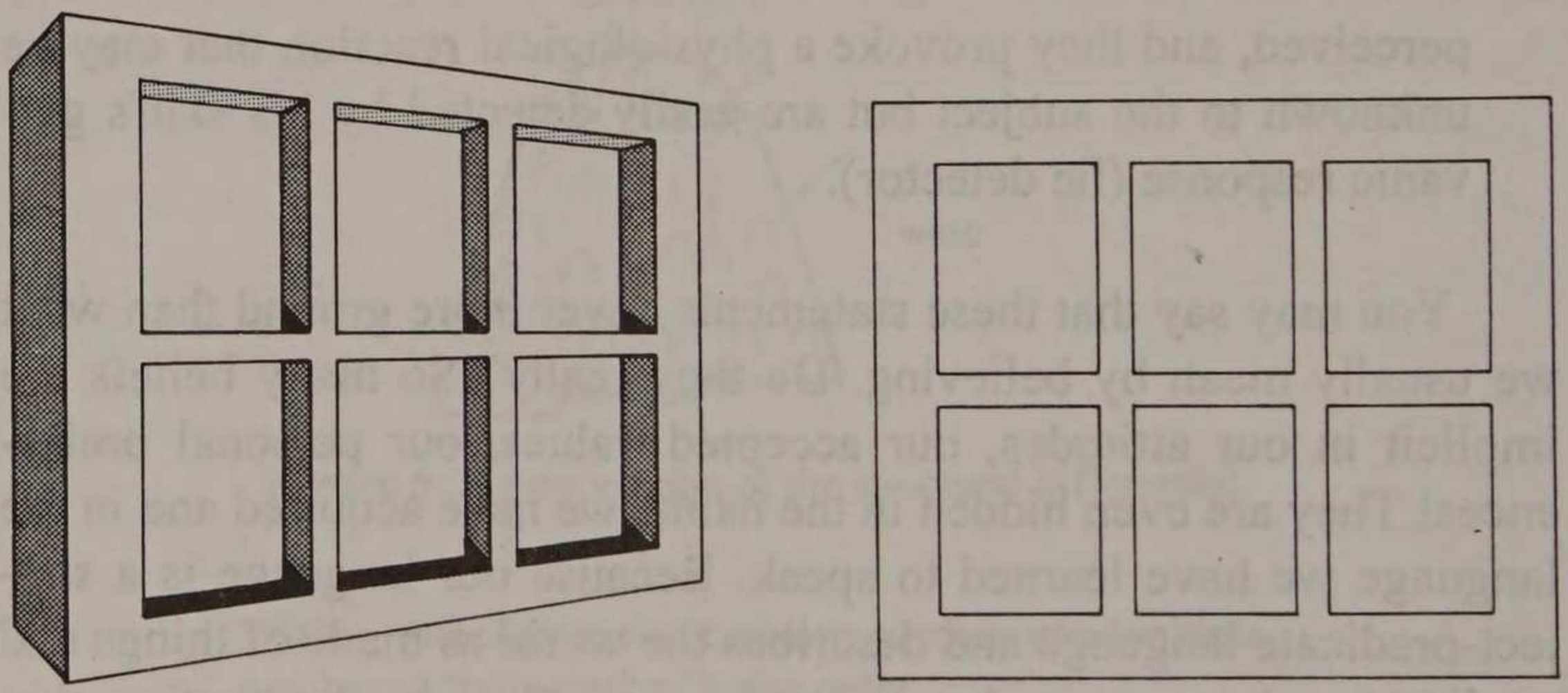
1. Bodily needs, which I called electrochemical activities tend to determine what is perceived. Subjects who were deprived of food for varying lengths of time saw articles of food depicted in blurred drawings much more frequently than subjects who had just eaten a meal.
2. Reward or punishment associated with the perceiving of objects tends to determine what is perceived. In other words, feeling and anticipation guide perceiving.
3. The values that a subject holds dear make him more perceptive of words related to these values. Again, a matter of feeling.
4. The value that the individual attaches to objects tends to determine his estimate of their size. Whatever is important to the subject, positively or negatively, is likely to "loom larger" in his perception.
5. The personality of an individual predisposes him to see things in a way that is consistent with his personality makeup.
6. Words that are disturbing or threatening to a person are not easily perceived, and they provoke a physiological reaction that may be unknown to the subject but are easily detected by his skin's galvanic response (lie detector).

You may say that these statements cover more ground than what we usually mean by believing. Do they really? So many beliefs are implicit in our attitudes, our accepted values, our personal preferences! They are even hidden in the habits we have acquired and in the language we have learned to speak. Because our language is a subject-predicate language and describes the world as made of things and qualities and agents and actions, we say "It rains," asserting that something is there that does the raining, when the pronoun *it* refers to nothing at all. This is almost like believing in ghosts.

The trouble is that there are times when we believe that what is going on is what we have learned to say is going on. It works fairly well in simple cases, but it often creates unnecessary problems. The hidden implications of what we say cause us to look for things that may not be there; and Poincare gave an example that has become classical. In the days when very few chemical elements were known, scientists tried to isolate the element "heat." What was involved in their looking for heat as a chemical element, comparable to sulfur,

oxygen, or mercury? I suggest that the strongest factor involved its having a name that belonged grammatically (and therefore logically) to the same class as elements, the class of nouns or substantives. By implication, substantives refer to substances (or elements), and consequently, the scientists were looking for the "substance" heat (or *phlogiston*). There was none. Back of that substantive was a process, not a permanent element like sulfur, oxygen or mercury.

The influence of past habits on our perception has been demonstrated in a series of spectacular experiments that were originally devised by the late Adelbert Ames, Jr., of Hanover, N.H. His apparatuses are now at Princeton University, and they have been reproduced in many laboratories. One of them, the trapezoidal window, has become a well-known demonstration that is widely used in courses for adult education. It was discussed and illustrated in *Life* magazine, and its use was shown in a motion picture (Figure 6).



Trapezoidal Window **Rectangular Window**

Figure 6. Ames Perceptual experiment with trapezoidal window

This apparatus consists of a window frame made of a thin sheet of aluminum 14 inches in horizontal length and 12½ in height at one end and 9 inches at the other. It stands on a rod, soldered at the midpoint of its length, and it is made to rotate in a clockwise direction by a small electric motor to which the rod is connected. When viewed at a distance of more than 22 feet, the window, though actually rotating,

appears to oscillate back and forth. A small red cube, attached to a vertical side, appears to move circularly, and, in part of its course, seems to leave the frame and float through the air, passing in front of the window and finally returning to the original point of attachment. Once the observers have looked at the window and have seen it oscillating, they are invited to come near and to see for themselves that it is actually rotating. But when they go back to the original distance, they see it oscillating again—although they know that it does not oscillate. The red cube still appears to detach itself from the window and to turn around it—although they know that it is wired to the window. They know that they are victims of a delusion, but they cannot correct their false perception.

What makes them see the window oscillating when they know it is rotating, and see the cube floating in the air when they know it is attached to the frame?

The answer is that long training, of which they never were conscious, has caused their vision to be influenced by the laws of perspective. When we look at a row of telephone posts along the road, the farther away they are, the shorter they appear. Long means near, short means distant. In Ames' window, the difference between the long and the short vertical sides is exaggerated so that the distance between them appears longer than normal. When the long side turns away from the observer, it remains apparently taller than the short side that is coming forward. Consequently, the long side does not appear to recede, it seems to remain close to the observer, and this causes the window to appear to oscillate—the long side being always in the front and the short side being always in the back.

When we see that, of two telephone posts along the road, the shorter is farther away, we are not simply seeing, we are interpreting what we see. The retina of our eyes is like a photographic film that registers what is out there, without interpreting it in the least. But the retina, alone, does not account for our perception; it is connected with the visual area of the brain in which the interpretation takes place. This interpretation has become automatic in the course of years; we have learned to believe it as the true picture of reality. When we think we see (as we say) with our own eyes, we are actually projecting upon the world the picture of it that we have unconsciously created in our own brain as we learned to interpret the retinal image. Our belief in the reliability of this interpretation is stronger than any information

that goes against it. After observing that the window rotates, we still see it oscillate, as our interpretation dictates. We have learned to see in a certain way, and we keep seeing that way, despite all evidence to the contrary.

I had a personal experience with Ames' trapezoidal window that gave me a "counterdemonstration" of this law of perception. With a New York associate, I was demonstrating it to fourteen executives of an industrial designing company. To our great surprise, most of them—twelve out of fourteen, if I remember rightly—saw the window rotating from the very start, and only two saw it oscillating. We were startled with this result and we checked carefully on the distance, the illumination, and the other conditions of the experiment. But the twelve men kept seeing it as rotating. I was ready to give up, to declare the demonstration unsuccessful when one senior partner said:

> No, it's not a failure; quite the contrary! It proves your point better than you expected. Didn't you say that this would show that we see the way we have learned to see, and therefore that our seeing depends on our training? Check on those who were not taken in by the illusion. They are all industrial designers. They were trained not only to detect visual illusions, but also to create them. The two who do not have that training react as the average person does. They are salesmen.

He was right. Later, I checked with a member of the Princeton laboratory, where the original Ames material is kept, and they told me that their experience had been similar. Designers, architects and people trained in the visual arts do not all react to the trapezoidal window as the average person does. We learn to see as we learn anything else, and different learning brings about different seeing.

We take it for granted that the outside world is actually what our experience has proved it to be. We believe implicitly in our mental picture of the world, and our new experiences conform to our preestablished picture. Our assumptions, our preconceived notions—particularly those that served us well in the past—act as a filter for our abstracting processes.

It seems that such a filter is a necessary part of our functional makeup. Without it, we would see only patches of color. We could not distinguish shapes and forms; we would not be able to identify objects by sight.

This was brought to light in recent years when eye surgeons succeeded in giving sight to people who had been born with congenital cataract. After being operated upon and provided with the proper glasses, these persons have normal vision, as far as their retina goes. When they first open their eyes to the world, they report only a spinning mass of lights and colors. They are unable to pick out, by sight, objects that they knew by touch, and it takes time for their brain to learn the rules of seeing, which have become second nature for others. If they are to make use of their eyes, they will have to train their brain. When shown a patch of color placed on a larger patch, they will quickly see that there is a difference between the smaller patch and its surroundings, but they will not see the shapes of the patches.

Such a patient, when shown a blue square, said that it was blue and round, and described a triangle as round. When the angles were pointed out to him, he said: "Ah, yes, I understand now, one can *see* how they *feel*." For many weeks after beginning to see, he could only with great difficulty distinguish between the simplest shapes, such as a triangle and a square. If such a person is asked how he does it, he may say: "Of course, if I look carefully, I see that there are three sharp turns at the edge of one patch of light and four on the other." But he may ask: "What on earth do you mean by saying that it would be useful to know this? The difference is only slight and it takes me a long time to work it out." Two days later, he will be unable to say which is a triangle and which is a square; it takes at least a month to learn to recognize some objects by sight. What these people lack is the store of rules for seeing lodged in the brain, rules that are usually learned by long years of exploration with the eyes during childhood.

People who are born blind have their own ways of perceiving, of using their sense of touch; they are content with these ways and cannot see the point of trying to find others. "And why not?" you may say, "Why must anyone seek new ways of acting?" The answer is that, in the end, our survival and our progress depend on making new experiments, on inventing new ways of seeing, new ways of thinking, and new ways of seeing persons and situations.[13]

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[13]This is precisely the place where a science-art of innovating, or the field of epistemics, concerns itself; to meet the human need to survive, evolve and renew ourselves in a conscious way, and form a more organized basis in order to minimize the risks involved.

Circularity does not always work to our detriment. The well-trained and experienced professional knows what to look for in a situation that is very confusing to the nonprofessional. The professional abstracts details that are significant and quickly makes sense of what is puzzling to his client. On the other hand, the professional may wish to rely too much on his experience and content himself with a cursory examination of the case. If it is useful to recognize similarities that make classifications possible, it is equally important to watch for differences that make a difference.

Circularity also operates in a person who has a few pet ideas, for which he seeks confirmation in almost everything he observes. The extreme case is the paranoiac, who interprets the most innocuous events as machinations of his assumed persecutors. The milder cases are those of the people who "prove" their pet theories by giving what they call "examples" of what they claim is true. The mechanism that operates in their case is obvious: instead of going in order from the parabola (WIGO), through a genuine experience (the circle), and through the stages of description and interpretation, they swing around from their preestablished conclusions and generalities back to the parabola, abstracting from the total event whatever aspects fit their convictions, attitudes, and purposes (see arrow pointing upwards in Figure 4, p. 90). This is circularity in its naked form. A person who is not aware that such a mechanism might be at work within himself is impervious to any logical counterdemonstration.

Types of Abstracting

The term *abstracting* covers a wide range of processes, some of which can be observed in the lower forms of life. For instance, if we put a seed and a small rock side by side in well-prepared soil, we will soon notice differences in their behavior. The rock will remain visibly identical with itself and appear inactive and practically unchanged; the seed will wake up, as it were, burst open its shell, stretch roots downward, and push a stem upwards. It will seek, select from its environment, and will ingest—in definite proportions, and according to a definite timetable—the chemicals, the moisture, the air, and the sunlight that are necessary for its survival and its growth into a plant or a tree. It does this abstracting according to an action pattern programmed in its genes; it transforms the elements that it abstracts into its own substance. If these elements are not within its reach, the plant

cannot pursue the transactions that are vital to its existence; and it withers and dies. Animals can move about; they can seek, in space, what they have to abstract and transform to survive and develop. The cattle in the field do not depend on rain or irrigation to provide them with moisture, they walk to the stream or the water trough; but if they are fenced in, out of reach of the elements that they need, animals also starve and die. In a sense, abstracting may be seen as an aspect of living, as partaking selectively of the environment to survive and to grow.

Humans share with plants and animals that abstracting capacity, need and function. By neglecting the usual distinction between mind and body, we may include under the term *semantic* those transactions that do not ostensibly go beyond the physiological level. The first time I read a particular statement of Dr. George K. Zipf, I was a bit startled, even shocked; today I find it quite acceptable.

> The fact that we administer pills to cure certain diseases and words to cure others (mental diseases), and use either for some, does not mean that there is a dichotomy between mind and body. In all cases, we are evoking selected kinds of responses by administering selected kinds of stimuli. To the upper "cultural" level of organization we talk with "words," to the lower and more determinate levels we talk with aspirin pills. But it is still talk, though we use the terms of conventional cultured language for the one and the terms of the more invariant language of physics-chemistry for the other. Opium that is food for some organisms is narcotic for us because it has that meaning in terms of our semantic system.[14]

It is accepted that we can produce a physiological reaction with *chemical* means; *mechanical* means such as puncture, friction, pressure; *physical* means such as light, heat, magnetism, sound, rays, electrical currents; and with *biological* means such as microbes, sperm, parasites. Now it has been generally established that means involving words or visualizations could be used interchangeably, and, at times, with the above means to produce a desired reaction at the physiological level. Two examples are Dr. Carl Simenton in his treatment of cancer patients, and Luther Burbank in his production of cacti without spines.

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[14]George K. Zipf, *Human Behavior and the Principle of Least Effort* (Reading, Mass.: Addison-Wesley, 1949). p. 200.

But we also abstract characteristics from our environment that we are more apt to consider as typically human. From the moment we are born—and perhaps earlier; who knows?—we unconsciously abstract from the environment vital elements that we internalize and transform into our growing self. We take in the love or the rejection of our mothers, the relaxed attitudes or the tenseness of those who handle us, the comfort or the discomfort of the place we are in, the noise of the city or the calm of the country. We become what we abstract, transform and assimilate.[15]

We are now concerned with the abstractions of the adult that are mostly "intellectual," with the *C* aspects of our semantic transactions (*see* p. 32). To use Korzybski's analogy, we are studying the various kinds of "maps" that we make of the "territories" we are dealing with when we transact with our environment. This "environment" may be inside as well as outside our physical organism. The founder of general semantics speaks of only two classes of abstracting; in an earlier volume, I gave a tentative list of five,[16] now I present a list of four in a different order and two under different names.[17]

The first kind of abstracting is *evaluative* (I called it *normative* years ago, but now I find it a poor label). Our first interpretation of the world about us is mostly a matter of sensing and feeling. We take the feel of our reactions as the adequate map of objective reality. Things are good or bad, pleasant or threatening, attractive or repulsive. We do not suspect that the qualities we ascribe to things, persons, and situations are abstractions that come not from them alone but also from our previous experiences with them and from our cultural assumptions about them. A standard experiment, made popular by the American Genetic Association, brings this out very vividly. Small bits of paper, treated with an entirely harmless chemical, phen-

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[15]This "becoming what we abstract, transform and assimilate" is powerfully described in Walt Whitman's poem "There Was a Child Went Forth" in *The Poetry and Prose of Walt Whitman*, edited by Louis Untermeyer (New York; Simon and Schuster, 1949) pp. 346-348.

[16]J. Samuel Bois, *Explorations in Awareness*, p. 135

[17]These types of abstraction, when put in the order suggested, give us an advance outline of the major scale of human development described later on in this volume.

ylthiocarbamide, are distributed to subjects. On the average, seven people out of ten, on chewing a bit of that paper, will detect a definite taste; most of them will find it bitter; a negligible percentage may find it sour or salty, or even sweet; and three out of ten will taste nothing. When the subjects report their experience, they will say "It is bitter" or "It is tasteless"—as if the bitterness or the tastelessness were a quality that resided in the paper. But such a quality cannot be there as an objective fact, since different people, because of their genetic constitution, get a different taste from it. Clearly, this is a case where our language of subject and predicate, things and qualities, fails to describe the phenomenon. It is not the treated paper that is bitter or tasteless, it is our tasting that creates the sensation. It is our first-order experience that deserves the label of bitter, not the paper itself. The statement "It is bitter" is false to fact, and the metaphysics derived from it is also false.

This observation applies to all our evaluative statements. We say that things are beautiful or ugly, good or bad, threatening or attractive when, in fact, we are abstracting these qualities not from the objective reality outside us but from our personal interaction with it. From these low-order abstractions, which emerge from subjective experience, we climb the ladder of abstraction in confidence and place, at the top, our general notions of beauty, goodness, attractiveness, truth. We build a hierarchy of values that we eventually accept as the absolute rules of taste, even of morality. We make idols of our evaluative generalities.

I used to call the second type of abstracting *nominalistic*—an awkward term that smacks of the epistemological quarrels of the Middle Ages—but I now prefer the more simple label *classifying* abstracting. This abstracting is the type that is most commonly discussed in seminars on general semantics. Professor F.S.C. Northrop of Yale, in his Korzybski Memorial Lecture in 1954, belabored the expositors of the discipline who limit themselves to insisting on the value of the COW_1, COW_2, COW_3 device. The fact is that this classifying abstraction is not inconsistent with Aristotelian thinking.

To put some order in the facts we have gathered, we classify them according to the features we think they have in common; and we decide—rather, our language has decided for us—what label will apply to each group of them. When a child meets something new to him, he asks "What is it?" meaning "With what shall I file this away

in my mind?" We answer by naming the thing: "It's a dog . . . a snake . . . a bulldozer . . . a machine," or what not. When we do this we abstract, according to the language we speak, the features that this object has in common with other objects of the same accepted class. If we are very specific, we use descriptive terms and remain at a low level of abstraction; we say, for instance, "I am attending UCLA Medical School." We may also give a general answer, and stay at a high level of abstraction, because we feel that under the circumstances, it is sufficient to say "I am attending a University" or "I am in college." The higher we are on the abstraction ladder, the less we describe the individual university and the more we can generalize about schools.

A special type of classifying abstracting may be named *objective* abstracting. In *classifying* abstracting, we have classes that include subclasses; for instance, the class "animal" includes dogs, cats, cows, horses, elephants and the class "dog," in turn, includes various subclasses or breeds, such as bulldogs, Chihuahuas, terriers, police dogs. The "container" class is of a higher order than its subclasses. In objective abstracting we have containers *and* contents, but the containers are not simply logical classes, they are *actual* groups made up of *actual* units—as a family is made of individual members, a book is made of individual chapters.

In a sense, all terms of objective abstracting can be considered as of a low order of abstraction; a book has a title that differentiates it from all other books, a family has a name that makes it unique. But when we compare the family as a whole to its members taken individually, or the book as a whole to its chapters taken one by one, we are at two different levels of objective abstraction. "Family" is higher than "family member" in abstraction, and "book" is higher than "chapter." Each term of the pairs belongs to a different order of existence; what is true of the family is not necessarily true of each member, and what is true of a member is not necessarily true of the family as a whole. The same is true of the book and its chapters; we cannot judge a book by one of its chapters. A book made of chapters that do not fit together is a poor book, although each chapter, taken one by one, might be a very good essay. Book and chapter do not belong to the same order of things.

Relational abstracting, our third type, is the typical human achievement when we function according to what is now called the

"scientific manner." Many people, including outstanding scientists and lay people, consider it as the supreme achievement of the human brain. The cultural mutation we are now going through may be seen as the painful process of disentangling ourselves from the snares of this all-pervading system.

Here we do not simply invent classes so that we can file our information in some arbitrary order; we "discover" how the elements of a situation are actually related to one another, and we express these relations in a mathematical formula, in a mental model, or in a telling analogy. What we abstract is not concrete, not material, not something that we can see, weigh or touch; yet it is claimed to be more real than anything that is tangible. It has been called "invariant under transformation," and of late the word paradigm has become more popular. It is not only information, it is structural knowledge; that is, we relate our experiences, thus creating knowledge. Then we relate these bits of knowledge to one another and make of them a structure of some kind. This we call science. Then we may go one step further and scientize about that structuring itself; this is the field of epistemology.

Every scientific advance is an achievement in relational abstracting. A simple formula, such as $a^2 = b^2 + c^2$, which states the unvarying relations among the three sides of a right-angle triangle in Euclidian geometry, is the result of relational abstracting. Einstein's $E = mc^2$ is another one, one that towers at the top of a pyramid of phenomena, some of which are still to be discovered. Mendeleev's periodic table, and Freud's trilogy of the superego, the ego, and the id, Korzybski's analogy of the map and the territory, and my own diagram of the human individual as a semantic transactor, these and similar formulas are types of relational abstracting. They are human-made guesses and approximations of the order that we assume is somewhere, somehow, behind the phenomena of nature.

The fourth type of abstracting is *self-reflexive*, and it is a human achievement that deserves more attention than is usually given to it (we shall discuss it in greater detail when we study multiordinality). We are not simply aware of our existence, we are aware of our awareness. We can think about our thinking, talk about our talking, worry about our worrying, and can go up and up on the ladder of self-observation until we reach the philosophical summits—or, in reverse order, the depths of our morbid introspection. We are not simply

turning in circles; we are spiraling up to wisdom or down to complete misery. It could be seen as a second-generation abstracting, or abstracting of the abstracting process itself, introducing a science of sciences and inviting a new kind of human functioning. This is the field in which we are now working.

Every time I am in a situation, the situation acquires a structure, assumes a degree of tension and direction, which is due to my presence. It is impossible for me to witness the situation "in itself" as we say; it is always the situation-with-me-as-a-component-participant. Being aware of my awareness brings the situation-with-me-as-a-component-participant to a third order of existence, and so on indefinitely, until the discrimination between my two roles, of participant and of observer, becomes so tenuous as to be imperceptible. The blending of me and the outside world gives birth to a compound that is not one element plus the other taken additively, but is of a new order of existence, with characteristics and properties that did not exist before. If I see myself as an element of a compound, and my awareness is that of an element within a compound, not of an element "really" detached from the compound, then I become an element that has the specific capacity of detaching itself from the compound to which it belongs without ceasing to belong to it. This is what we refer to when we speak of self-reflexive awareness. It differentiates us from our animal cousins.

We cannot get out of the human individual-world compound laterally, that is by moving to the side of it on the same plane of existence, so to speak. We have to jump to a higher order of dimensionality. To use a three dimensional model: we cannot get out of the box that our very presence creates unless we "create" a fourth dimension by observing our observing, thinking our thinking, evaluating our evaluating in recurring cycles of higher and higher dimensions of finer and finer amplitude, the span of which can never be reduced to zero. Self-reflexiveness means more than just "thinking."

As we will show later in discussing Self-1, Self-2, Self-3 . . . Self-n, observing our behavior in wide-awake self-reflexiveness is useful not only in preventing trouble and waste of energy, but it has proved to be a powerful means of discovering hidden assumptions and unearthing behavior patterns within us in ways we seldom suspect.

If we want to use the formulation of abstracting and of orders of abstraction to guide ourselves, we must train ourselves to differentiate between levels of knowing and to see them as levels of existence—as Harry Weinberg puts it so well in his book of that title.[18] Our thinking thus assumes a vertical dimension as crisscrossing traffic keeps moving without interference in multilevel highway interchanges.

To summarize the types of abstracting: Evaluative abstraction reminds me that I am always in the picture, with my hidden assumptions and prejudices, when I speak of "honesty," "goodness," "beauty," and the like.

The rules of classifying abstraction forbid me to generalize about teachers from knowledge of a few teachers that I have met: this would be confusing the higher order with the lower order. In objective abstraction I am reminded that the whole, as a whole, is different from the sum of its parts taken as distinct units; therefore I am not surprised if five mature men happen to behave like immature children when they are put together in a committee.

Relational abstraction gives me the pure theory that guides my practice, although it has never happened that all the conclusions drawn from a theory have agreed with the observable facts.

When I am tempted to place blame on "the outside world" for all my troubles, self-reflexive abstracting can allow me to see my existence as a condition that I create by my own activity. I can use this creative ability for the benefit or to the detriment of myself, my species and my whole environment.

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[18]Weinberg, *Levels of Knowing and Existence* (New York: Harper & Row, 1960).

CHAPTER 6

orders of abstraction and multiordinality

We do not have to limit abstracting to the "C" or 'thinking' activities. We can see abstracting as an activity of all living forms. From the seed that, after it is put in the soil, breaks open its shell, selects and absorbs chemicals, breathes the air, and fills itself with the energy of the sun's rays, we saw this phenomenon of abstracting, assimilation, and transformation become more complex and pervasive until, in conscious *Homo sapiens*, we reach the apex of the living segment of our planetary world.

Like the seed that returns to the soil from which it grew, human abstractors take their place in the cultural environment from which they emerged. They break open the shell of their unspoken first-order experience, they seek avidly, and they select—from the traditional and recorded experiences of those who preceded them—the nutritive elements that will make them grow into conscious specimens of humanity.

The seed reproduces the plant or the tree from which it came, but it does not change the pattern of development it has inherited with the genes of its species. Most people are like the seed: they reproduce without improving the cultural pattern they inherited from their parents and teachers. But occasionally a cultural mutation takes place; the patterns of abstraction, assimilation, and integration undergo a transformation. A new kind of *Homo sapiens* emerges, who makes and discovers itself as the creator of a new order of things.

We have said that such a mutation is now taking place in many individuals of our generation, and we called it a conceptual revolution. It does not seem to be a case of biological evolution; nothing spectacular appears to be happening in our bones, our muscles, our

nervous system, or our sensory organs; the change is within our awareness mostly at the level of our thinking activities. Of these activities, abstracting is one of the most important. We have it in common with all forms of life, but in us it has a very distinctive characteristic.

In all other living things, abstracting seems to be a dumb process,[1] unspoken and unrecorded. Neither the tree nor the animal conceptualizes what it does as it reacts to its environment. A chimpanzee or a child may manage to develop skills in relation to things immediately sensed, or remembered as sensed. For them, abstraction stops at the level of first-order experience; it does not reach the level of description, of translation into words and propositions, into symbols and formulas. Lynn White, Jr., said that

> We are beginning to see that the distinctive thing about the human species is that we are a symbol making animal, *homo signifex*, and that without this function we could never have become sapiens. We have not only the capacity to make symbols; we are under the necessity to create them in order to cope humanly with our experience. [2]

Once they have been made by us, these symbols become a tool; but while they multiply our power of thinking, they limit our capacities to their own range of significance. The art of *Homo sapiens*, the symbol-user, increases and directs—within definite channels—the wisdom of *Homo sapiens* the philosopher. By making better thinking models, we become better thinkers. If certain problems are still baffling, it is because we have not yet devised the proper symbols for observing and managing them. The inventor of symbols and symbol systems is the person who blazes the trail of our advance. The mathematician has been doing it with spectacular success for the natural sciences, and it is the task of the epistemologist to do it for the human sciences.

This brings us back to abstracting. Because it is a most important activity, it follows that any invention that will increase our awareness

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[1]As we are learning more about dolphins and whales, our assumptions in this regard are being seriously questioned, at least in aural forms of abstracting.

[2]Lynn White, Jr., *Frontiers of Knowledge in the Study of Man* (New York: Harper & Row, 1956), p. 305

of this process and improve our skill in managing it is a major achievement in our cultural evolution. One of these epoch-making inventions was formulated by Alfred Korzybski in 1925.

> The most humanly important and interesting terms are multiordinal, and no one can evade the use of such terms. Multiordinality is inherent in the structure of "human knowledge." This multiordinal mechanism gives the key to many seemingly insoluble contradictions, and explains why we have scarcely progressed at all in the solution of many human affairs. [3]

What do we mean by multiordinality? When is a word used multiordinally? Is it simply when the same word means different things to different people? Not at all.

Most words have many meanings in the dictionary; statistics show that, on the average, every word of the English language has from two to three accepted meanings. Moreover, it is well known that the same dictionary meaning of a word may trigger different reactions in different people who hear it or read it at the same time. We mentioned this when we described the reactions of the surgeon, the patient, and the statistician to a statement about cancer (p. xliii).

Multiordinality deals with the orders of abstraction. A word is multiordinal when, without any change in its dictionary meaning, it is used in the same sentence—or the same context—to refer to different orders of abstraction. Multiordinality belongs to the vertical aspect of our thinking.

When we move to higher orders in the abstracting process, we pass, for instance, from the proper name "Mickey" to the breed name "spaniel" then to the more general names "dog," and "animal." There is no confusion here. To each order corresponds a different word. In objective abstracting, we also give an example where no confusion is likely to occur: individual, family, community, state, nation and so on.

The trouble begins when we have to use the same term in many different orders. Then we might pass from a lower to a higher order and vice-versa, without realizing that we are sliding back and forth from the particular to the general. Since many words that we use are of this type, no wonder that misunderstandings are frequent. Let us start with a simple example.

In the army, the term "unit" applies to formations of different sizes: a unit is part of a larger unit, which in turn is part of a still larger unit. Fortunately, there are specific terms for each type of unit: platoon, company,

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[3]Korzybski, *Science and Sanity*, p. 74

battalion, brigade, division, and so forth. However, it remains that we can make statements that will sound paradoxical if taken literally. A captain commanding a company could say to his lieutenant colonel, "My unit is in your unit"; and the lieutenant colonel could say to his brigadier general, "My unit is in your unit." In these two statements, we have the term "unit" at three different orders of abstraction: company, battalion, and brigade. A peculiar feature becomes evident: the lowest unit is contained in the next higher, and this middle one is both the container of the lower and part of the contents of the next higher one. This feature is common to all multiordinal terms: they refer to containers and contents at the same time. The problem is to determine which is which.

This term "unit" is also used in other contexts. We speak of units of distance, of time, and of money. In science we may take as our *unit of discourse* a limited field within a broader field. The psychologist studies the individual as a *unit;* the sociologist studies the group as a *unit;* the anthropologist studies the culture as a *unit*.

So we see that *unit* can be applied to army units (platoon, company, battalion, brigade, division), to units of time (second, minute, hour, day), to units of money (cent, nickel, dime, quarter, dollar, "grand"), to units of discourse in science (gene, chromosome, cell, organ, organism, or individual, group, culture). I say the term "unit" is multimeaning and multiordinal. By "multimeaning," I want to describe the fact that this term is used in many areas (army, time, distance), and by "multiordinal" I want to describe the fact that in each area the term may be used at any lower or higher order of abstraction. [4]

One characteristic of multiordinal terms is that they cannot be easily defined in general terms. Compare the word *fact*, which is multiordinal most of the time, to such other words as *chair* or *courage*. Chair refers to something fairly definite; we can point to a piece of furniture and say "This is a chair"; we can draw a picture of it. Courage does not refer to a tangible object, but it can be defined fairly sharply. The *American College Dictionary* calls it "the quality of mind that enables one to encounter difficulties and dangers with firmness or without fear." We can give examples of courage in action, and show that its opposite is cowardice. In the end, our listener will have a reliable picture of what we mean. In this case, as with the chair, we can live up to the prescription of classical logic: "Define your terms."

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[4]J. Samuel Bois, *Explorations in Awareness*, (New York, Harper & Row, 1957), pp. 149.

The word *fact* is altogether different. A sharp definition will not help; indeed, it is practically impossible. If we take the word to have a clear-cut meaning, we will be disappointed. We will run into paradoxes and misunderstandings without end.

"Peter loves Mary." This is a fact, but Peter has just bawled Mary out, perhaps cursed her; and this too, is a fact. Does it cancel the first fact? If we take the two facts as belonging to the same level of abstraction, it does: loving Mary and cursing her stand in opposition. In strict logic, Peter cannot claim to love her if he curses her at the same time.

This strict logic, however, does not always correspond to what is actually happening. Peter may justly claim that he still loves Mary in spite of cursing her. And Mary may resent the bad treatment she receives, and love Peter at the same time. Shall we account for the apparent contradiction by some complicated psychological theory about the ambivalence of feelings?

We could—we could say that love and hate may coexist in Peter and in Mary at the same time; but we don't have to accept this theory as the only theory. The multiordinal formulation is much more simple.

The fact that Peter loves Mary is at a higher order of objective abstraction than the fact that he is fighting with her. The two facts don't contradict each other; they are superposed on each other. The higher-order fact is a broader objective reality that encompasses a multitude of lower-order facts, of which the present fighting is only one, lost among all the rest. This is like the reports from the stock exchange; it is a fact, let us say, that the stocks went down today, but it is also a fact—of a different order—that the trend has been upward for the last three months. One fact is the container: "Peter loves Mary" or "The stocks are going up"; the other fact is the content: "Peter curses Mary" or "The stocks are going down." Multiordinality, being a methodical formulation that can apply to any science, is preferable to an *ad hoc* explanation created in a particular science for every ambiguous case—as is done in psychology with the theory of ambivalence of love and hate.

If we realize that a characteristic of multiordinal terms is that they can be both containers and contents, we quickly realize that these terms are legion. Take the word *problem* as an example. A mother brings her son, Johnny, to a consulting psychologist because

Johnny does poorly at school. The consultant finds that Johnny lacks the necessary motivation because he feels insecure in a home where his father and mother occasionally threaten each other with separation and divorce. The problem of the father and the mother, in turn, involves their being in a mixed marriage, she being Jewish and he being of German-Lutheran parentage—and both remain in close contact with their respective families. Where is the *real* problem?

It is everywhere simultaneously, at all levels. The practical question is not to decide *what* or *where* is *the* problem, it is to decide at what level the elusive situation can be tackled under the circumstances. If the family squabbles cannot be stopped, Johnny will have to make up for his parents' lack of common sense. If the cultural and religious prejudices cannot be ironed out, the chances of the family's survival as a functioning unit are slim. The solution of the problem at a lower level has to take into account the continuation of the problem at a higher level. On the other hand, a solution at a higher level—in this case, the problem of the cultural and religious differences—automatically reduces the tension at the lower levels.

Management, a word that is frequently used in business circles, is ambiguous and multiordinal; in the chain of command, a person may be managed and managing simultaneously. I remember some specialists in human relations who wanted to arrive at a precise definition of management, and spent a whole afternoon in the library of a company going through books, professional magazines, and monographs that gave management definitions, then compared these definitions to arrive at the core, the essence, of what management is. At the end of the afternoon, they were more confused and frustrated than ever. They had hoped to find a good definition, or to make one themselves, but they had to abandon the attempt. They could not agree among themselves, although all knew what they were talking about and what they were looking for.

Had they known that such an elusive word is multiordinal, and therefore undefinable in the usual logical manner of genus and difference, they would have saved time and energy. They would have determined the level of management they were concerned with, in what division, at what time, and for what purpose. The old prescription "Define your terms" does not apply to multiordinal terms, and, because there are so many multiordinal terms and so frequently used, this prescription is now recognized as a most burdensome and useless

legacy of Aristotelian logic. It is one of many sententious statements that we keep repeating without ever stopping to question their value, as if they had sprung up—immutable—from the wisdom of the ages.

Instead of being subservient to an obsolete tradition, let us pinpoint, as sharply as we can, what we are talking about. Let us not ask ourselves "What is a fact? What is management? What is the problem?"—let us be soundly operational and answer the simple questions *who, what, when, where* and *how*. Let us find out at what level of abstraction—and consequently at what level of existence—we think we can best deal with the situation.

Multiordinality can also be described by means of a diagram, as in Figure 7, p. 121. First, we draw a horizontal line to represent the level of first-order experience, which is the down-to-earth level of contact with what is going on. On the center of this line we draw a small arch, with its two sides resting on the line, and within this arch we write the figure *1*. This is the first stage of abstraction, the first descriptive use of the term we employ multiordinally. In the case of the child mentioned above, it is the problem of Johnny as an individual.

Next we draw a larger arch, resting on the same line and enveloping the first arch. This is level two. In the same case, it is the problem of the father and mother talking of separation and divorce in front of Johnny. It is more comprehensive than Johnny's individual problem; it includes it. Problem 2 includes problem 1. It is higher in objective abstraction, but it also touches the ground of first-order experience. The ends of arch 2 reach the same baseline of those of arch

We can draw any number of arches, each new one superposed to the previous ones. Each new arch represents a higher level of abstraction, so that the highest of all is both a first-order experience (touching the ground in a sense) and a high-order generalization (holding all the lower ones in its framework).

This multiordinal diagram lends itself to a limitless variety of applications. It gives us a visual picture of theories within theories, of decisions within decisions, and systems within systems where the highest of all has the overall control—like the board of directors of a holding company. It shows that a "theoretical" principle, which is couched in general terms and apparently out of touch with day to day practices, is really a down-to-earth measure that holds within its grip

the behavior of those who have accepted it, or have been forced to accept.

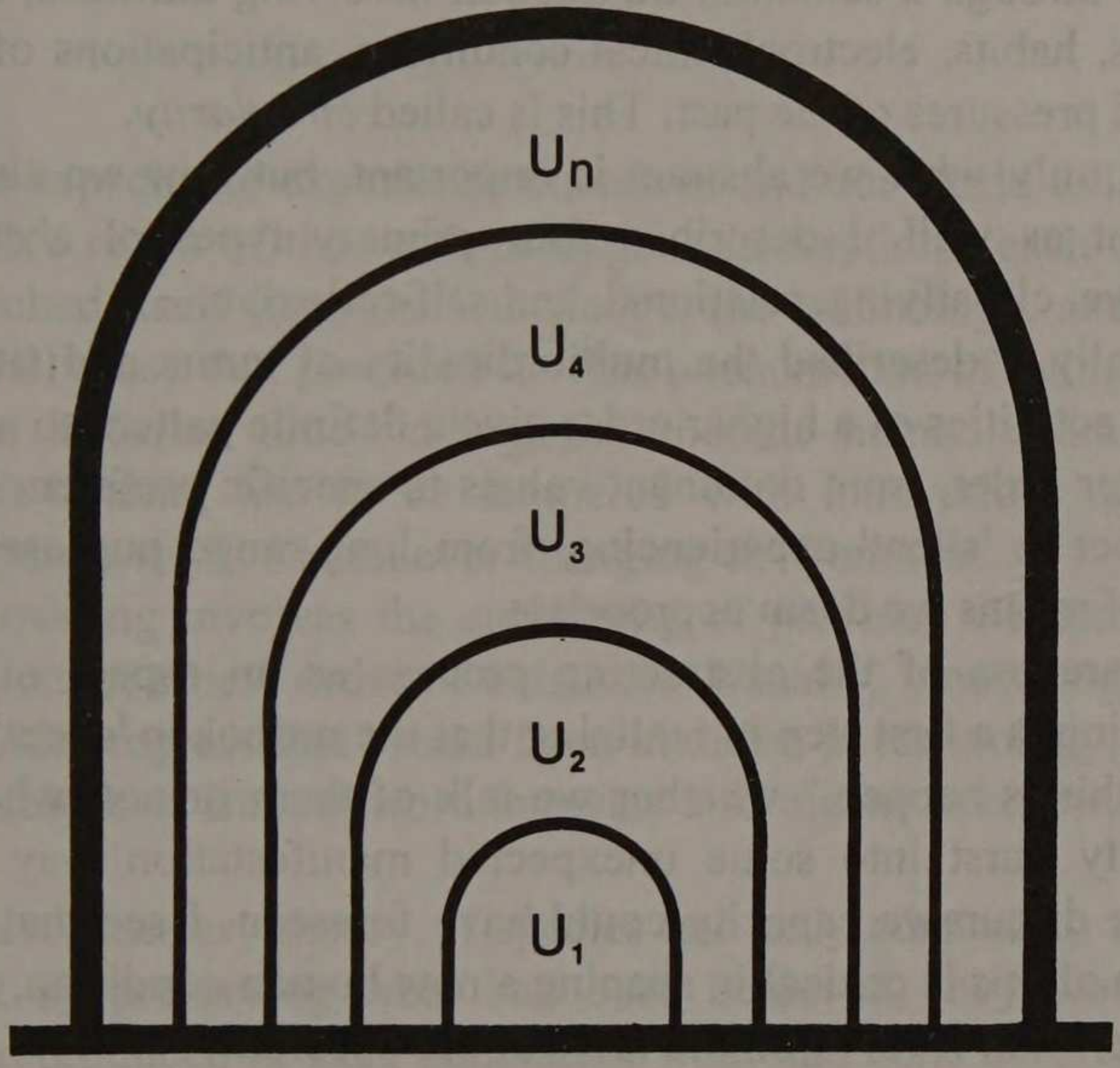

Figure 7. Multiordinality, or units of lower order within units of a higher order.

Consequently, the study of such general principles (often hidden as common-sense assumptions) becomes a most important activity of people who want to be practical. It does away with the common belief of the opposition between theory and practice.

Summary

In this chapter, I have emphasized the importance of consciousness of abstracting as a way of making our thinking multidimensional, thus avoiding the collisions of "two-dimensional" logic that hinder human transactions.

We saw that a human experience is a multileveled affair; that our "silent" personal experience of what is going on (WIGO) emerges through the structure of our semantic state at a given moment. We do

not simply perceive as a camera perceives what is in its focus. With the aid of various diagrams, we took that a step further by saying that our verbalized constructs are higher in order and not at all commensurate with our 'silent' lower orders of abstraction. Each order emerges through a semantic transaction involving attitudes, feelings, purposes, habits, electrochemical conditions, anticipations of the future, and pressures of the past. This is called *circularity*.

Not only *what* we abstract is important, but *how* we abstract is important as well. I described four primary types of abstracting: evaluative, classifying, relational, and self-reflexive.

Finally, I described the multiordinality of terms and situations, and that activities of a higher order give a definite pattern to activities of a lower order, from dominant values to specific preferences, from mental set to 'silent' experiencing, from long-range purposes to the choice of means we deem appropriate.

Awareness of the abstracting process as an aspect of human functioning is a first step in realizing that the unspoken 'silent' level is "where things happen," whether we talk of them or not, where they eventually burst into some unexpected manifestation way beyond what our discursive capacity could have foreseen. I see that our acceptance of this is critical in shaping a new human condition, whether on the personal level or on the level of our species.

The shaping of our world is the work of countless generations of human experience being passed on and transformed. This is what Korzybski called time-binding. We are going to look at this next to show that our actions, which are guided by mental constructs, may initiate irreversible changes that our children will have to live with.

PART II
INNOVATING

The capacity to experience ourselves and our world today is the cumulative result of the work of bygone generations, each of which has enriched itself from the knowledge, the technology, and experience of all those that preceded it. This phenomenon of cultural accumulation is called time-binding, the specific human characteristic. But time-binding has to be tempered with innovation, or radical change, since we live in an ever changing environment.

Innovating involves the combining of previous elements into a new structure, a new order of existence. Usually, innovating is associated with progress that breaks from tradition in technology, the arts, and the sciences. But the word innovate also means to renew, to make new.

In evolutionary theory, if species had only adapted to the environment by preserving what had been achieved, they would have merely reproduced in each generation what had gone before. The resulting rigidity would not have allowed for adaptation to a changing environment. Thus if evolution were to occur, there had to be preservation of older forms, but there also had to be the possibility of new ones. Absolute continuity would have excluded change; on the other hand, continual radical change would have destroyed what had been accomplished.

The solution to this conflict in evolutionary theory lay in unexpected changes in hereditary traits known as "mutations." Mutations by themselves do not further the evolution of a species; they *do* furnish the "raw material" of change and renewal. This raw material still has to be shaped within an environment. Of the many mutations that occur in nature, the environment "selects" only a few.

The analogy of organic evolution illustrates a similar process in the evolution of humankind within cultural environments. The appropriate tension between preserving the past and innovating or "mutating" is essential to growth and renewal.

What is said about human cultures can also be applied to individuals. All innovating involves us in the "project" of human evolution; we may do it alone, but never apart. We invent within the tides of significance that have been processing and transforming over thousands of years on this earth.

In speaking of time-binding, Dr. Bois refers to "time" as the frequency of innovation, or the frequency with which generations of humans go through the process of questioning the value of what is known or done; inventing something new that holds promise of being an improvement; and self-reflexively criticizing that invention through experiment or experience. He speaks of innovative vitality as a characteristic of human life. Some generations exhibit more such vitality than others.

While Part I of this book focused on the processes of *evaluating*, this part focuses on our capacity to "dream," to develop the art of the plausible, to animate the nerves of the "future." Dr. Bois introduces us to the formulations that can enhance the innovative process. He does this by familiarizing us with what has been going on, and suggesting alternatives to give us new resources to guide us into the unknown. Constructs such as time-binding, the world in which we live, the structured unconscious, semantic jumps, the stages of cultural development, a reformulation of objectivity, the use of mental models, the human equivalent of the cosmic propulsive energy, and practices in awareness and self-renewal, together create a rich soup of meanings that can clear the way for the emerging unexpected. Then with up-to-date methods of evaluation we have the "tools" to shape and integrate what emerges.

As individuals this means self-renewal rather than the more therapeutic notion of "healing." But by individual, I am not referring to an isolated entity. Since the environment and the individual are inseparable, the so-called individual is implicitly related. This holds the promise of a ripple effect in what-is-going-on (WIGO). As innovative individuals participate in WIGO, a renewal of the human experience may unfold.

—The Editor

CHAPTER 7

the worlds in which we live

We have described the individual as "a thinking, feeling, self-moving, electrochemical organism in continuous transaction with a space-time environment" (p. 34). And now is the time to take a fresh view of our environment. By environment, we do not mean only the physical place where a people live and function, we mean—together with this—the entire aggregate of conditions, institutions, and traditions that surrounds and penetrates each person to the very core of their self.

Our primitive predecessors were without the cultural environment that we now take for granted. Cassius Jackson Keyser invites us to look at their condition as it must have been.

Long ages ago, there appeared upon this planet—no matter how—the first specimens of our human kind. What was their condition? It requires some meditation and some exercise of imagination to realize keenly what it must have been. Of knowledge, in the sense in which we humans now use the term, they had none—no science, no philosophy, no art, no religion; they did not know what they were nor where they were; they knew nothing of the past, for they had no history, not even tradition; they could not foretell the future, for they had no knowledge of natural law; they had no capital—no material or spiritual wealth—no inheritance, that is, from the time and toil of bygone generations; they were without tools, without precedents, without guiding maxims, without speech, without any light of human experience, their ignorance, as we understand the term, was almost absolute. And yet, compared with the beasts, they were miracles of genius for they contrived to do the most wonderful of all things that have hap-

> pened on our globe—they *initiated*. I mean, the creative movement which their remote descendants call Civilization.[1]

In contrast to this, let us also look at Pitirim A. Sorokin's rapid survey of the cultural world in which our generation is living.

> Man has created a new realm of reality in the cosmos known to us. Besides the two basic classes of reality—inorganic and organic phenomena—which existed on this planet before the emergence of man, he has built a third basic class of phenomena; the superorganic or cultural . . . At the present time this cultural realm consists of: (1) an infinitely rich *ideological* universe of *meanings* unified into systems of language, science, technology, religion, philosophy, law, ethics, literature, painting, sculpture, architecture, music, drama, economic, political and social theories, and so on; (2) the totality of so-called "material culture," representing "an incarnation and objectification of all these meanings in biophysical media, beginning with the simplest tools and ending with the most complex machinery and gadgets, books, paintings, sculptures, buildings, highways and airways, villages and cities, and so forth; (3) the totality of individuals as *sociocultural persons* ("kings," "farmers," "criminals," "saints," "husbands," "wives," "prostitutes," "citizens," "debtors," "masters," "slaves," "Frenchmen," "Americans," "Catholics," "Socialists," etc.) and of *sociocultural groups* (political, scientific, religious, economic, occupational, national, artistic, etc.); and (4) the totality of *overt actions, ceremonies, rituals, proceedings,* in which the individuals and groups actualize, realize, and practice this or that set of meanings. The total superorganic universe made of the above . . . cultural phenomena has become the most powerful environment that immediately envelops, conditions, determines, and molds every individual and group in its own image.[2]

Years ago I devised a diagram to express visually what Keyser describes as the condition of prehistoric people without any means but their bodily senses, in contrast to the people of today who, say Sorokin, can use to their advantage—or to their disadvantage—the tools, the institutions, and the knowledges of civilization. This diagram, entitled *The Worlds in Which We Live*, is reproduced here as

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[1]Cassius Jackson Keyser, "Korzybski's Concept of Man" in A. Korzybski, *Manhood of Humanity*, d ed. (Lakeville Conn.: International Non-Aristotelian Library Publishing Co., 1950) p. 295.

[2]Pitirim A. Sorokin, "Integralism Is My Philosophy," in *This Is My Philosophy*, ed. Whit Burnett (London: Allen & Unwin, 1958) pp. 182-183.

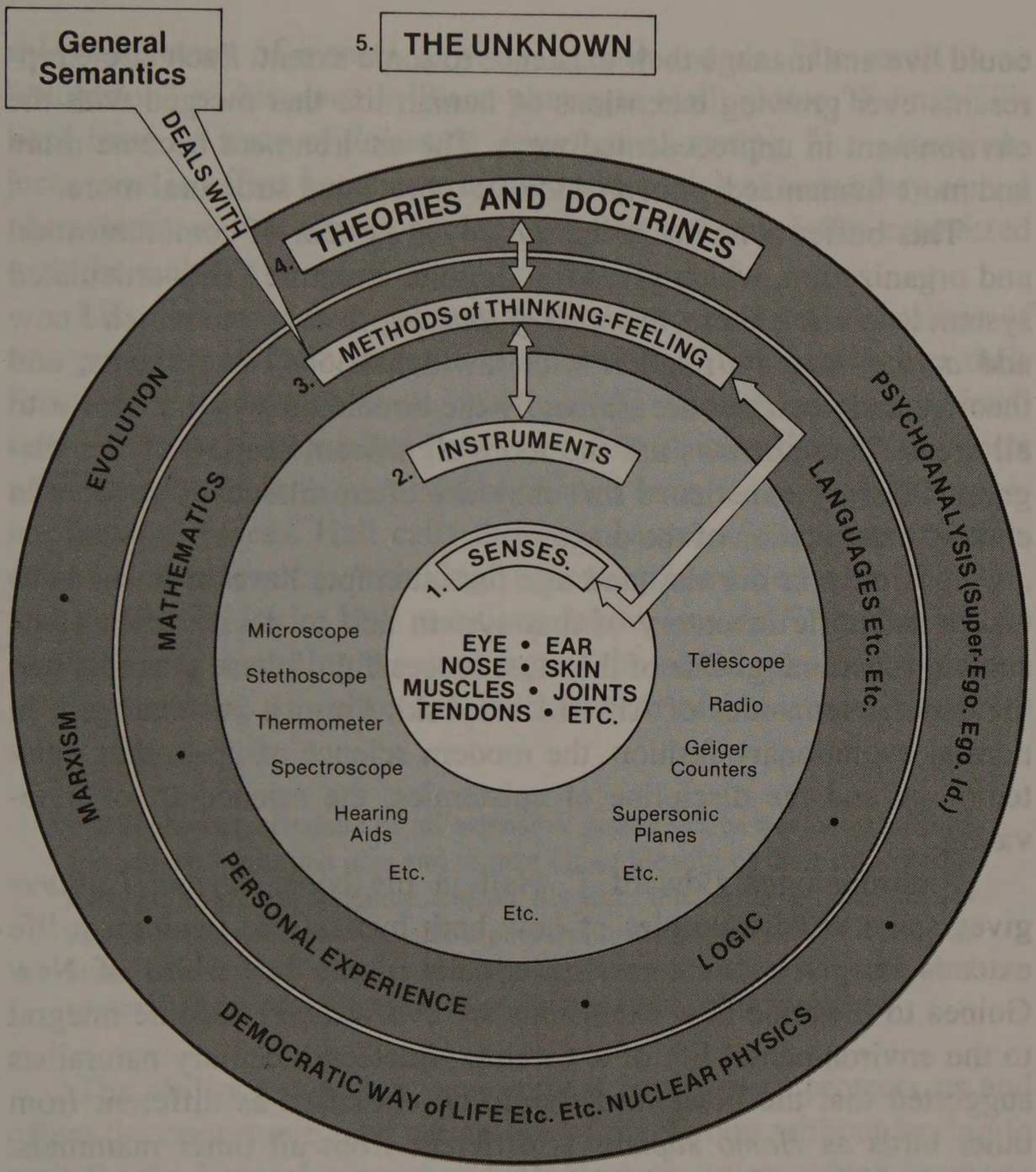

Figure 8. The worlds in which we live (Copyright, 1948, J.S. Bois).

Figure 8. It is made of four concentric circles situated in an indefinite blank space that represents the unknown. Between the first human beings and this unknown there was nothing but raw perceptions, wild imagination, fears, and a felt need for survival. Circle one was immediately surrounded by the unknown (area five). Gradually, instruments of perception and action together with methods of thinking-feeling-behaving were invented, and they developed theories and doctrines to fixate in tradition and in symbolic forms the fruits of their accumulated experiences. By doing so, they established between themselves and the unknown a sort of buffer zone in which they

could live and manage their existence to some extent. Each circle represents ever growing extensions of human life that merged with the environment in unprecedented ways. The environment became more and more humanized—not an additive more, but a structural more.

This buffer zone has a tightly woven system of communication and organization, which gives it a definite structure. This articulated system is in circle three, *methods of thinking-feeling*—to which I now add *acting*—and its relation with raw sensations, instruments, and theories and doctrines are shown by the double arrows that link it to all areas. These arrows are the more significant feature of the diagram. It is my experience that they are often missed by readers in cursory examination of the diagram.

It is only in our day and age that attempts have been made to take a scientific inventory of that system and to devise rules of its smooth functioning. One of the most successful of these attempts was the general semantics of Alfred Korzybski. From it has emerged, in normal evolutionary fashion, the modern science of up-to-date epistemology and the discipline of epistemics, the science-art of innovating.[3]

Anthropologist Edward T. Hall in his book *Beyond Culture*[4] gives some vivid examples of how both human and nonhuman life extends its given structures. He speaks of the bowerbird of New Guinea to illustrate how extensions are evolved and become integral to the environmental life of a species. Nineteenth century naturalists suggested that the bowerbird should be classified as different from other birds as *Homo sapiens* is different from all other mammals. What the bowerbird and *Homo sapiens* have in common is the practice of elaborating their extensions, and, in the process, greatly accelerating their own evolution.

The bowerbird gets its name from the male's practice of building a bower or enclosure of grass and twigs to attract the female. He decorates the bower with various brightly colored objects, shells,

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[3]Bois, J. Samuel, "Epistemics: A Time-binding Emergent from General Semantics." in *ETC., A Review of General Semantics* 28, no. 2 (June 1971); 177-189.

[4]Edward T. Hall, *Beyond Culture* (New York: Anchor Press/Doubleday, 1976), p. 33

shiny skeletons of insects, flowers, pebbles, seeds. The result is an "extension" of his once brilliant plumage. Hall quotes Thomas Gilliard from an issue of *Scientific American* as stating, " . . . these objects have in effect become externalized bundles of secondary sexual characteristics that are psychologically but not physically connected with the males."[5]

Like the bowerbird, human beings have evolved extensions of every aspect of their semantic transactions. They externalize their functioning in various ways, which I will describe in greater detail later. They then internalize their own web of inventions to the point where the extensions are undifferentiated from, or replace, the original human process. Hall calls this phenomenon "extension transference." One example is "thinking" becoming identified with language, and its built-in logic. Hall mentions James Joyce's *Finnegan's Wake* as portraying in writing the workings of the verbal parts of the brain.

In speaking of culture as an extension of human activity, Hall states:

> It is the characteristic of all extension systems to be treated as distinct and separate from the user and to take on an identity of their own. Religions, philosophies, literature and art illustrate this. After a time, the extended system accretes to itself a past and a history as well as a body of knowledge and skills that can be learned. Such systems can be studied and appreciated as entities in themselves. Culture is the prime example.[6]

The ability to use our environment in this way protects us and offers the opportunity and advantage of innovation without having to wait for the internal process of biological evolution, which seems to go according to its own slower time dimension. At the same time, our ignorance of the process of extending ourselves and developing a new kind of evolution, that is, our ignorance of the acculturation and time-binding process, threatens our very existence as a species.

> The study of man is a study of his extensions. It is now possible to actually see the evolution taking place, an evolution that occurs outside the organism and at a greatly accelerated pace when compared to intrinsic evo-

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[5]Edward T. Hall, *Beyond Culture*, p. 33.

[6]Edward T. Hall, *Beyond Culture*, p. 33.

> lution. Man has dominated the earth because his extensions have evolved so fast that there is nothing to stand in their way. The risk, of course, is that by enormously multiplying its power, humankind is in the position of being able to destroy its own biotrope—that part of the environment that contains within it the basic elements for satisfying human needs.[7]

We are now going to go deeper into this aspect of the environment, starting with Korzybski's formulation of time-binding.

Homo sapiens, the Time-binding Class of Life

The creation of a superorganic universe was taken by Korzybski as the specific characteristic of *Homo sapiens*, and it led him to propose a new definition of man: "I define HUMANITY," he wrote, "to be the TIME-BINDING CLASS OF LIFE."[8]

What did Korzybski mean by "time-binding?" According to the dictionary, "to bind" means, among other things, "*to cause to cohere*," or to bring things together and to make out of them a compound that becomes a new *thing*, a new unit, of which the original elements, previously differentiated, are blended and homogenized, thereby reaching a new level of energy, a new order of existence. A simple example would be that of concrete, which is made by mixing together three elements: cement, water and sand. Once properly blended and "left standing," this compound hardens to a point that none of its elements, taken singly, could ever reach. The result of such a binding operation is, structurally, more than a mere addition of its elements. Korzybski believed the capacity to bind together elements of a very different nature is the characteristic of all forms of life.

The lowest form of life is that of plants; they are binders of chemicals. Side by side in our garden are rose bushes, chrysanthemums, rosemaries, irises, and other plants. Out of the common soil, each chooses the minerals and the amount of water that are necessary for its growth. Each picks them in definite proportions, transforms them into tissues that are different in softness or hardness, and into

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[7]Edward T. Hall, *Beyond Culture*, p. 33.

[8]Korzybski, *Manhood of Humanity,* d ed. (Lakeville, Conn.: International Non-Aristotelian Library, (1950), p. 60.

leaves, flowers, and seeds that are barely comparable to one another. Stones are not able to do this, nor, left to itself, does the soil bind its chemicals together in such a fashion. Therefore, "chemistry-binders" is a good description of what plants are and do; it puts them in a class by themselves, which applies equally to the least conspicuous moss and the most majestic tree.

The next higher form of life is the animal. It has the chemistry-binding capacity of plants, of course; it chooses its own food, ingests, assimilates and transforms it into its own tissues and organs. But, besides doing this, it is capable of moving in space, of roaming about to reach for food that is not available where it stands, of going for water without waiting for rain or irrigation to quench its thirst, of gathering materials from its surroundings to build a nest or a storehouse. Animals are not only chemistry-binders, they are space-binders; binders of elements scattered in space.

We now come to humans. They, of course, are capable of doing what plants do as chemistry-binders and what animals do as space-binders, but they are not limited to these activities of plants and animals. They have a characteristic that is distinctly human that neither plants nor animals can share with them. Humans are time-binders; they select, gather together, and combine into something new the various elements that belong to different periods of time. They combine them, transform them, and make out of them something that did not exist before. They can repeat this operation as often as they wish, each time creating a modification, an enlargement, a complexification of the world in which they live. Time-binding means producing civilization, inventing farming to replace hunting and fruit gathering, technology to replace the use of raw materials, central government to replace smaller and insufficient political units, printing to replace handwriting, steam and electrical power to replace manual labor, the telegraph and telephone to replace couriers, radio and television to multiply the presence of artists and speakers. Time, in this context, does not refer so much to calendar time as to the number of productive past generations whose products are parts or necessary conditions of what is done in the present.

> We have observed that each generation of (say) beavers and bees begins where the preceding one began and ends where it ended; that is a law for animals, for mere space-binders there is no advancement, no time-binding—a beaver dam is a beaver dam—a honey comb is a honey comb.

> We know that, in sharp contrast therewith, man invents, discovers, creates. We know that inventions lead to new inventions, discoveries to new discoveries, creations to new creations; we know that, by such progress breeding, the children of knowledge and art and wisdom not only produce their kind in larger and larger families but engender new and higher kinds endlessly; we know that this time-binding process, by which *past time* is embodied as a co-factor of toil in enduring achievements thus survives the dead and works as living capital . . . , is the secret and process of civilization-building.[9]

For many years, I was misled in my thinking by the word "time" in the expression "time-binding." I understood that, eventually, progress would be manifested as time went on. I could see that our advance was like the accumulation of compound interest, but I knew very well that our rate of advance in the last fifty years—at least in the physical sciences and in the corresponding technology—was twice as great as it had been in the previous fifty years. I also saw distinctive spurts of advance at certain dates, as it were, where people pooled their creative resources.

I knew, for instance, that, when Einstein wrote his famous letter to President Roosevelt, there was enough knowledge about the atom scattered over the world to make the creation of the atom bomb possible, and that the time for achieving this was shortened when scientists got together and worked intensively as a team. I also knew that Japan in the last century and Russia after the 1917 revolution had shortened the time necessary for them to catch up with our technology. I therefore felt that the Korzybskian formula needed some addition and should consider another factor of progress. At the time, I thought this other factor was the interaction of scientists who work together on a particular project.

But if we take "time" as a plural, meaning the frequency with which humans have decided to go through the three steps of time-binding (1) questioning the value of what they know or do, (2) inventing something new that holds promise of being an improvement and (3) criticizing that invention by the test of experiment, time then becomes not the absolute number of generations recorded in history but the number of generations or groups that are ready and willing not to be simply replicas of the past. If, within a calendar generation, a

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[9]Keyser, "Korzybski's Concept of Man" in *Manhood of Humanity*, p. 316.

group of people is ready and willing to reexamine its achievements and to repeat the act of creation, we may have two or more time-binding generations within a span of twenty-five or thirty-five years. If on the other hand, several consecutive generations content themselves with uncritically repeating the theories and the practices of their predecessors, we may have only one generation of time-binders within a long period of history. Progress is not an additive affair, it goes by cycles that increase their outputs in geometrical progression. The shorter the interval between cycles, the faster the total advance within a definite period of years. We don't know how fast the new nations will reach a level of development that is comparable to ours. Complete dedication to creating a new order of things may advance them far ahead of us.

Instead of the algebraic formula of time-binding (which still appeals to me because of its precise design[10]) we could use an alternative formulation and say that *the capacity to invent is the characteristic of Homo sapiens*. This means that a fully functioning human being sees tradition not as something to preserve in a static form but as something to exploit, something like the humus formed by fallen leaves, which helps the growth of new crops.

It is hard to concede that the results achieved by the human capacity to invent can be measured by the *a priori* formula that Korzybski suggests. For instance, when he says that if each generation doubles the progress of the preceding one, the progress made by the tenth generation would be 1,024 times the progress made by the first (and the total gains of the ten generations would be 2,046 times the progress made by the first) and he is evidently playing with numbers—and enjoying the exercise. As he muses over his "discovery," he becomes enthusiastic, and he bursts into sweeping statements.

> Humans are, unlike animals, naturally qualified not only to progress, but to progress more and more rapidly, with an always *accelerating acceleration*, as the generations pass.
>
> This great fact is to be at once the basis, the regulator and guide in the science and art of Human Engineering. Whatever squares with that law of time-binding human energy is right and makes for human weal; whatever contravenes it is wrong and makes for human woe.

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[10]Korzybski, *Manhood of Humanity*, pp. 90-91.

> And so I repeat that the world will have uninterrupted, peaceful progress when and only when the so-called social "sciences"—the life-regulating "sciences" of ethics, law, philosophy, economics, religion, politics and government—are technologized, when and only when they are made genuinely scientific in spirit and method; for then and only then will they advance, like the natural, mathematical and technological sciences, in conformity with the fundamental law of the time-binding nature of man, then and then only, by the equal pace of progress in all cardinal matters, the equilibrium of social institutions will remain stable and social cataclysms cease.[11]

This quotation is peppered with terms and statements that make it easy for self-satisfied critics to ridicule Korzybski and his followers. Some people want science to behave like a sedate matron who moves majestically with measured steps. They deny the legend of Archimedes, running naked through the streets of Syracuse and shouting "Eureka!" They forget Johann Kepler's "sacred fury." But living science is still a very human experience, running the gamut of human emotions, from excitement and enthusiasm to self-doubt and criticism. What Korzybski "saw"—in a unifying or peak experience—has been verified and measured by researchers.

A survey made at the beginning of this century by Ludwig Darmstaedter[12] shows that the number of discoveries and inventions in the Western world has doubled every fifty years since the scientific revolution of the seventeenth century. A more recent study, by Professor Pierre Auger—published by UNESCO in 1961—is a survey of current topics of scientific research in the fundamental sciences (mathematics, physics, chemistry, biology), earth and space sciences, medical sciences, food and agricultural sciences, fuel and power research, and industrial research. The book lists over 200 national and international organizations and almost 300 individuals who were consulted during the preparation of the report. The growth of scientific activities follows an exponential curve, just as Korzybski had stated *a priori* in the early twenties. According to Auger, the volume of scientific work increases twofold every ten years. Other forms of human

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[11]Korzybski, *Manhood of Humanity*, p. 92

[12]Ludwig Darmstaedter, Hanbuch zur Geschicte des Naturwissenschaften und der Technik (Berlin: Verlag von Jullus Springer; 1908) Passim.

activities are, of course, also increasing, but at a far slower rate. The doubling time of activities not directly related to science is forty years. (There are, however, indications of a slowing down in the rate of growth of science.[13])

When a new idea or a new system of thought appears, it tends to spread over wider and wider areas, to gain converts in larger and larger numbers. Witness the appearance and growth of Christianity and Islam, the spread of revolutions for the freedom of the individual started by the American Revolution, the emergence of Marxism and the international communism in the last hundred years. This tendency to gain adherents in ever-increasing numbers, and by whatever means, is not a manifestation of time-binding energy; it is an increase in volume—as happened to the dinosaurs. It is not an improvement in vitality and in capacity for eventual survival; it is the transformation of a revolution into a tradition.

But there is a second tendency, which is a true manifestation of time-binding energy. It is the tendency to keep reexamining a new system of thought in the light of its own development, to keep stirring revolutionary thinking so that it won't jell into tradition. This second characteristic is the one that holds promise for the far-reaching future. If we accept time-binding as a characteristic of human growth, this continuing attempt at self-renewal becomes a normal expression of humankind in action, a feature that differentiates us from lower forms of life. Clinging to tradition, whether it is centuries old or of more recent vintage, is the very negation of that distinctive human trait, and brings human life one step down, to the level of animal life, where generations after generations keep repeating the same patterns of activity. We thus copy animals in our nervous systems, as Korzybski so often deplored.

From this we see that there are two criteria for evaluating change. One criterion is that of numbers: how many people join the new political creed, the new school of thought, the new religion? The second criterion is: how much time-binding vitality is apparent in this cultural change? Does it favor its own renewal by facilitating correc-

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[13]Joseph Rothblat, "International Science - A Review," *Bulletin of Atomic Scientists* (March, 1962), p. 40. It must be noted that the term "science" here means the physical sciences and biology; the "social sciences" were not covered.

tions and elaborations instead of conformity and respect for tradition? In human affairs, we often go by the first criterion, the criterion of numbers. In technology, we go by the second criterion, the criterion of "renewalness," invention and creativity.

Nobody is afraid to daydream publicly in matters of technology, to plan—at whatever cost it might entail—for a future world that will dwarf the present one. In a one-page advertisement in an issue of the *Scientific American*, an aircraft company displays eleven models of space vehicles. Apart from the now conventional rockets, there are three nuclear spaceships—one of which is intended to travel to Venus and Mars—two vehicles for traveling on the surface of the moon, one craft designed to collect lunar ore specimens, another craft to load this ore in containers that will be rocketed back to earth, a space observatory that will be sent aloft in sections and assembled in orbit, and a supply-and-escape vehicle that will shuttle back and forth between space stations and earth.

We are ready to spend billions of dollars and thousands of hours of human labor to bring this about, but let a social scientist dream of a human world different from our world of misery and cold war as Gardner Murphy attempted to do in a very modest way in his book, *Human Potentialities*, and the traditional advocates of common sense express their learned doubts in the nature of what human nature *really* is. Their view of "human nature" comes from the old definition of *Homo sapiens* as an animal whose basic nature has a thin coating of reason, a definition that makes no more sense than would a definition of an animal as "a plant with the capacity to move about in space." Such a definition would convey a mental model that would fit neither plant nor animal. Similarly, when we define a human being as an animal endowed with reason, without including that essential characteristic of time-binding creativity, we have a mental model that fits neither animal nor human. Keyser insists on the importance of differentiating humans from animals:

> Though we humans are not a species of animal, we are *natural* beings; it is as natural for humans to bind time as it is natural for fish to swim, for birds to fly, for plants to live after the manner of plants. It is as natural for man to make things achieved the means of greater achievements as it is natural for animals *not* to do so.
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> This fact is fundamental. Another one, also fundamental, is this; the time-binding faculty—the characteristic of humanity—is not an effect of

> civilization but its cause; it is not civilized energy that *civilizes*; it is not a product of wealth, whether material or spiritual wealth, but . . . the creator of wealth, both material and spiritual.[14]

Adequate mental models are a necessity. Before we had a mental model of electricity, we could not deal with that form of energy, we could not control it, we could not manage it, we could not generate it. Now it is inserted in practically all of our daily activities, but generations ago it belonged to the category of mysteries. It was thunder and lightning, the dreaded "acts of God." It could burn, kill and destroy without human recourse against its devastations. Now it is our helpmate, keeping our houses bright at night; acting as a courier to transmit our messages by telephone, telegraph, radio, and television; heating our houses in the winter and cooling them in the summer; keeping our food fresh in freezers and refrigerators; performing routine brain functions in electronic computers; working for the treatment of diseases in hospitals; and advancing our knowledge of nature in research laboratories.

Before all this could be done, we had to discover electrical energy and invent a way of managing it, and I see a parallel in the discovery of the cosmic energy that has its locus in humankind. Time-binding energy has been mostly destructive; it seems to accumulate as electricity accumulates in storm clouds, and it bursts out in revolutions, wars and social cataclysms. It appears where we do not want or expect it. It works itself into a frenzy before we find time to shut it off, and explodes and plays havoc in our well-established institutions. Its power has increased and it has brought within its grasp other forms of energy, from the tensile strength of the bow, to the explosive force of gunpowder, to the power of atomic fusion. "War," as Keyser said, "is a bloody demonstration of human ignorance of human nature."[15]

More than fifty years have elapsed since our new concept of *Homo sapiens* was offered to the Western world, and during those

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[14]Keyser, "Korzybski's Concept of Man," in *Manhood of Humanity*, p. 315.

[15]Keyser, "Korzybski's Concept of Man," in *Manhood of Humanity*, p. 315.

fifty years, we had a second world war. In fact, war has become a permanent institution under the name "cold war." The two men who had the vision of humanity as a time-binder, Keyser and Korzybski, have passed away, and some of their hopes and previsions have not materialized.

Were both men completely mistaken? I don't think so.

That special form of cosmic energy—that they "discovered" and called time-binding energy—still operates in *Homo sapiens*, the latest product to emerge from the long and slow-moving process of evolution. It throbs in the ever-increasing mass of nervous matter that spreads like a network over the inorganic an organic substance of the nonhuman world, that holds it in its grip and that gradually transforms it into a huge artifact.

Knowing about this phenomenon, participating in it with full awareness, and steering it intelligently is an all-important task at this critical moment of history. George Gaylord Simpson, the paleontologist, referred to it when he wrote:

> [Man] happens to represent the highest form of matter and energy that has ever appeared. Recognition of this kinship with the rest of the universe is necessary for understanding him, but *his essential nature is defined by qualities found nowhere else* . . . It is part of this unique status that *in man a new form of evolution begins*, overlying and *largely dominating* the old organic evolution, which nevertheless also continues in him.[16]

The World as We Make It

All forms of life are energy-binders. They bring to a higher order of existence the energies that surround them; they form islands of order in the sea of entropy where the nonliving world disintegrates into chaos.

The human species is the most complex developing process on our planet, the most resourceful of all energy-binders. Humans do not simply exploit their surroundings to ensure their own survival and that of their species (like the animals and the birds), they transform them according to their purposes and their whims, creating personal

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[16]George Gaylord Simpson, *The Meaning of Evolution*, (New Haven, Conn.: Yale University Press, 1949), p. 344 (italics added).

needs that demand satisfactions that nature, unaided, cannot provide. They make the world to their own image.

A group of promoters who have decided to build a retirement community go over the accumulated records on the climate of various states and sections of states. They want a place where there is no winter, no fog or smog, where it is generally cool at night, bright and warm during the day, away but not too far away from big urban centers. Eventually, they choose a valley, devoted to dry farming, halfway between the lowlands of the California coast and the high ranges of the Rockies. Then they use the knowledge, tools and equipment that the technology of town-building has accumulated. They survey the land and cut it into building lots strung along curving streets and wide boulevards; they have bulldozers, earthmoving machines, excavators, a concrete mixing plant and a fleet of delivery trucks, piles of lumber, and a swarm of workers from all construction trades.

The whole valley becomes noisy and active; and the central part of the town begins to take shape: a townhall, a swimming pool, a golf course, an open-air theater, a row of hobby workshops, a shopping center, a hotel with a cocktail lounge, a fine dining room, and a sales office with an enticing plan of the prospective community, all come into being within a few months. In a year or two, there is a bustling new town, with service clubs, churches, a social life, and budding traditions. The quiet farmland has become a new world, created after a pattern that *Homo sapiens*, the time-binder, has materialized in a permanent structure.

What has been made within a short time and on a small scale in such a retirement community is a miniature of what has been going on for generations around the planet. Our nation was built in somewhat this way, from the debarkation of the colonists in an almost empty land to the vast complex of states, cities, transportation systems, and political superstructures of governments and institutions that make our country. So was built the Western world, to which we belong culturally; and so is being built the planetary community of humankind, which we can make a place of comfort and joy, or misery and death.

Instead of the vacant valley, let us imagine the multidimensional world of processes that stretches, without limit, in time and space. In this world of undifferentiated continuity, *Homo sapiens* appears and immediately begins to survey it, to cut it into parcels of various sizes,

using the genetic instruments given by nature: senses and limbs for perceptions and action and a brain for classification and ordering. What the senses cannot detect is ignored at first; what cannot be structured in an acceptable order in the brain is mysterious, or supernatural. As experience is accumulated from generation to generation, there is an increase in the range, the efficiency, and the power of the senses and limbs. Vision is extended with microscopes, telescopes, electron microscopes; there is an extension of hearing and communication with telegraph, telephone, radar, television; touch sensitivity is expressed with seismographs and oscilloscopes; to the senses of taste and smell are added the techniques of chemical analysis; power is added to the limbs with levers, machines, and engines of all sorts; instruments are invented that measure distance, weight, and pressure; means of locomotion are devised. Along with all this, methods of thinking are developed that make it possible for the brain to classify perceptions—old and new, as well as human actions—simple or multiplied in power. Means of integrating perceptions and actions in a structure that makes sense are devised; and from this organized world ventures into the unknown are made, gradually annexing parts of it to the expanding human domain.

When we, as individuals, appeared on the scene in this twentieth century of the Christian era, we did not inherit the earth as it was when our first *Homo sapiens* ancestors found it; we were born into it as participants in the accumulated wealth of methods of thinking, of instruments and techniques developed by the race. We accepted the world as it is parceled into chunks of reality by the language that our ancestors invented to classify and order their experiences.

If our senses were calibrated to perceive what we now discover with the aid of microscopes, we would live in a world of microbes, cells, viruses, and crystal lattices instead of a world of full-size plants, animals and things. If our senses and limbs were calibrated to grasp the whole planetary system, much as we hold a cluster of grapes, the worst earthly cataclysms would require very delicate instruments to be detected. We simply register the forms of cosmic energy that lie within the range of our perceptual capacities, and we relate ourselves to them according to whatever system of relations we can conceive. It is within that range, structured, organized and manipulated by the succeeding generations of humankind, to which we belong, that we have our being and experience. As a whole, we do not

yet know how to participate outside this world of perceptions and action. At our present state of development, "outside" is for us nothing but the unknown. It is from that world of the unknown that we emerged when we were conceived, and it is to the same world of the unknown that we shall return when we disintegrate at death.

To what extent is this world in which we live a result of human activities? We don't know exactly. Today the trend is toward a fuller acceptance of our human share in making the world in which we live. When we speak of humanity's share here, we do not limit the meaning of "human being" to the individual born and reared in our time, we mean human being as a member of a distinct species, different from animal cousins. We also mean human being as a member of a culture, different from members of other cultural groups while similar to members of his or her own. Finally, we mean human being as an individual, distinct and unique within a particular cultural group.

I am all of this simultaneously, as if I were made of many concentric shells that have grown within an outer shell, until the center of my personal ego takes shape within the inherited environment—physiological, mental, affective, spiritual—that is an integral part of my total self. I can see myself as a cumulative cluster of experiences, structured in a unique manner, which exists nowhere else in space-time, which never existed before, and which will never be duplicated exactly at any other time in the entire ongoing cosmos. In a sense, I can say that I constitute a miniature world of my own, a world that I could destroy if I wanted to, a world that I can possibly modify and transform by my own initiative and decision to a degree that is probably beyond what I have learned to believe.

We are apt to hesitate in accepting the idea that we are actually making the world in which we live. The statement sounds paradoxical; we appeal to our personal experience, and many instances come to mind when things did not happen the way we wanted them. The evident conclusion that imposes itself upon us is that we *do not make* our world. Even when one can say that he or she is the master of his or her own soul, each must recognize that an individual is not the master of circumstances, of the environment in which one lives. The very opposite is quite evident: I must adapt myself to the world in which I happen to be; I cannot adapt the world to my personal plans and wishes.

Quite true. This is simply common sense, and if we remain at the level of common sense, no refutation is possible. No common-sense refutation was possible when, generations ago, some of our ancestors refused to accept the idea that at the antipodes men were standing upside down. The fact was that the "upside-down" of common experience did not apply in this case, but this was not as evident in those days as it is now. Similarly, the statement "We make the world in which we live" goes against our common-sense experience if by "we" we mean only ourself and the individuals we know. But if "we" means the whole of humankind, viewed in space-time since the appearance of our species, the statement begins to make sense.

Yes, the world as a newborn child finds it is of human origin to a greater extent than we commonly realize, and the young *Homo sapiens* of today need that humanized world to survive. That child has exchanged the brute capacity that its first ancestor had to emerge from the animal world for the accumulated culture that generations of time-binders have made a natural endowment of the race. Experience has shown that "wild children", found occasionally among the beasts, cannot within the short span of their individual lives, recapitulate the century-long experience of the race, but children reared in a human milieu do so easily. These are thus incorporated in the "we" who have made and continue making the world in which we live. They are born and reared in a world richer than the lithosphere of rocks and mountains and the biosphere of plants and animals; they are full-fledged members of the *noösphere*, as Teilhard de Chardin calls the humanized planet.[17]

If the proverbial visitor from Mars came circling our planet now, there would be many differences from what an earlier Martian would have found two generations ago. The night side of earth, formerly pitch dark except the days when the moon shone, is now speckled with bright spots made by the lights of hundreds of cities. In the formerly empty space that surrounds the earth for a few hundred miles, a swarm of satellites appear that did not exist before. And, according to a Martian scientist, the Earth would be too old to engender a new satellite out of her now hardened body. These new earthly phenomena

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[17]Pierre Teilhard de Chardin, *The Future of Man* (New York: Harper & Row, 1964), pp. 155-184.

are not the results of changes produced by the planet as a lithosphere, hydrosphere or biosphere, they are born of the activities of the earth-human complex. They are due to our human intervention in a world that we alone can modify, remake or destroy, according to our whims. "Man takes a positive hand in creation," wrote a perceptive genius of our generation, Frank Lloyd Wright, "when he puts a building upon the earth beneath the sun."

Human Solidarity and Noöspheric Centration

As we probe into space, we discover that, of all the planets of the solar system, our Earth is the only one that carries complex living organisms on its surface. Some of them cover the soil with moss and grass; some beautify the plains and the hills with shrubs and trees; some break the silence of the air with the songs of birds and the buzzing of insects; some introduce into the landscape the movements of beasts crawling, jumping, running, and flying.

Some fifty centuries ago there appeared a distinctly new type of living organism: it emerged from the animal herd and quickly took over. Curious, active, and full of initiative, it scratched the surface of the planet with a stick and later tore it open with a plow, to make it produce more abundant and better food; it pierced the earth's innards with mine shafts and long metal tubes to extract metals and bring up fuels. Unrestricted in a choice of habitat, the animal could live in the cold of the polar regions and in the heat of the tropics in the valleys and on the peaks. It traveled on the waters and plunged deep below their surfaces; it soared into the air and darted through it at high speed; it eventually broke loose from the hold of gravitation and made a bold leap into empty space to examine and possibly exploit other astral bodies that float at great distances from the place of abode.

This new form of life is *Homo sapiens*, the time-binder, accumulating experience and skill as numbers are multiplied from generation to generation, gradually mastering the lower forms that appeared before them, using for their own purposes the blind forces of energy that have developed in the course of chemical evolution from the simple atomic structure of hydrogen to the complex instability of uranium, improving the nourishing qualities of plants, vegetables and fruits, domesticating animals, and changing their living habits to suit *Homo sapiens* own needs and fancies.

Conscious of activities and conscious of consciousness, they asked themselves, some 2,500 years ago, what made them different from the rest of existents that surround them. Some members of the kind who had the leisure to ponder over the workings of their newly discovered consciousness, were able to formulate an answer that has satisfied curiosity for many centuries. They invented a mental construct they called "nature," and they offered it as the adequate picture of what makes a distinct lump of matter or an individual form of life different from everything else that exists. Thus, they created a hierarchy of existents, layering them into three superposed kingdoms, the mineral, vegetal and animal, above which man himself stood as the observer and master.

They saw that "human nature" present in each member of their species, and for generations they derived from this notion a satisfactory account of whatever individuals and groups planned and achieved.

The time has come to invent a new mental construct that includes that basic "human nature" but transforms it upwards to a higher level of complexity in the light of what the new sciences of man have learned in the last hundred years. Instead of describing *Homo sapiens* as simply an emergent from the animal herd, which can be dominated by time-binding capacities, we view them now as a complex dynamic unit, as a growing cluster of activities that occupies a unique place in the overall process of cosmic evolution. Individuals are different in age, experience and knowledge; they form groups that are also different depending on where they live and at what stage of development their tribe or nation happens to be. Their numbers stretch along the path of history as a continuous stream of increasing consciousness, power, and capacity to change the face of the earth. From small groups scattered over the surface of the planet in rare contacts with one another, they have gathered into a huge family of nations that are just beginning to realize their interdependence and to learn the political art of coexisting in a minimum of harmonious cooperation.

Teilhard de Chardin calls *noösphere* this new layer of living forms that envelops the planet and gives it a character that makes it different from all other members of the solar system. The third planet from the sun has become humanized, and it has begun to probe into the vastness of the space that surrounds it. It has become self-

reflexive, shooting out of itself and keeping within the proper range hundreds of satellites with electronic sensors that observe what is going on at its surface in the natural interplay of atmospheric elements or in the technological inventions of nations bent on threatening one another with weapons of war.

Individuals are active cells of that huge organism, and their institutions—political, economic, technological, or educational—are its organs. Lines of transportation have provided the *noösphere* with a circulatory system; communication networks act as its nervous system, flashing information from one point to the other.

Humans are everywhere; all parts of the planet have been discovered and visited; most regions are inhabited permanently. Mount Everest was conquered; the Nautilus navigated under the ice of the North Pole; Antarctica is peopled year-round by scientists from various nations. The depths of the ocean are surveyed; the crew of Apollo 11 landed on the moon and left on it human-designed instruments that measure its seismicity; electronic probes have recorded the physical and chemical features of Mars and Venus.

This *noösphere* is a new phenomenon, humanly created. It is not the assumed workings of a Nature whose laws are predetermined and translatable into mathematical equations. It could be seen as the process of evolution becoming conscious of itself, emerging into a new order of existence, endowed with a brain, and enjoying the freedom to choose its own future.

The *noösphere* is the planet possessing human qualities, for good or for ill; it has reached a new stage of maturity long prepared by centuries of prehuman and protohuman life. It is the Earth come of age as a conscious entity and able either to commit suicide or guide its own future into experiences that surpass our brightest dreams. It is the embodiment of what Whitehead saw years ago when he compared our universe to an organism, self-reflexive and self-renewing.

What has been said so far corresponds to what we call in general semantics the "verbal" level, or the discursive aspect of our semantic transactions to this latest phase of the ongoing evolution.

What of the nonverbal level, of the affective and value-laden aspect of our responses to what is happening around us and within us? What experience of ours, if any, corresponds to that seemingly valid theory? Is there within us a need, a drive, a felt tendency to bind ourselves with other members of the human family in an awareness of a

common fate, in a conscious realization that we share with them this speck of dust on which we travel through space-time during a relatively short flash of consciousness between the miracle of birth and the mystery of death? Do we observe and do we feel, in that *noösphere* of which we speak, a centering tendency somewhat similar to the drive for holistic complexity that we see in the atom, the molecule, the cell, and in all organisms? Is the attraction of human to human, or its polar alternative, the rivalry between human and human, a dominant feature of human experience?

It seems that it is. If we look at history as the drama of people attempting in various ways to bind together the whole of humankind into a single unit by conquest, religious conversion, economic penetration, or technological development, we see every such attempt is a manifestation of some deep urge that breaks out here and there at some points of the space-time plenum, is never fully satisfied and reappears repeatedly under some form or other. What do people want that they are ready to bring about by any means, fair or foul? What possesses them and works them into a frenzy that cannot be stopped, like that of the beast in rut obeying unwittingly the vital drive of its species to continue in existence?

The *noösphere*-binding urge reveals itself as the most powerful and ruthless form of energy that *Homo sapiens* displays. Under its impulse, people tear apart the atom itself and make it a thundering tool with which to subjugate the human race into a unity of politics and purposes. It makes people ready to take the ultimate gamble of being one in common mode of life or of not being at all. There was a time, not long ago, when we claimed that we were making the world safe for democracy, or for our own kind of noöspheric oneness. Others wanted to unify the world in the practice of Marxism-Leninism. All great religions claimed, each in turn, to be world religions; all philosophical systems have so far striven to account for a common human destiny. What all these undertakings have in common is that they are determined to make the world one, happen what may.

While politicians, religious leaders and military men attempt to make the human race one by propaganda or sheer force, some moralists and philosophers proclaim a oneness of a different kind, which they see as the obvious characteristic of humankind evolution. "No man is an Island," writes John Donne; "To be is to be related," says the philosopher-mathematician Cassius Jackson Keyser. Confucius

formulates the Golden Rule centuries ago, and Jesus repeats the commandment, "Love Thy Neighbor like Thyself!" More recently, Hermann Keyserling sees what he calls the "emotional" order, meaning the affective component of our behavior, as the most adequate replica of the order of the universe; Sylvan Tomkins speaks of the "logic of feeling" as a truer picture of the universe than the logic of strict intellection.

> Love has always been carefully eliminated from realist and positivist concepts of the world; but sooner or later we shall have to acknowledge that it is the fundamental impulse of life, or, if you prefer, the one natural medium in which the rising course of evolution can proceed.[18]

When the world was seen as made of distinct natures distributed in a hierarchical order and interacting with one another according to definite laws, its overall oneness, though taken for granted, was not studied as a special phenomenon deserving explicit attention. Then came Jan Smuts, in the twenties, who spoke of holism as "the concrete character which distinguishes all natural objects in the world of experience."[19]

At the level of the *noösphere*, that concrete character of holistic centration becomes the awareness of our solidarity as a species sharing a common experience on a small planet and a feeling of togetherness to be fostered and transformed into actual love given and received.

Whatever happens to the world of humans, in events that are divisive like wars and rivalries or conjunctive like joint international enterprises or world hunger cooperatives, we had better see them as the cyclical pulsations of the evolutionary urge working its way in laborious self-renewals and creating step by step its own transformation into a transcending unity.

People of today stand at the growing tip of this vectorial process. Their main concern is to acquire the knowledge and the skills necessary to become experts in the art of living, working and growing together in a felt relation of loving unity.

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[18]Teilhard de Chardin, *The Future of Man* (Harper & Row 1964), p. 54.

[19]Jan Christian Smuts, *Holism and Evolution* (Viking, 1961), p. 122.

Perceiving-creating My World

From these broad and clearly visible aspects of our role in making the world in which we live, we may now advance toward the consideration of phenomena closer to our everyday life and look at them from a viewpoint quite different from that of generally accepted common sense. This brings us to one of the most baffling problems of epistemology, one that philosophers have been wrestling with from time immemorial. Until the present conceptual revolution and without the freedom to speculate that is normal at what I shall later describe in Chapter 9 as *stage four* of the epistemological profile, it had remained a haunting paradox.

The problem can be presented in several ways. There is the age-long conundrum that goes like this: if lightning strikes a tall tree and sends it crashing to the ground on a mountain where there is nobody within hearing distance, is a noise produced or not? Or, in Dr. Harry Weinberg's slightly different version:

> Suppose you and I are in a room. We see before us a desk which appears to have color, texture, shape. I leave the room. Question: Is the desk still there? The empiricist says yes, the skeptic no.[20]

Finally, we could word the problem in more abstruse language—as I saw it recently in a psychological journal, where a well-known psychologist complained that nobody has yet answered the important question "What makes the 'thingness' of a thing?" The man was asking this in all seriousness, apparently unaware that the question, as worded, is unanswerable. Evidently, there are still people who believe that if you can string words together in grammatical order and put a question mark at the end, you have asked a question to which an answer is possible and should be found. If we accept this view, what prevents us from asking "How much is much?," "How far is far?," "How many miles from near to far?" Or, as in the Middle Ages, "How many angels can stand together on the point of a needle?"

No, this is not a matter of juggling words, nor a contest of cleverness at manipulating abstract ideas without any connection with

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[20]Harry Weinberg, *Levels of Knowing and Existence* (New York: Harper & Row, 1957), p. 59

worthwhile issues. The underlying question is serious and the problem is fundamental, and we cannot evade it in a book on the art of awareness. If we cannot take a good honest look at our original contact with the outside world, we are not ready to come out of the delusive obviousness of common sense.

One way of dealing with the apparent difficulty is to come back to the central notion of abstraction and orders of abstraction. From what is going on, I choose, consciously or unconsciously, certain elements that are within the range of my senses, unaided or aided by instruments. This is my first-order experience; this is where I collect the raw data of my experience. For instance, the green patch of color that I see against the background of a lighter shade on the wall in front of my desk is the raw visual impression on my retina. My brain will quickly analyze the impression in terms of its relative shades, of its shape as learned from other senses, of its perspective, its texture. It will cut it out of the surrounding colors as a distinct object, in this case a sofa bed. If the room were in darkness, I could not start the series of activities with this green patch on my retina, and my brain could not abstract the sofa bed from the whirling dance of electrons that surround me. It would have disappeared in the colorless world of atoms and radiation that we now accept as the background texture of the universe.

What we make of that background texture is a creation of ours, made possible under certain circumstances. It is a joint product of what is going on and of what we are and do. This product is kept in existence by the simultaneous action of two forms of energy. One is the energy of the cosmos of which we are a part, and the other is the specific energy of the part that we are, both interacting, and by this interacting initiating new levels of existence. This new level of existence, created by me and bound to disappear when I fade out of the picture, is my world, my personal contribution to the enrichment of the cosmos, a world that is and will forever remain a unique, irreplaceable, and nonrepeatable feature of the total space-time cosmos. I create my world as I perceive it. My world is me-in-action from the moment I was conceived to the moment my last living cell will stop functioning. It has the same dimensions as I have; it lasts the same number of years as I do; it covers the space that I have covered; it is populated by the people that I have known; it is located in history where I happen to be located; it is part of the cultural phenomenon to

which I belong. It invades other personal worlds to the extent that I generate enough human energy to irradiate to them, into them, and through them.

This world of mine is distinct from the world that *you* create and of which *you* are the center. Our worlds may overlap to some extent, as they do now as I write and you read, but they never coincide exactly in their space-time totality, and seldom do they fuse into a common experience. When fusion occurs, however, it is an unutterable experience, clearly beyond words, at a level of existence that words cannot reach. There is the total surrender and the ecstasy of reciprocated love, and less spectacular degrees of unity in living are experienced when a common insight makes two or more persons share in a discovery of enjoyment of a notion that reaches deep into their world of values.

It is at the level of values that our individual worlds have a greater chance of fusing. We are observer-participants in the world, and it is as participants, rather than observers, that we share a common experience. This participation can be seen as just below the verbal level as the flesh is just below the skin, feeding it, supporting it, and protected by it. Within the flesh are buried the vital phenomena of metabolic exchanges, renewal, and growth. Below the verbal level are buried the metabolic exchanges of values internalized and expressed in behavior. Buried also are the felt attractions and repulsions, the yieldings and resistings, the commitments and detachments, all the moving, interacting, and growing elements of life-in-depth.

When we start speaking about these, we quickly realize that our vocabulary is inadequate, metaphoric for the most part, and laden with connotations that distract our capacity to observe with a fresh vision. And yet, if we look well, this is where we can detect the connective colloidal tissue that binds our human world together. In science, common acceptance of a theory is what makes it "objective" for a time, until it is replaced by a more acceptable one. In human affairs, it is the sharing of values and the common adherence to their requirements that make understanding and cooperation possible. Yielding to love instead of holding on to the rules of discursive logic is what makes *vie-a-deux* (life-of-two-for-two) possible, enjoyable and fruitful. A common dedication to a core of values is what holds "movements," institutions, and organizations together during periods of intensive and difficult growth. Later, the values may harden into

sets of rules and procedures, the interpretation of which gradually assumes a "logical" character. When this goes too far, we speak of the "letter of the law" versus the "spirit of the law."

Now that we speak of matter-energy, or of energy assuming a tangible form and being called "matter" when it reaches the level of compactness necessary for our sensorium to become aware of it, could we not speak of the energetic-feeling-purposive-evaluating element of human functioning as the microscopic and submicroscopic levels of what we are? Our knowledge of these levels and our consequent techniques would then give us a mastery of human affairs comparable to our growing mastery of the physical world through our knowledge of its atomic substructure.

The verbal level—in the spoken word, the written word, the taped word, the works of art, and the monuments—would correspond to matter as opposed to energy, to apparent stability as opposed to everchanging motility, to "reality" that is sensed as opposed to "process" that is postulated. The atomic value of a person, of a book, of an organization would be measured in terms of its "radioactivity," not of its bulk in weight, not of its surface finish in shine or color.

Summary

We began this chapter by discussing the evolution of our extensions of technology, methods of thinking-feeling acting, and theories and doctrines. The world of extensions has become the humanized world in which we live and guide ourselves in a limitless "unknown."

The evolution of this superorganic universe takes place by what Korzybski called time-binding. This refers to the frequency with which humans use their capacity to invent and innovate by combining the elements of different times to create a life-space that did not exist before.

Teilhard de Chardin called this an activity of the *noösphere*, which he saw as the humanizing of planet Earth. The *noösphere*, is evolution become aware of itself. When we, as individuals, tune ourselves to this phenomenon, we become aware of our solidarity as a species; we become participants in a common enterprise.

In the current epistemic revolution, we see that we make the world in which we live to a greater extent than previously realized. Now we can see how determinism, laws of nature, and predictability, as high order abstractions of the past, would not allow us to think in

terms of inventing and shaping our environment. It has not only become "thinkable," but an imperative value to be carried out in every area of our lives. As a start, I wish to introduce "Semantic Stages of Development" as a way of considering how we may enter this new creative process.

CHAPTER 8

multidimensionality and complexification

Bees build their honeycomb in six-sided cells that are marvels of engineering. They do not have to learn how to do it; the plan according to which they work is programmed in their organism, and they follow it faithfully, without changing it or improving it.

Beavers are born builders. The dams they throw across streams are of solid construction, and their huts are also masterpieces of convenience and usefulness (for beavers, of course).

Birds build their nests in similar fashion. Naturalists tell us that there is a limited range of variation and initiative in their work. Swallows have adapted their mud nests to the eaves of buildings, which did not exist in their natural habitat before people came upon the scene.

In these and similar cases, the plans are given by Mother Nature; the process is instinctive. Unconscious drives trigger series of ordered activities that establish working relations between the needs of the animal and the conditions of the environment.[1]

The Structured Unconscious

Humans, as semantic transactors—as thinking, feeling, self-moving and electrochemical processes—have a *first* nature that determines some of their behavior, just as it does for the bee, the beaver or the birds. But humans also acquire a *second* nature, which we may call the *structured unconscious* that determines—before intelligent

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[1]The theory of instinctive behavior is limited to whatever information is processed by the author at the present time. This world is in a state of rapid change, and no theory propounded can assume a permanent stability.

and volitional control—the manner in which they transact with people, things, situations, language, and symbols. They assimilate, in their unconscious, patterns of activity that are not inherited through the chromosomes they received from their parents. These patterns are cultural patterns that vary from one culture to another. They differentiate a Chinese from a Westerner, a German from a Frenchman, even an Englishman from an American—although in the last case, the languages are practically identical. Cultural differences are found in vocabularies, in social mannerisms, and in the way people eat, cook, furnish their houses, play games, dance, greet one another—do whatever is done, as we say, "spontaneously" or "naturally."

This cultural second nature reaches an even finer degree of differentiation: the cultural unconscious becomes a distinctive *personal* unconscious, a dynamic pattern of attitudes, habits, internalized values, and modes of thinking. This becomes the pattern by which each person relates to the world of things and people, observes and judges that world, and expresses himself to himself and to his surroundings.

Because *unconscious* is usually taken as a psychological term, we may fall back into the old rut of the distinction between mental and physical and may overlook the fact that this acquired second nature goes deep into our muscular tissues and our glandular nervous system.

A well-known psychiatrist put it as follows:

> Though obvious, it is also perhaps well to emphasize that fact that distinctions between organic and psychogenic are sometimes far from absolute. Organic changes in the organism must occur not only in the psychopath, the schizophrenic, and the hysterical patient, but in all people in response to every item of experience. He who learns French, gets married, dissects a cadaver, is frightened by a dog, or looks for a new word in the dictionary, can scarcely be conceived of as emerging with the synaptic patterns of his nervous system entirely unchanged. It would not be profitable to confine our concept of what is organic to the cellular level with so much already known which shows that molecular and submolecular changes (colloidal, electrochemical, etc.) are regularly resulting from our acts of learning or, if one prefers, from all our conditioning. He who ever saw a miser, an honest man, a bigot, a golf enthusiast, or a person who genuinely loves another will not have to be told that such changes can be enduring.[2]

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[2]Hervey Cleckley, *The Mask of Sanity* (St. Louis: Mosby 1950), p. 442.

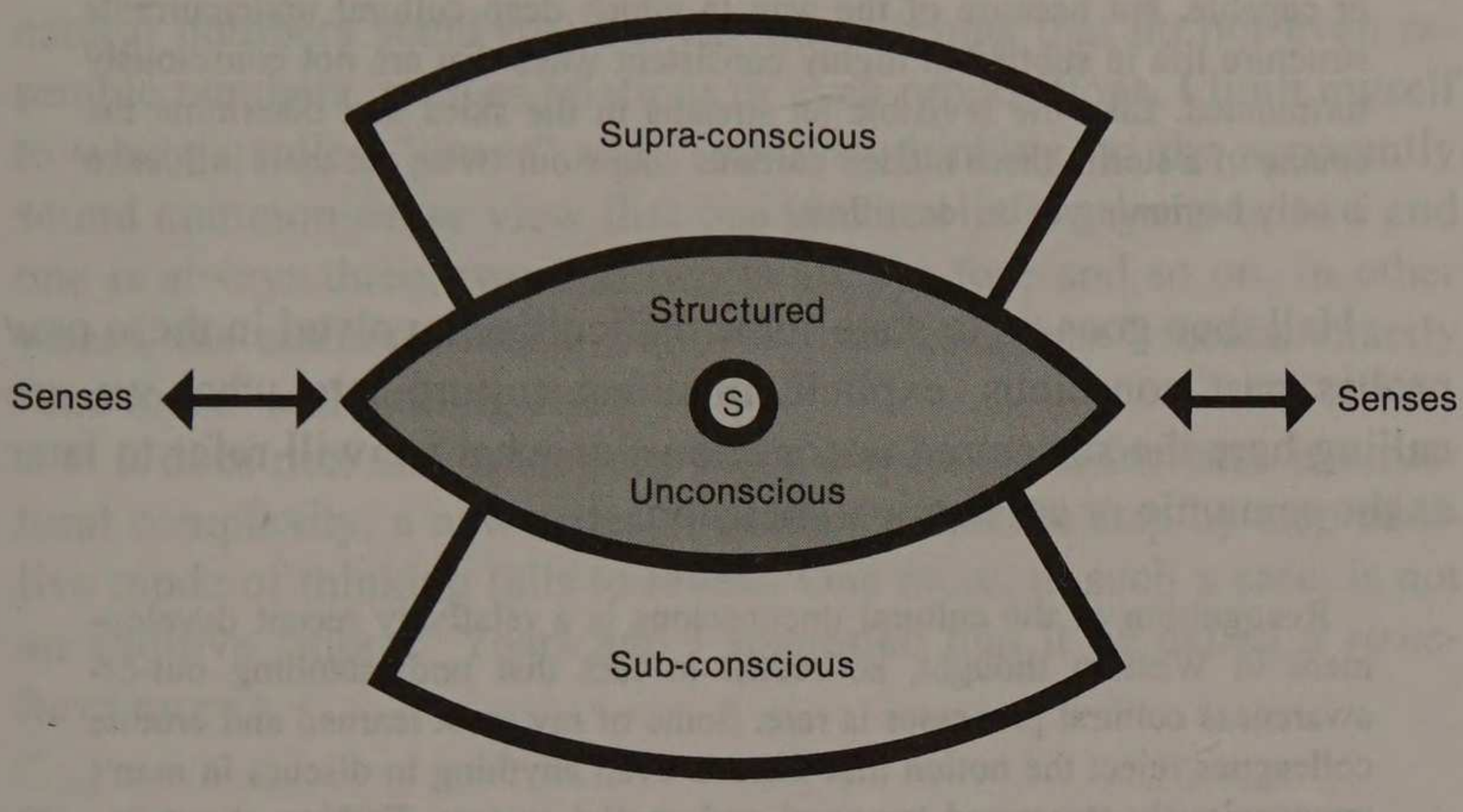

Figure 9. The structured unconscious. Sensations, dreams from the subconscious and intuitions from the supraconscious have to go through it to reach the inner Self (S).

The consequence is that an adult who wants to practice the art of awareness quickly discovers that the organism within which she finds herself has many built-in features, some that are useful and some that are obsolete for our day and age. It is like an old house whose plumbing and wiring require close inspection, and perhaps complete renovation. Kahlil Gibran uses a stronger simile: "It is not a garment I cast off this day, but a skin that I tear with my own hands." Indeed, the built-in features of our personal unconscious have become parts of ourselves, like the skin that stands between our flesh and the outside.

There are many strands to that unconscious, woven through the very fibers of our semantic organism. At the thinking level, we call them hidden assumptions, ideas, theories, and methods of thinking that we take for granted. They form the warp and woof of our logical consistency.

One who has explored this "hidden dimension" is anthropologist Edward T. Hall:

We have been taught to think linearly rather than comprehensively, and we do this not through conscious design or because we are not intelligent or capable, but because of the way in which deep cultural undercurrents structure life in subtle but highly consistent ways that are not consciously formulated. Like the invisible jet streams in the skies that determine the course of a storm, these hidden currents shape our lives; yet their influence is only beginning to be identified.[3]

Hall then goes on to state some difficulties involved in these new probes past conscious, explicit, manifest culture into what we are calling here the structured unconscious, or what we will refer to later as the semantic or epistemic dimension.

> Recognition of the cultural unconscious is a relatively recent development in Western thought, so recent in fact that understanding out-of-awareness cultural processes is rare. Some of my most learned and erudite colleagues reject the notion that there is even anything to discuss in man's unconsciously structured temporal and spatial system. Talking about unconscious culture in concrete terms is a little bit like talking about writing systems for language prior to the development of writing. The reader should ponder a moment on what it would be like to live ten thousand years ago or more, trying to grapple with the analysis of language. Of course there would be those who verbalized freely, yet were completely unaware of the fact that there was a system that regulated their speech.[4]

We will see in later chapters that the words we use and the manner in which we link them together in grammatical sequence determines some of our behavior. We remember how the scientists of the late eighteenth century were delayed in their advance toward the discovery of thermodynamics by the unconscious assumption that heat was a chemical element because its name was a substantive. But there is another language that we take as a revelation of what is "really" going on in the "objective" world, the language of arithmetic that as we learned it in grade school.

I am not speaking here of superstitions about numbers; most of us are free from these primitive reactions (except, perhaps, the owners of the many modern buildings and hotels that pretend to have no

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[3]Edward T. Hall, *Beyond Culture* (New York: Anchor Press/Doubleday, 1976), p. 9.

[4]Hall, *Beyond Culture*, pp. 143-144.

thirteenth floor). Nor am I speaking of advanced mathematics, where the methods are not confined to the manipulation of "quantities" (that natural numbers stand for) but extend to things that do not even resemble numbers, such as relations or even propositions. I limit myself to what is called "linear" and "additive" thinking, to the apparently sound common-sense view that one and one is always two, two and one is always three, two and two is always four and so on. In other words, the additive thinker believes that "one more" means exactly "one more" and nothing else.

It does not! One more may mean a spectacular increase in structural complexity, a new order of existence that the step-by-step additive mode of thinking fails to reveal. One more, in such a case, is not an additive "more." Years ago I suggested that it be called a *structural* more.[5]

The Structural More

When we think with natural numbers, we can add and subtract; this is a fundamental operation of arithmetic, and it is wonderful as long as we remain in the world of arithmetic. The trouble begins when we unwittingly use additive thinking in human affairs where it does not apply. For instance, it is true that two plus one makes three, but it is not equally true that two persons who are joined by a third person while they are in intimate rapport consider that third person as a mere addition to the pair. Their "twoness" is disturbed (or perhaps relieved) by the "threeness" that replaces it. Here two plus one is not a case of addition, it is a case of total change, of transformation. And the important characteristic of the process is precisely that transformation.

This transformation is an empirical fact that *more* in "three is one *more* than two" fails to reveal. The word involves a comparison between two groups of units that are of the same kind, one being smaller than the other in size but not different in structure, as in "Five dollars is *more* than four dollars" or "There is room for one *more*." More does not adequately express what happens after the size of the smaller group has reached the critical point beyond which it becomes

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[5]J. Samuel Bois, "Introducing the Structural More", in *Explorations in Awareness* (New York: Harper & Row, 1957), Chap. 25, pp. 160-65.

a group that suddenly acquires a structure and a whole set of properties that were nonexistent before the increase. Consequently, it belongs to the category of terms of which Korzybski said:

> With our present low development and the lack of structural researches, we still keep an additive Aristotelian language, which is, perhaps, able to deal with additive, simple, immediate and comparatively unimportant issues, but is entirely unfit structurally to deal with principles which underlie the most fundamental problems of life.[6]

His suggestion was that we must create new terms.

> If facts cannot be covered by given linguistic forms and methods, new forms, new structures, new methods are invented and created to cover the structure of facts in nature.[7]

To convey the idea that the smaller group has been absorbed and transformed into a larger one, I suggest that we give *more* a new meaning when circumstances require. Apart from the generally accepted *additive more*, let us have a *structural more*. This would imply two things: (1) In the case of the two persons whose rapport had been interrupted by the addition of a third person, the second group, that of three persons, contains—additively—one unit more than the original pair; (2) the three units, including the two original units, are now in a web of relationships that did not exist when the pair was alone; the new group is not only larger, it is structured according to a different and more complex pattern.

The structural "less" corresponds to the structural "more," depending on whether we go up from the simple to the complex, or down from the complex to the simple—from the parts to the whole or from the whole to its parts. Analysis is a search for the simple, for the elements that do not have the structure that make them a complex whole; synthesis is an attempt to put them together again in a structure that transforms them to a different order of existence.

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[6]Korzybski, *Science and Sanity* (Lakeville Conn.: International Non-Aristotelian Library, 1933, 1941, 1948, 1958) p. 265.

[7]Korzybski, *Science and Sanity*, p. 172.

Many analogies derived from the physical sciences show how the structural more corresponds to transformations that take place in the world of material things. Sand, water, and cement, when mixed in the proper proportions and allowed to set, become a solid block of concrete, with the properties that none of the three components, taken singly, could ever have. Gunpowder, made of charcoal, sulfur, and saltpeter, has a power of explosion when ignited that none of the elements could develop by itself.

In chemical compounds, the structural "more" is more evident still. Water is entirely different from the two gases it contains. Sulfuric acid has properties that none of its constituents, sulfur, hydrogen and oxygen, possesses. For chemical elements, the structural proportion of the elements is a characteristic of the whole; it does not allow the addition of a single element outside the proportion expressed by the formula.

In biology, the transformation is even more evident. A seed put in the soil becomes the seat of an abstracting process; it chooses from the chemical elements that surround it, measures what quantity of each it requires at what time, and absorbs and combines them with the oxygen of the air and the photons of the sun to form a complex product—the plant or the tree—that will become something different from the seed itself.

Structural More and Our Genetic Self

Additive thinking, where *more* and *plus* have a linear meaning, and where they fail to suggest a transformation of the constitutive elements of the emergent whole, pervades most of our built-in unconscious; it often exerts a harmful influence on our semantic transactions.

In the standard definition: "man, a rational animal," it suggests a linking of two heterogeneous entities, an addition of two elements: a body and a mind, a physical organism and a soul, an animal that is less self-sufficient than many but one that has an enlarged cerebral cortex that makes him superior to his fellow animals. If we think additively, as we do more often than we realize, we may conceive of our difference from animals as a plus or minus affair; we may use comparatives, and say—for instance—that orangutans are stronger, dogs have a wider range of hearing. Continuing our comparison from

the human side, we may say that we are more intelligent and more resourceful than any of these animals.

All these expressions are inadequate, even misleading. The differences between humans and animals are not differences in degree, as the additive more implies, they are differences in *kind*. Human vision is not to be compared to the falcon's, but it is part of a seeing capacity that can use the Palomar telescope, the radar telescope and the electron microscope. The human capacity for speed is not different in degree from the cheetah's, but it is part of an endowment that overcame gravitation when astronauts went into orbit. Human strength is not a matter of muscles, as is the orangutan's; it is the resultant power of our skills, theories, and knowledge of energies when we release the power of nuclear forces. We amplify our hearing to the point of listening to conversations across the oceans or to signals from the deep reaches of space.

If we introduce the structural more in our thinking, this new and more adequate picture of our species becomes easy. We do not result from the juxtaposition of animal characteristics and reasoning powers or from the superposition of an elaborate cortex on top of an animal brain. We have no purely "animal" and no purely "spiritual" characteristics. We have characteristics that are unique to us. They are *human* characteristics. All our reactions, even those that resemble animal reactions, such as hunger, sex, homeostasis, are shot through and through with meaning; they are related to what we think of ourselves, of our place in the world, of our function as individuals, as a marriage partner, a professional, an employee or an employer, a young woman or man or an old woman or man. Our transactions are *semantic* transactions. A man may go on a hunger strike; a woman may deprive herself to keep the youthful figure shown on TV commercials. They may both suffer from sexual frigidity for reasons other than the physiological condition of their gonads. As happens in chemical compounds, it is the structure of the whole that determines what elements will be accepted into the structure and in what quantity. The whole, for humans, is not simply the psychophysical activities that we have in common with all other members of the human family; it is the individual as a highly differentiated semantic transactor with a unique past, environment, anticipated future, and with unique thoughts, feelings, values and bodily habits.

Structural More and Human Activities

Our formulation of the structural more applies to a variety of situations in which an increase or a decrease of a certain element beyond or below a critical point changes the whole picture. I am thinking now of the break-even point in cost accounting, where a small difference, above or below, means prosperity or bankruptcy. I am thinking also of the "straw that breaks the camel's back," when a trivial incident brings about an unexpected emotional explosion. I am also thinking of something that may appear quite different at first sight: the disproportionate influence that an uncooperative individual may have in a working group.

Let us amplify a bit on this last example. A group of four men, Fred, Tom, Dick and Harry, are jointly responsible for the survival and development of a small company. Let us assume that one of them, Harry, is habitually noncooperative, or systematically negative in his approach to common problems, or so mentally deficient that he cannot follow the rest of them. Arithmetically speaking, he is one of four, or 25 percent of the group, but he can interfere with more than 60 percent of the group activities. In fact, each of them has a direct influence on over 60 percent of their joint activities. This is another case where plain additive thinking fails to cover the empirical facts of the situation.

Figure it out for yourself. Count the number of possible interactions among the four of them, taking them with two or three at a time. If two at a time, we have six possibilities: Fred with Tom, Fred with Dick, Fred with Harry, Tom with Dick, Tom with Harry, and Dick with Harry. If three at a time, we have four alternatives: Fred, Tom, Dick; Fred, Tom, Harry; Fred, Dick Harry; and Tom, Dick Harry. Now count how many times Harry appears in these possible groupings: six times out of ten. Harry can interfere with 60 percent of the work although he is only one of the four partners. In fact, his nuisance value is higher than that because I did not include a third alternative: that of the whole group in a joint session. Does this not also show the terrific power the right of veto gives one nation in the Security Council? Does it also show the historical importance of the few votes that made Senator John Kennedy the president of the Country?

When one applies for a job, experience is counted in years. Ten years of experience is taken as five times two years—or surely as much more than two years. This assumes that one year of experience

is a unit that is comparable for one individual and the next and that each consecutive year has added one more degree of efficiency. What of the person whose fifteen years mean simply a routine repetition of her first year, without change and without personal growth? This is a case where fifteen times one is not fifteen but only one. It makes me think of one of my philosophy professors: by looking at our lecture notes we could tell the students of the following year what he would talk about on a certain day, what examples he would give, and what jokes he was going to tell. Each year was a replica of his first year of teaching.

Years ago I agreed to give a seminar on executive methods to a group of young executives. In discussing the arrangements, I said that I wanted no more than fifteen participants and I explained why. On the first morning of the seminar I found fifty-four students in the lecture room. I protested but in vain. The reasoning of the man responsible for the arrangements was simple; if I could talk to fifteen persons, I could as well talk to fifty-four, and the company would get more than three times as much for its money. The actual difference was that it got less, because with such a large group, the necessary participation was not possible.

Another fallacy is "the more books you read the more you know" or "the more words you can read in a minute the more material you can handle." There is a catch in this, and no comprehension test will convince me that it applies to all kinds of reading material. If one reads to add items of the same kind as those he has already filed away in his memory, fine; but the information that one fails to assimilate may make the difference between routine reading and creative reading. The comprehension test is itself a counting of individual items, not an evaluation of the structure of the total message. Professor Whitehead, the mathematician and philosopher, once said to his friend, Lucien Price:

> I read very, very slowly. Sometimes I see myself referred to as a "well-read" man. As a manner of fact, I have not read a great quantity of books; but I think about what I read, and it sticks.[8]

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[8]Lucien Price, *Dialogues of Alfred North Whitehead* (Boston: Little, Brown, 1954), p. 170.

Arithmetic is a language, a very sharp and precise language; it is useful for purposes that are in line with it but misleading for purposes that are foreign to it. Additive thinking is unable to deal with most human problems, but it is embedded so deeply in our cultural unconscious that we are seldom aware of the manner in which it shades our thinking. To know its limitations is not enough, however; we have to devise new means of dealing with the complexity of human situations. The formulation of the structural more is a tentative step in what I consider the proper direction. Much structural research is needed if we are to invent language forms less inadequate to the empirical facts they are intended to cover.

Semantic Jumps

For the structural more—or the structural less—there is a corresponding change in our semantic transaction pattern. This change, even if very slight, involves a modification of our outlook on life. Sometimes it may be spectacular; it may mean a genuine revolution in our inner world of ideas and values. I suggest that we call it a *semantic jump*.

It reminds me of the rapid flight of a squirrel I disturbed in a pine forest. It ran like lightning to a tall ponderosa, climbed it in a flash, and jumped from its highest branches to the next tree and then to the next, when it stopped and looked at me from a world I could not reach. Or it may be like the experience of the astronaut who suddenly finds himself weightless after the blast that tore him out of the web of gravitational forces. It may feel like entering a new world, where relations between things and people have assumed new dimensions and new proportions.

If we look deeply into our experiences, we can find many such changes, although it may take some time to become aware of some of them. Indeed, we may have failed to profit from them as much as we could have because we did not know enough about them and about their significance. They may have been brought about by any change in any of the seven aspects of our semantic transactions (Figure 2, p. 32).

Let us begin our examination by looking at the electrochemical aspect that takes place at the level of our organs, glands and nervous system. Some changes came about spontaneously and naturally, as when our sex glands became active at puberty and suddenly revealed

to us a world where sex and love gave a peculiar glow to everything. Some change agents were human discoveries, as when opium, hashish, or a bout of drunkenness sweeps away the clouds of anxiety that darkens our inner world. Some change agents are studied in laboratories and are sharpened as scientific instruments for producing specific results: tranquilizers, energizers, LSD, peyote extracts, and such. In these biochemical experiences, there are definite changes in the outlook on the world held by the subject, most of which are permanent and irreversible. One does not regress physiologically from puberty back to infancy, and the nervous system of a person who has taken LSD or submitted to electroshock treatment cannot be the same as it was before.

Now, the environmental aspect. We all know that a change of scene often brings about a change in outlook. We may not all be equally sensitive to small changes of furniture arrangement, or to decorating or landscaping, or to the arrival of different people in our immediate neighborhood, but most of us will remember changes of environment that have made a great difference in our life. For example, people compare California to the Middle West or to the East, where they lived before, but their home of earlier years does not mean the same as it did before they knew what it is like to have a home in the Western part of the country. Or, if we take environment to mean a semantic milieu, we may have a case like that of a young woman, born in a German-Swiss Protestant family, sent to a Spanish Catholic boarding school, and later marrying an American, non-churchgoing husband. This change in the evaluation of the environment is, again, what I call a semantic jump.

When our deep feelings are involved, the face of our world undergoes a significant transformation. Whoever recalls what it means to be really in love, what it means to have a life's companion wrenched away by the hand of death, whoever has dedicated herself to a cause or witnessed the defeat of a cause she held dear, all know that their world before the event was not the same world after, and the world after could not bring back the world of before. Their world either expanded or shrank, moved its focus from one center to another, or disappeared entirely to be replaced with one they had not anticipated. The change in outlook and personal reactions that take place is also what I call a semantic jump. It may be forward or backward, toward more freedom or into a dark pit of misery.

At the thinking level we have such things as brainwashing and religious conversion. Accepting a new theory may mean a new reorientation for a whole life; and the psychotherapeutic process could be described as a chain reaction of successive insights that are so many jumps out of the darkness of confusion into the light of awareness and self-understanding.

The acquisition of a new skill, or any change in our self-moving activities—whether it is relaxation, the practice of sensory awareness, or the sudden realization of how it feels to sketch, to paint, or to create in an art form—is likely to bring about semantic reactions that may surprise us by their deep reaching significance.

Our past may have kept an iron grip on our feelings and on our thoughts. A sudden insight, achieved by psychoanalysis or otherwise, may release that grip and give us a freedom of action that we never dreamed possible before.

Finally, the prospect of a bright future is a stimulant that rejuvenates—as the anticipation of a defeat saps our energies, dulls our mind, and spreads gloom throughout the world in which we live.

There is much talk about security nowadays. For many persons security means living in a world that stays put, a world in which we can organize our life on a routine basis—with just enough distraction to relieve boredom. We expect a static core of existence as we expect people to have a static core of personality, which we can define and with which we can establish relations that are predictable in all details. If people don't stay put in the pattern of behavior that we have assumed is in keeping with their nature, we blame them for being inconsistent, changeable, purposeless, or crafty.

All this goes back to the old Aristotelian view of the world that fits nicely with the language we speak. Things are what they were, what they are, and what they will be. Whatever happens is thought to happen as a movement in space or in time. It does not happen through them, and does not transform their intimate structure as it happens, but pushes them unchanged along the road of history from year to year. From this simple view of things and persons moving along, the practice of semantic jumping makes us pass to a learned awareness that the world and we are swirls of restless processes. Our bodies live because they are complexes of actions, circulation, chemical exchanges, respiration, and electric charges in constant variation. If we stopped breathing, we would die. This moving flux of changing proc-

esses is the dynamic warp and woof of our existence. As Alan Watts puts it: "The only way to make sense out of change is to plunge into it, move with it, and join the dance.[9]"

This "dance of life," as Havelock Ellis called it, has styles and fashions that vary from one generation to the next, from one part of the world to another, from one theoretical set of postulates to a different set. The art of semantic jumping consists of skills: (1) the skill of keeping in step with the evolving style of the dance of our own culture, (2) the skill of adopting, when needed, the basic patterns of the most exotic dance styles of other cultures and blending them with our own; and (3) the skill of participating in the creation of the new styles that the evolution of humankind requires, for instance, passing from nationalism to internationalism, from traditional religion to genuine ecumenism, from competing philosophies to congruence in the enterprise of making the most of the best that humans have invented so far. We can substitute *thinking* for *dance* in these statements and the theme will remain the same, transposed, as it were, into the key of accepted Western intellectuality.

This brings me back to the structural more that we discussed in the previous pages. What I meant to convey, when I chose the words *structure* and *more* was not only a change obtained by a mysterious legerdemain from one fixed pattern to a more complex pattern that would also be fixed. It *was* that, but something else as well, and this something else is that particular operation that I am now attempting to describe as semantic jumping. It is by practicing it that one eventually gets the feel of what I mean.

For instance, you are reading a page on which each statement makes sense by itself, or at least you feel it does. Sometimes you may find that a whole page is full of such statements, but they sound commonplace and trivial. They file past, in front of your eyes, as so many obvious truths with which you are already familiar. They fail to click together, to form an original pattern that would glow and give you an insight. You begin to wonder why the author, whom you happen to respect, is making such a fuss about it all. If you don't watch yourself, you may pass judgment that she or he was in a weak mo-

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[9]Alan Watts, *The Wisdom of Insecurity* (New York: Pantheon, 1951), p. 43

ment when writing that passage, and you dismiss the whole message as too simple, too banal to deserve your sophisticated attention.

If the writer has otherwise stimulated your thinking, this is precisely the place where you might try semantic jumping and might integrate, in a structure of higher dimensionality, the elements that you see scattered in front of you. Or, to change the analogy (and at this stage of mental operations we do not have to follow the strict rules of consistent analogies), you may read in depth, doing your best to internalize the underlying structure of the whole message. This is the time to use your constructive imagination, to rocket yourself out of the gravitation of common sense with its earth-hugging weight.

These jumps vary according to the semantic barrier over which they take us. Some of these barriers are within our own culture, separating areas that for many years we arbitrarily classified as closed to outside interference, for instance, science and religion, pure science and applied science, psychology and physiology, mental and physical, business and pleasure, freedom and authority—in fact, all the dualisms that divide our mental world in "prospectors' lots" that are jealously guarded by the holders of the properly registered titles.

There are higher barriers between cultures themselves, as between Eastern and Western philosophies, or between the communist and the capitalist economic and political theories. These require long practice in semantic jumping up to a higher level of abstraction, where the Iron on the Bamboo curtains fade into relative insignificance, like farm fences viewed from the windows of a high-flying plane.

Finally, there are historical jumps, transitions from one method of soaring into speculation to a more powerful one that raises the ultimate ceiling of our ascension to the stratosphere of scientific generalizations. We first use these heights for the limited purpose of advancing the physical sciences, without imperiling—as we think—the fate of human beings. Now the time has come to bring the human sciences to these heights of adventurous speculation, way above the most exalted peaks of accumulated common sense. There, the artist, the mathematician, and the nondoctrinal philosopher may meet in orbit, well above the highs and the lows of terrestrial weather, but with the hope of eventually influencing that weather and taming its hurricanes.

In the world of thinking, humans have achieved jumps even more spectacular than those of the astronauts and cosmonauts. When these jumps occurred, they were turning points in the history of our progress. From the days, not so far distant, when Bishop Berkeley ridiculed Newton in the name of common sense, we have freed ourselves from the laws of logical gravitation that shackled us to what we could sense or imagined as sensed. Berkeley expressed his down to earth view of the world as follows:

> Now, as our sense is strained and puzzled with the perception of objects extremely minute, even so the imagination, which faculty derives from sense, is very much strained and puzzled to frame clear ideas of the least particles of time, or of the least increments generated therein . . . The further the mind analyseth and pursueth these fugitive ideas, the more it is lost and bewildered; the objects, at first fleeting and minute, soon vanish out of sight . . . They are neither finite quantities, nor quantities infinitely small, nor yet nothing. May we not call them ghosts of departed quantities . . . ?[10]

So said the good bishop of Cloyne as he upbraided Newton for proposing his *method of fluxions,* which was to become *calculus*, one of the most powerful thinking tools ever invented by Western culture. Berkeley would not accept what he derisively called "ghosts of departed quantities." As a common-sense philosopher, he had not acquired the freedom to soar beyond what he could see, hear, or feel, or imagine as seen, heard or felt.

Let us contrast Berkeley's views with those of a mental cosmonaut of our generation, Sir Arthur Eddington, the British astronomer.

> We have pictured the atom as consisting of a heavy nucleus with a number of nimble electrons circulating around it like planets around the sun . . . You must not take this picture too literally. The orbits can scarcely refer to a motion in space . . . and the electron cannot be localized in the way implied in the picture . . . The physicist draws an elaborate plan of the atom and then proceeds critically to erase each detail in turn. What is left is the atom of modern physics . . . There is not enough to form a picture, but something is left for the mathematician to work on.[11]

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[10]Bishop Berkeley, "The Analyst" in *The World of Mathematics*, ed. James R. Newman (New York; Simon & Schuster, 1956), pp. 289, 292.

[11]Arthur Eddington, *The World of Mathematics*, pp. 1560, 1561.

What a difference—what a jump—between the statements of Berkeley and those of Eddington. Ten generations ago Berkeley protested against "straining and puzzling" our imagination beyond what we can picture easily. Today we accept as normal the prescriptions of Eddington and his fellow scientists when they say (in effect): "Take away the mental picture; come out of your sensory imagination into the outer space of pure abstraction. This is where we, mathematicians, work in the freedom of a non-Aristotelian logic that is not bound any longer by the gravitation of common sense."

Too few of us have been sufficiently identified with the scientific development of the West to get the feel of what this intellectual jump means. I have to use similes to convey that feeling, and unless you take time to meditate upon them, you may think that I am just indulging in a literary exercise, which I am not. I see the Bishop's outlook on the world as that of a country squire surveying his estate as he rides on horseback; I see Eddington's outlook as that of an astronaut orbiting silently around the planet—or as commuting freely from the earth to any point in the universe where he happens to have to work that day. To quote Eddington again:

> We must seek a knowledge which is neither of actors and actions . . . The knowledge which we require is knowledge of a structure of pattern contained in the action. I think that the artist may partly understand what I mean.[12]

No Aristotelian system that rationalizes a subject-predicate language and therefore conceives of the world as made of actors engaged in actions can meet these requirements of up-to-date thinking. Our Western culture has gradually—and painfully—disengaged itself from the shackles of Aristotelianism by a series of historical semantic jumps. These will be studied in the following pages.

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[12]Arthur Eddington, *The World of Mathematics*, p. 1559.

CHAPTER 9

stages of cultural development: an epistemological profile

Humans, as functioning elements of the cosmos, were not at the beginning what they grew to become in the course of history. The different methods used to create answers that humans gave in the quest for knowing how to deal with the world and with themselves may be summarized in stages of cultural development. The semantic jumps of a culture are seen as recapitulated in each individual until he or she can reach the full maturity available in the cultural environment.

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Professor Gaston Bachelard (1884-1962) for many years taught the history and the philosophy of science at the Sorbonne. He was the first continental scientist-philosopher to comment outspokenly and favorably on Korzybski's work, and he became an honorary trustee of the Institute of General Semantics. He was a prolific writer whose books ranged from treatises on physical chemistry to poetry and essays on art. One of his books is *La Philosophie du Non*, which describes a philosophy that says *no* to its own formulations because it remains an open-ended system, constantly denying the finality of its own conclusions. It is not only non-Aristotelian, as is the Korzybskian system, but it is a bold attempt to make the negative feature of all progressive theories the characteristic of a new type of philosophy.

According to Korzybski's theory of time-binding, human beings become structurally more than their ancestors, as they add to their brainpower from generation to generation. In the course of history Western men and women have taken semantic jumps that have al-

tered their outlook on the world and their capacity to deal with it. As semantic transactors, they became different from their predecessors after each of these jumps, which are tantamount to cultural variations, to transformations of what is commonly called our *second* nature.

Bachelard saw these semantic jumps recapitulated in the life of each individual growing from infancy through childhood and adolescence, eventually reaching—in some cases—the full degree of maturity available in our cultural environment. If we fail to reach this stage, we will live technologically in the twentieth century while remaining psychologically in the Middle Ages, or further back. Or we may grow to the sophistication of our time in some areas of our life and react as a primitive in some other areas. One of the purposes of Bachelard's scheme of thinking, called the *epistemological profile* (which we are now going to display), is precisely to evaluate these differences among the various aspects of our mental life. Korzybski claimed that these differences are due not to the relatively greater amount of information about ourselves and our surroundings that we modern humans possess but to the invention of new linguistic structures and new methods of thinking.

> History shows that the discovery of isolated, though interesting facts, has had less influence on the progress of science than the discovery of new *system-functions* which produce *new linguistic structures and new methods*. In our own lifetime, some of the most revolutionary of these advances in structural adjustment and method have been accomplished...There seems no escape from admitting that no modern man can be really intelligent in 1933 if he knows nothing about these structural scientific revolutions. It is true that, because these advances are so recent, they are still represented in very technical terms; their system-functions have not yet been formulated, and so the deeper structural, epistemological and semantic simple aspects have not been worked out. These aspects are of enormous human importance. But they must be represented without such an abundance of dry technicalities, which are only a means, and not an end, in search for structure.[1]

General semantics and Bachelard's epistemological profile are an answer to Korzybski's wish for a simple representation, without dry technicalities, of Western culture's advances in thinking methods—

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[1]Korzybski, *Science and Sanity*, p. 148.

from the crude animism of the primitive to the cosmic consciousness of the creative scientist of today.

We count five stages in the development of Western culture. The first four will be described in detail, followed by a short description of the fifth stage. The fifth stage will be the object of a separate section in Part III.

1. The Sensing Stage

At stage one, individuals took their sensations and feelings as an accurate revelation of what the world was like. Their semantic transactions were *evaluative* transactions, and they did not question their objective value. *The world was what they felt it was*, threatening or inviting, beautiful or ugly, depressing or exhilarating, yielding to human whims or resisting human efforts. Things and events were personified, and ruled by arbitrary gods and spirits whose designs humans had to discover by divination—whose easily provoked anger they had to assuage by offerings and sacrifices.

In our twentieth century, people who still react at this sensing stage may not indulge in the religious rites and the magic practices of aborigines, but they have retained superstitious practices. They go to fortune-tellers; they wear good luck charms; they read the astrological column in the daily newspaper; they build buildings that have no thirteenth floor. Our common-sense language contains vestiges of primitive beliefs that personify natural phenomena. We say "There is a storm coming over the mountain" or "I cannot get rid of that stubborn cold," or "How could this happen to me?"

The term *sensing* as used here, is not limited to sensory experiences. It also covers feelings that are unquestioned and uncontrolled, feelings to which we expect people to yield, feelings that are their own self-justification, and that we do not even dream of changing because we are convinced that they have been provoked by other people—or by circumstances—over which we have no control. If I feel hurt by what you say or do, evidently *it is you who hurt me!* You do it, probably, because you want to or because you feel I am not worthy of your attention. What shall I do? Propitiate you as early humans propitiated their gods, or destroy you as they destroyed their enemies?

Here is a less tragic description of stage one that a participant in a seminar I was conducting gave me years ago:

A little toddler who is within hailing distance of his second year has a vocabulary of about ten words—mostly nouns—and he uses them in a way that greatly amuses his parents. He attaches the word "me" to anything he wants—"me cookie," "me milk," "me up," "me down." His whole conception of reality up to this present moment consists in himself and what he wants. His life oscillates between these two poles. This is cute in a toddler, and of course, quite natural, but it is neither cute nor natural in an adult. Yet there are many adults whose whole lives consist in nothing beyond establishing contact between themselves and certain things they want—"me pleasure," "me liquor," "me money," "me sex," "me power." These are the people who bedevil their home, their employees, their friends, and anybody who is unfortunate enough to oppose their desires.

The basis of moral and intellectual growth is the capacity to criticize oneself. But there are millions of people whose thoughts run along only one line: themselves and the things they want. How to get these things becomes the end of their existence, the only project in which they have interest. They are little "me cookie" people who have never grown up.

Now, for a final example, which will also introduce stage two. Years ago we spent a summer on the shores of Lake of Two Mountains, my family and I. Our daughter Johanna was eight and her brother Leonard was twelve. One sunny morning they woke up early and their first thought was for a swim. Johanna, the quicker of the two, ran to the end of the landing pier, and stopped. From his cot, her brother called: "How is the water?" She dipped her toe into the lake, withdrew it quickly, and brought her shoulders together in a shiver. "It is cold!" she yelled.

When she shouted, "It is cold!" she was reacting at the sensing stage: *what she felt was for her the objective measure of the temperature of the water.* She *felt* the water was cold, therefore the water *was* cold.

"Check with the thermometer hanging on the post," I called from the porch: "See how many degrees it reads." "Seventy-two degrees" she answered; "it is not so cold after all; come on, Len!". Soon they were both swimming and splashing without any thought of the cold.

I had invited her to jump to stage two. The message that my words implied was something like this: "Be objective and logical. The thermometer is there to tell you the 'real' temperature of the water. Correct your first impression. Since it is seventy-two degrees, it cannot be cold. The water was at that temperature yesterday afternoon, and you enjoyed it."

2. The Classifying Stage

Of course, they had no thermometers in the days of the Greek philosophers who introduced the classifying stage. The difference between stage one and stage two is not a matter of instruments, it is a matter of what we call "objectivity." It was a great advance when our forebears took the jump from stage one to stage two. They made the great discovery that the world of nature does not change with the moods of the gods or with human reactions. The world of nature has a stability of its own. A thing is identical with itself. It is human privilege and duty to use human powers of observation and to find the "real" nature of things. There are *substances*, and there are *qualities*. Substances are the "real" stuff the universe is made of. Qualities—or actions—may vary without changing the *essential nature* of persons and things.

A man's nature is that of an animal endowed with reason. Two people possess opposite qualities, and yet both are human because they have the same nature. One may be tall, the other short; one may be free, the other may be a slave. They may do different actions while their essential nature remains the same: one is sitting, the other is running; one is awake, the other is sleeping.

There is no doubt that this conscious and logical classification was extremely useful; it was the beginning of science and philosophy. As time went on, substances were classified with finer discrimination; qualities were measured more accurately and compared on statistical tables. Today, we say that Johnny has an intelligence quotient (a quality) of 120, a mechanical aptitude (another quality) at the 75th percentile of the boys in his grade, a *high* degree of aggressiveness, of extroversion. Our language has a structure consistent with that stage; it has nouns or substantives that refer to persons and things; it has adjectives that refer to qualities of nouns and adverbs that refer to qualities of actions expressed by verbs.

This structure of our subject-predicate language reveals the structure of our common-sense thinking. Every sentence in this book has this structure, and whoever wants to practice thinking within the confines of strict verbal logic is locked within the house that Aristotle built when he accepted Greek language forms as the adequate expressions of man's "natural" thinking capacities.

It does not take much observation to see that common-sense theories belong to this stage of cultural development. For people functioning at stage two, things are what our language *says* they are. The difference is not as great as it might appear because our choice of words is often determined by habits, feelings, prejudices, and conditionings that we seldom reexamine. Stage-two people are under the impression that the collective brain of their culture mirrors the world: for each word in the dictionary there is a corresponding fact, a thing, a person, an action, or a quality that is somewhere, somehow, in the objective world. If their thinking goes from one thought to another according to the rules of logic, they are sure that it goes from one fact to another in the real world. Within their brain there is a miniature of the world.

Whenever we take as ultimate truth a "clear," "positive," or "fixed" notion, we think at stage two. Whenever we think in terms of opposites, of black and white, of for or against, of either all good or all bad, of freedom versus slavery, of 100 percent this or that, we are at the classifying stage. What we call clear thinking is oversimplified thinking. When we count, we are even more impressed by our conclusions; if the Russians orbited a satellite five times the weight of our last one, we conclude that they are superior in many other respects.

Since the human mind is seen as a storeroom of facts about the world, stage-two individuals have a great respect for persons who know many things, persons with a powerful memory, persons who can answer quiz-show questions, persons who have read many books, persons who can read two thousand words a minute. They believe in speed, in making many decisions within a short time. Whether these decisions solve problems or only create new ones is another question. They are conformists who sincerely believe they have ideas of their own, and they are ready to defend their opinions.

They quibble on the meanings of words because words, for them, are actual pictures of things and events, and they want to use the "right" term that gives the "exact" picture of what is being talked about. They look for what they call the "real" meaning of words; they expect sharp, clear-cut definitions; when they ask a question they demand a definite yes-or-no answer.

They believe that any question that can be worded grammatically—and therefore logically—should have an answer. Because they

can ask "What is *the* cause of my illness . . . my success . . . my failure?" they are convinced that *one cause* accounts for their illness, success or failure. If they fail to find that cause, they must be lacking in intelligence, knowledge, or wisdom. This search for simple causality lies behind many *why* questions—and behind the many wild theories given and accepted as answers.

Kurt Lewin called this stage-two mode of thinking Aristotelian, and he contrasted it with stage three, which he called the Galilean mode. He claimed that much "scientific" psychology was still marooned at stage two.

> Present-day child psychology and affect psychology also exemplify clearly the Aristotelian habit of considering the abstractly defined classes as the essential nature of the particular object and therefore as an explanation of behavior. Whatever is common to children of a given age is set up as the fundamental character of that age. The fact that three-year-old children are quite often negative is considered evidence that negativism is inherent in the nature of three-year-olds . . . The classificatory character of its concepts and the emphasis on frequency are indicated methodologically by the commanding significance of statistics in contemporary psychology. The statistical procedure, at least in its commonest application in psychology, is the most striking expression of this Aristotelian mode of thinking.[2]

Classifying is a necessity in thinking and communicating, and there is no suggestion here that we should avoid it; the suggestion is that we should use it with full awareness of its limitations, remembering at all times that what we say of a thing, a person, or a situation does not reveal its "real nature." It is simply a way of talking about it.

3. The Relating Stage

When certain segments of Western people took the semantic jump from stage two to stage three, they did not give up their quest for objectivity; in fact, they redoubled the intensity of their drive for a more adequate knowledge of the universe as they believed it existed independently of human knowledge. From the dichotomous language of subject and predicate, of substances and qualities, of agents and actions, they passed to the language of mathematical formulas. The

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[2]Kurt Lewin, *A Dynamic Theory of Personality* (New York: McGraw-Hill, 1935), pp. 15-16.

object of their science was no longer *what things are*, it became *what things do*—or better, *how they do it.*

It meant a strong reaction against whatever smacked of metaphysics, against mere intellectual understanding that does not lead to practical accomplishment. It meant systematic observation and rigorous experimentation, both guided by the laws of induction. It meant theories that could lead to further discoveries. The human mind-in-action became attuned to a universe seen as a huge machine and developed methods to force nature to reveal its secrets.

It was the age of a science that questioned the authority of the Scriptures and of the philosophers of the past. It was the age of humans gradually assuming control over the forces of nature that they were discovering as they were perfecting their methods and their instruments.

It was the age when they were inventing an array of instruments to multiply their powers of perception: telescopes, microscopes, stethoscopes, X-rays, oscilloscopes, Geiger counters, radar, radio, television, transistors, electron microscopes, Tiros and; Earth satellites. They also constructed machines to multiply their powers of action: engines, explosives, railroads, automobiles, ocean liners, airplanes, assembly lines, spaceship boosters, lasers, cyclotrons, atomic reactors, A-bombs and H-bombs, earthmoving equipment, automation. In the biological field, new breeds of plants, such as frost-resisting wheat or hybrid corn, were invented; new breeds of animals were established and old breeds were stimulated to levels of production that unhumanized nature could not reach. Medicine increased the average span of active life; transfusion of blood became a routine procedure; serums and vaccines curbed epidemics and antibiotics controlled infections; surgery performed quasi-miracles; allied research worked on organ transplantation and plastic substitutes for vital organs. For the common person, science and technology are practically the same; progress introduces more progress, increasing mastery over nature, improving predictability in weather forecasting, and controlling economic cycles.

The world is seen as a complex of interrelated parts, as a huge machine whose workings we keep discovering one after the other, and we learn to control them more and more efficiently. We long ago gave up the naive belief that there is a single cause for any single phenomenon; we know that whatever happens is due to the conver-

gence of many antecedents. We are devising ever better means of taking such a dynamic complexity into account: we build computers that can predict what will come out of the interaction of several space-time factors. The general public is so impressed by these accomplishments that these machines are called *electronic brains*. They may even listen to the claims of those who speak of *human cybernetics*, repeating early *Homo sapiens*' idolatrous gesture of making a god of what is planned with their brain and fashioned with their hands.

For many persons, this is humankind's top achievement, and Science (with a capital s) becomes the supreme value, just as Religion was in the Middle Ages. To oppose Science is to be heretic in today's world.

Evidently stage-three thinking is a distinct advance beyond stage two. Wendell Johnson, when he compared the static world of stage two to the dynamic world of stage three, put it this way:

> The fundamental scientific assumption is that reality has a process character; if you reject that, you remove practically all the purpose and point in everything the scientist does. In a perfectly static world the only requirement for adjustment would be a good memory, and everyone would have that, if one might speak of memory as existing in a world in which tomorrow and yesterday would be identical. What most fundamentally characterizes the scientific, or well-adjusted, or highly sane person is not chiefly the particular habits or attitudes that he holds, but the deftness with which he modifies them in response to changing circumstances. He is set to change, in contrast to the more rigid, dogmatic, self-defensive individual who is set to "sit tight."[3]

4. The Postulating Stage or Creative Process

Just as the individual who functions at stage three is ready to change his behavior when the scientist shows him new aspects of the real world, the scientist who functions at stage four is ready to change his own methods of thinking as he keeps experiencing himself in transaction with the world. In fact, he has no set beliefs but only a human-made structure of postulates that he accepts as a workable system of assumptions for guiding him in the conduct of his life as an

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[3]Wendell Johnson, *People in Quandaries* (New York: Harper & Row, 1946), p. 45.

individual and as a member of any group, large or small, to which he is conscious of belonging.

If we compare stage two or stage three, we see that the first was just a rough sketch, an oversimplification of the order of nature, a reduction—to a static picture—of the dynamic processes of the world. Stage three, in its turn, is now revealed to be an oversimplification of a human being's relation to the world and to herself. The concept of "reality out there," of which a human is a detached observer, and which she explores and controls with ever-increasing wisdom, must yield to more abstract conceptions. The "laws" of nature that we mathematically formulate deal not with nature itself but with our knowledge of nature, with our relating ourselves with nature. "There is no quantum world," Niels Bohr is reported to have said; "There is only an abstract quantum description. It is wrong to think that the task of physics is to find out how nature *is*. Physics concerns itself with what we can *say* about nature."[4]

Consequently, language—or any system of symbolization that we use—becomes central again, as it was in the days when Aristotle created his language-derived logic and metaphysics, but this time with the important difference that we are now aware of the situation thus created. We now know that "we are suspended in language," as Bohr would say. We know that the structure of our human world is the structure of the postulates our language presents to us; we know that it could be any alternate structure that another language presents to members of a different culture; and finally, we know that it could be any alternate structure that we might create as we transform the world with our technological inventions.

Yes, our verbalizing creates difficulties that a change in verbalizing could remove. In stage four, we are flexible in that regard; we do not have to stick to one kind of verbalizing as if it were the only accurate picture of the situation. We should not change the wording as a mere trick for fooling ourselves or the other person; we should change it and accept the new terms as a possibly valid alternative to an objective description. This is what physicists do when they view

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[4]Reprinted from "The Philosopher of Niels Bohr," by Aage Petersen, with permission, from the September 1963 issue of the *Bulletin of Atomic Scientists*. Copyright 1963 by the Educational Foundation for Nuclear Science, Inc.

the atomic nucleus through the shell model, the liquid-drop model or the visual model. Each model serves a purpose, and shifting from one model to another makes it possible to solve problems that the original model could not encompass.

Stage four is the stage where we learn to be independent of mental categories, "accurate" words and exclusive theories. It is a preparation and often results in creative acts. The great discovery that ushered in stage four is the awareness of our self-reflexiveness, or the way we experience our experiencing, being self-reflexively aware of what goes on in our semantic transactions. It could be described as the awareness of our awareness itself.

We have at last understood that our mental constructs, linguistic or mathematical, are not images of an "objective" world, they are mirrors of ourselves looking at the world. Objectivity, as we took it to be, has now disappeared. Rational absolutes are crumbling. We are actually in the throes of a rebirth to a new form of human life the like of which history has never seen. Reason and rationality have reached their limits, and we are aware of this; proud dogmatism has to make room for humble uncertainty; predictability becomes possibility with an unmeasurable margin of unknowns.

Presently, it is among natural scientists (turned philosophers and epistemologists) that this discovery is most often discussed and commented upon. Here is how one of them, Werner Heisenberg, describes what led to this discovery.

> Profound changes in the foundations of atomic physics occurred in our century which lead away from the reality concept of classical atomism. It has turned out that the hoped-for objective reality of the elementary particles represents too rough a simplification of the true state of affairs and must yield to much more abstract conceptions. When we wish to picture to ourselves the nature of the existence of the elementary particles, we may no longer ignore the physical processes by which we obtain information about them. When we are observing objects of our daily experience, the physical processes transmitting the observation of course play only a secondary role. However, for the smallest building blocks of matter every process of observation causes a major disturbance; it turns out that we can no longer talk of the behavior of the particle apart from the process of observation. In consequence, we are finally led to believe that the laws of nature that we formulate mathematically deal no longer with the particles themselves but with our knowledge of elementary particles . . . Natural science always presupposes man, and we must become aware of the fact that,

> as Bohr expressed it, we are not only spectators but also participants on the stage of life.[5]

This does away with self-evident truths, with axioms as we learned them in Euclidian geometry, with shared perceptions that are supposed infallibly to bring about agreement. Whether we know it or not, our most obvious observations and our most solid and lasting knowledge have grown from a set of postulates.[6]

The highest achievement of our rational mind, when it reaches the postulating stage four of today's science, is to acknowledge its own limitations. No formulation that we can devise is 100 percent valid; no truth as we conceive it is *the* truth. Consequently, we are ready to accept that, when dealing with a single phenomenon or a simple situation, we may use two descriptions and explanations that appear utterly different if not contradictory. For instance physicists may speak of light as the result of waves of energy or showers of particles; philosophers may account for human behavior in terms of strict determinism or of its opposite, freedom of choice. Their relation of mutual exclusion is brought to a higher order of abstraction and this is called complementarity.

This does not mean that our mind is blank, or that we are uncommitted and without a philosophy of life. We make choices, we hold to certain values, and we observe certain rules and regulations in our thinking, but, at the same time, we are aware that our choices may change as our experience of life accumulates, that our value system may expand to include what we formerly rejected, and that our methods of thinking may reach new orders of dimensionality. We are ready to use definite mental models to form within ourselves a mental picture of the world; we manipulate these models according to

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[5]Reprinted from "The Representation of Nature in Contemporary Physics" by Werner Heisenberg, Reprinted by permission of *Daedalus*, Journal of the American Academy of Arts and Sciences, Boston, Mass., Summer 1958, *Symbolism in Religion and Literature*.

[6]Many passages in this book demand, on the part of the reader, more than cursory reading. This is doubly true of the statements concerning self-reflexiveness. Here we reach the vital nexus of what makes general semantics and epistemics totally different from the sciences mentioned above in stage three. I suggest several periods of meditation spaced over several days.

the rules of the system to which they belong; and we interpret them and draw conclusions that we translate into policies, plans and actions. But we are not, for all this, deceived into believing that what we see could not be seen differently, what we understand could not be explained otherwise, and what we consider the proper thing to do could not be done differently.

This freedom of interpretation and choice in the transverse direction of our march forward goes with the freedom of jumping ahead of the well-organized body of pioneers who keep advancing at the slow tempo of institutionalized culture. We make use of available knowledge, but we are free to go beyond it (at our personal risk) to search deeper, to seek higher viewpoints, and to act as scouts who suggest to the main group of explorers where there might be a possible breakthrough. We become suspicious of the value of rigorous thinking along well-established channels.

> The creative order is not an elaboration of the established, but a movement beyond it, or at least a reorganization of it and often of elements not included in it. The first need is therefore to transcend the old order. Before any new order can be defined, the absolute power of the established, the hold upon us of what we know and are, must be broken.[7]

What such an orientation could achieve at all levels of human relations, from the life of the married couple to the forum of the United Nations, we can only surmise. Our philosophy of life, limited by the still-underdeveloped human sciences, has not yet begun to renovate itself as our outlook on the physical world has been doing for the last two generations. One purpose of general semantics is to help people function more often and more easily at stage four. It takes time, but it proves to be an exhilarating experience.

The important thing to know and take into account is that refined rationality and elaborate induction are *not* the sources of creativity; but this does not mean that creativity is born of ignorance—quite the opposite. A great deal of preparation is necessary to equip oneself for an excursion into the not-yet-surveyed regions of a particular field of knowledge. This requires work—good, honest, pedestrian work.

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[7]Brewster Ghiselin, *The Creative Process* (New York: Mentor Books, [New American Library], 1955), p. 14.

"Genius is a long patience," said Pasteur; and, to paraphrase Edison, "It takes more perspiration than inspiration."

We have to observe, explore, experiment, and learn if we are to make the fine differentiations that escape the casual observer. Then, and then only, are we ready to take the risk of entering the world of the unknown and to make sense of our experience in that world. It is like going into Antarctica, or climbing Mt. Everest, or piloting the X-15. We have to profit from the experience of those who preceded us and make use of the information they have gathered, yet be ready to take chances beyond what they ventured.

Because we take it for granted that the object of our observations, thoughts, constructs, is "out there" for us to see and theorize about: we miss the fact that the original singling out of the object is an act of our own choice and creation. The choice may not be entirely personal and conscious, it may be determined (in part) by the culture in which we were reared, by the purposes we have set ourselves, or by the circumstances in which we happen to be; but it is our choice in the sense that we could, if we wanted, abstain from it or make a different choice. For instance, if I say "I accept such-and-such a theory because it sounds sensible to me," I am actually choosing a particular theory because it fits with the "growing tip" of my experience. It is the "natural" expansion of what I am at the moment, as the flower in spring is the natural development of the bud on the branch of the tree, as the fruit is the natural expansion of the flower that disappears in producing it.

At stage four, the growing realization of choice makes the creative process central to everyday human functioning. Innovating becomes integral to the life cycle of cultures and individuals. This means that out of the experience and knowledge of an individual, his or her acquired semantic state at a date, emerges a new untested idea, a postulate that seems plausible. This is a creative act using the "material" of the individual's total life experience. The process of shaping the postulate is called abduction.

Next comes deduction that infers a pattern of planning consistent with these postulates in order to test them. This leads to experimenting by carrying out the previously arranged plans. Here, "experience" and "experiment" become synonymous. At a certain point in the experiment or experience, through a process of induction, we interpret what we have observed; we check our results.

Finally, we evaluate what we have been through, including the interpreted results, and see how our original set of postulates held up. They are either confirmed for the time being, or they may be corrected to plan a new cycle of experiments. Or, the postulates may prove to be inadequate for the purposes involved; in such a case, a new process of abduction is called for—a new creative act.

The experience of going through this cycle brings about a differently structured semantic state. The total life experience of the individual is renewed; this renewal is a structural more that increases the complexity of the person's wisdom. I put it this way in another of my books:

> As this renewed and enriched wisdom rises to a higher level or organized complexity, the creative loop (postulating-planning-experimenting-interpreting) bends in the time dimension and becomes the spiral of human cultural advance, or personal and cultural evolution.[8]

We will now examine in a bit more detail, the creative process from which our postulates emerge.

Precreative Excitement and Confusion

Creative science involves the whole person, and so does creative learning; both experiences run along parallel lines. To make advances that deserve to be recognized as creative, a scientist has to free himself or herself from the hold of the theories that are generally accepted in the cultural environment. To make personal advances in knowledge that deserve to be called creative learning, an individual has to be free from the hold of theories that have been uncritically accepted, from the hold of assumptions that often disguise themselves as common sense. Too often, we do the reverse; when we read of hear a theory that is new to us, we quickly pooh-pooh it if it appears to challenge some of our common-sense notions.

In the creating process there is a stage of confusion, of groping, of trial and error that is not always described when scientists and inventors report on their insights and discoveries. We are apt to think that they have passed suddenly from the pitch-dark of not-knowing to

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[8]J. Samuel Bois, *Epistemics: The Science-Art of Innovating* (San Francisco: International Society for General Semantics, 1972), p. 5.

the bright midday sun of clear understanding. We still believe in magic, in miracles. This is not the way things really happen.

> Creation begins typically with a vague, even confused excitement, some sort of yearning, hunch or other pre-verbal intimation of approaching or potential resolution . . . Production by a process of purely conscious calculation seems never to occur.[9]

There is a corresponding stage in the process of learning. It is a stage during which we cannot clearly describe what it is that has stirred up our interest and created in us a state of excitement, expectation and confusion. When I read *Science and Sanity* for the first time there was very little of it that I could accept consciously; in fact, the few statements that stood out in my conscious memory were those that flatly contradicted some ideas of mine that seemed basic and uncontrovertible (the principle of nonidentity was one). Yet I was stirred to the very depths of my sense of truth and values. The quotation from Ghiselin's *The Creative Process* perfectly describes the condition in which I found myself if we replace creation" by "new understanding," and "production" by "learning." It would then read as follows: "New understanding begins typically with a vague, even confused excitement, some sort of yearning, hunch, or other preverbal intimation of approaching or potential resolution . . . Learning by a process of purely conscious calculation seems never to occur."

Because we ignore this unavoidable phase of confusion that marks the first stage of real learning, we mismanage our learning experiences and we mismanage those of others. We expect learning to be a conscious process, a collection of new, well-differentiated items that we can show to inquirers who ask to see them—or that we can store up in compartments of our memory, from which we can pull them out at will.

We may have heard a lecture or read an essay that has stirred us deeply. If we are asked—or ask ourselves—immediately afterwards "What are the main points of what was said?", we feel embarrassed when we cannot give a clear-cut answer. We blame ourselves for having let ourselves be carried away by enthusiasm, feeling, idealism, or what-have-you, which is considered very bad form in our logic-

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[9]Ghiselin, *The Creative Process*, p. 14.

worshiping culture, and we crush without compunction that delicate and precious link in the chain of learning reactions that we just beginning to form a living sequence. Because we do not accept the state of "imaginative muddled suspense" (as Whitehead calls it) that precedes successful creation and creative learning, we fail to reach the final stage of transformation and confirmation in new knowledge and belief.

I have seen the same disregard of this unrecognized phase of creative learning snuff out a whole program of executive development. The vice-president of a large corporation had been sent to a workshop I was conducting on Executive Methods (which is nothing but up-to-date epistemology applied to administrative work) to evaluate whether the top staff of the company should go through that program of training. He was a well-informed person, very bright, and capable of feeling the impact of such a workshop, but, when the session was over, he was in that period of vague and confused excitement, of preverbal readjustment of his ideas and values, so that he could not yet translate his experience into clear-cut formulations.

His superior, the president of the corporation, who had great respect for his vice-president's intelligence and judgment in matters of this kind, but who had never suspected that creative learning involves a stage of mental confusion that is often allied to an unexplainable emotional condition, asked the vice-president for a quick and short report on "what this course could do for the company, what problems it could help solve, and how."

This time, the vice-president who was known to respond with clear-cut answers when asked such questions in matters of his competence, felt that he could not come out with a "one-two-three" type of report. He had been so stirred by the experience of the workshop that he was still in that initial stage of confusion and suspense (which he had not anticipated and which, to a better-informed observer, would have suggested an impending revolution of his inner world of knowledge and values).

His answer to his chief was: "It was a very stirring experience, but I cannot at this moment tell you exactly how it could be applied to any specific problem of ours." "Well" said the president, "if a man of your knowledge and experience cannot see its practical application to any of our problems, I don't see how others, less well-prepared than you are, could profit from it. Let us forget it."

Had the president known that creative learning is not simply adding to what we already know, that it is not the extension of the well-established but an expansion beyond it, that it involves initial disturbance and hesitation, he would have recognized that his vice-president's reaction was a strong indication that—for a man of his caliber to report such an unusual disturbance—he might have hit upon something of unexpected but real value. The president had never learned that there is a wide difference between rote learning and creative learning.

The same fallacy of expecting clear-cut, measurable results from a creative learning experience lies behind the tests of comprehension inserted in a course of rapid reading as a check of the progress achieved. If we comprehend and remember a high percentage of what we have just read, it is a sure sign that our reading was not of the order of creative learning. It was additive learning, it was inserting new facts in a classification system already established, it was filling in compartments already made in our memory warehouse. It was not creative learning, not a revamping of our classification system, not a reorganization of our store of knowledge, not a reshuffling of what we know and what we are.

There are many praiseworthy attempts to foster creative thinking in business and in the professions, and I am all for them. I find something good in all these efforts, from the occasionally childish game of brainstorming to the more sophisticated practices of group dynamics, role-playing, socio-drama, and the like. Some of them are very impressive, and they sometimes achieve results that are really spectacular. It is the function of the epistemological research to detect the operative process in the various practices that accounts for the results. Once this process has come to light, we could make training in creativity part of our normal curriculum at the college level, or its equivalent in adult education and business training.

Semantic Psychoanalysis

It is relatively easy to accept the fact that the same word may trigger different semantic transactions in different persons. The dictionary meaning of a word is only an approximation of what the word has been taken to mean up to the time the dictionary was published. Being an "average," it does not apply exactly to every use of the word—no more than, say, the average height of a ten-year-old boy

applies to every boy of that age in the neighborhood. Every word that we use has a meaning-to-me value at the time and under the circumstances that we use it. We saw this illustrated in Figure 1, p. xli. This value may vary from one situation to another, but the variations usually remain within a recognizable pattern. If I can make that pattern visible, it will give me a picture of what the word means to me. By comparing my pattern of meaning with yours, we may come closer to an understanding, perhaps to agreement. Or we can determine more accurately how and why we disagree.

To bring out this pattern of the meaning relation between a word and its user is the purpose of what Gaston Bachelard called *semantic psychoanalysis*. It has nothing in common with psychoanalysis as it is known in psychiatry—classical Freudian, neo-Freudian, Jungian, Adlerian, or whatever—and it does not deal with the subconscious, with complexes, fixations, repressions, and such things. It deals primarily with *thinking,* not with *feeling* activities, but it does not exclude feeling activities (which, as we have seen, are an undetachable aspect of our total semantic transaction). A second difference is that it does not deal with neurosis and such conditions, but with our "normal" behavior. It attempts to bring out the relative degree of wisdom of our habitual thought process.

We could compare semantic psychoanalysis to spectral analysis, a well-known procedure in the physical sciences where it has achieved spectacular success. It started some three hundred years ago when Isaac Newton performed an experiment which he reported in his *Opticks*. He saw what he called "a colored image of the sun" like a rainbow on the wall opposite the closed window through which a narrow beam of light was allowed to enter. Newton's original experiment was the beginning of a development that has reached a high degree of refinement and usefulness today.

Our study of the semantic spectrum is three hundred years behind our discovery of the spectrum of light—and some may now maintain that the former is a false start. It may be, but I am ready to give it up only if something more promising presents itself. I have used it in clinical work, in business, and in philosophical investigations, and others have also used it, and I know of no adverse reports.

Although our techniques of semantic analysis are still primitive, we are beginning to discover the main areas of the semantic spectrum. Bachelard suggests five areas, which we call the sensing, the

classifying, the relating, the postulating, and the participating stages of human development. We are far from the measurement of anything that might correspond to the Angstrom units of the color spectrum, but crude as it is, the procedure is already a significant advance. It shows that, despite their appearance of homogeneity, our most common mental constructs are made of elements that do not always form a balanced whole.

When we say that we are biased, would it not be interesting to be able to measure in what direction and to what extent? When we say that we see through rose-colored glasses, would it not be good to evaluate the tint of these glasses in terms of psychological wavelengths? When we put together, in one semantic transaction, the blind impulsiveness of the primitive, the dogmatism of the medieval thinker, the critical attitude of the experimenter, and the indeterminacy described by Heisenberg, how can we determine which of these four elements dominates this assemblage? Perhaps we may find why some twentieth-century humans may suddenly indulge the barbarous pleasure of snuffing out an enemy's life with a nuclear bomb, whereas their primitive ancestors used a rock in the stone age. Until we have learned to differentiate these very dissimilar ranges, we shall find it difficult to manage ourselves and almost impossible to manage world events, which may mean the end of humankind as a whole.

The idea is to examine the thinking aspects of some of our basic semantic transactions—Bachelard calls them our "concepts"—and see how they are distributed on the semantic spectrum or epistemological profile; from the infrared of sensing to the ultraviolet of participating.

Bachelard did not speak much of a semantic spectrum, nor did he insist on the analogy of spectral analysis. He reported his finding of his semantic analysis of two terms familiar to him in his profession, matter and energy. On histograms where the highest bar represents the most frequent level of semantic transaction, he revealed that stage three was dominant for him on both concepts. This meant that his personal development was mostly at stage three, although he could report of experiences at stages four and five (which I will describe later). This relative frequency of experiences at different stages corresponds to what we call here stages of development. They remind us of what Korzybski calls semantic states. And we could describe them

as types of responses that have hardened into habits not easy to change.

Some Examples of Semantic Analysis

Let us begin with a simple example from life. Suppose you say "My boy is a problem to me." Let us analyze your semantic response to *problem*.

If the term, or the situation, makes you anxious, puzzled or uneasy, and that seems as far as you can go with it, you are marooned at stage one. You have not started to think; you have let your uncritical, unconditioned reaction to the word *problem*—and to the situation thus labeled—dominate your organism. Value terms such as "It is awful," "It is terrible," "Oh, my God!" may come out as verbal responses. You may shiver, sweat, cry, become fidgety and distracted. You may reach for a tranquilizer, or for a drink if you have a propensity for that type of relief.

At stage two, however, you begin to think. You attempt to classify the problem and the boy. You look for *the* cause of the trouble. You ask yourself *why*, expecting to find behind that *why* the *what*-to-do. You look for *the* solution, a clear-cut, radical solution. You may ask yourself such questions as, "Is he lazy?", "Is he going with bad companions?", "Did he resent what the teacher told him yesterday?", "Is he neurotic?" Or, if your mind is already made up about the boy, you may interpret what happened as a proof of what you already think of him.

At stage three, you begin to realize that things are not so simple, many factors might be involved in the situation. You may ask yourself: "What is going on at home, at school, or elsewhere that may have some connection with the present situation?", "What is he heading for in his own expectations?", "What went on last week, last month, or in recent years?" You do not see this human problem as similar to an arithmetic problem in which the data are definite and there is only one correct answer. You think in terms of relations, of a balance among various determinants, and you choose to act upon whichever one is within your reach and likely to influence the situation for the better.

At stage four, you become aware that you are part of the problem-in-process. You are the only factor over which you have immediate control. To solve the problem becomes, for you: "How shall I

manage myself as I transact in this situation, doing my very best and hoping for the best?" You are ready to look at the situation as the boy sees it, knowing that there are many possible versions to the story.

The original and staple meaning of *problem* disappears at stage four. Instead of being "the problem of the boy," which you could observe and solve "objectively," the situation has become a complex, interrelated cluster of events, things and persons of which, you discover, you are one. This is where relativity comes into play: every situation becomes a gestalt, a configuration that is different for each participant and that involves a different participation from each. At stage four, Whitehead's statement becomes a necessity:

> The old foundations of scientific thought are becoming unintelligible. Time, space, matter . . . structure, pattern, function, etc., all require reinterpretation . . . if science is not to degenerate into a medley of *ad hoc* hypotheses, it must become philosophical and must enter thorough criticism of its own foundations.[10]

If science must undertake a thorough criticism of its own foundations, what shall we say of plain common sense? What shall we say of our everyday language, and of its subject-predicate structure that dates back centuries before even classical science was born? The function of semantic psychoanalysis is precisely this: by revising our thinking models, it brings our semantic transactions in tune with the world that our technology has created.

Let us take another example and analyze a word that is often used in public discussions: *leader* or *leadership*.

At stage one we have the charismatic leader, who is appointed by "the gods" or anointed in some religious ceremony to become the head of a state, a church, or a group. This type of leadership is still accepted as valid in many institutions, although the degree of acceptance will vary, of course. The queen of England is formally anointed in the coronation service; she is the head of the nation "by the grace of God," but she does not rule. The Pope, another charismatic leader, has effective quasi-legal powers over his subjects. Modern dictators have also assumed this type of leadership; Lenin, for example, is glo-

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[10]Alfred North Whitehead, *Science and the Modern World* (New York: Cambridge University Press, 1933), p. 21.

rified as such a leader in a burial monument that reminds us of the Egyptian pharaohs.

The stage-two leader is different; he or she represents the "objective"—and later the "scientific"—view of the characteristics of a born leader. Studies of whether he or she is intellectually bright or dull, a glib talker or a silent schemer, tall or short, healthy or sickly, emotionally balanced or slightly neurotic, are legion. They were continued during World War II for selecting the most promising candidates for positions of responsibility, but many of these studies contradicted one another. We can recognize this thinking and purpose in such questions as "What makes an *ideal* student . . . an *ideal* teacher . . . an *ideal* marriage . . . an *ideal* parent? These questions lead to a sharper definition of the ideas we form of a leader, a teacher, an ideal anything. They show our symbol-manipulating inventiveness and are no more real than the "snark" that Lewis Carroll created by combining the words *snake* and *shark*. They have no necessary connection with the actual performance of a leader, for example.

At stage three, the leader emerges from interactions between people and circumstances. We pass from leadership as a quality bestowed by the grace of God (stage one) or as a quality inborn in the individual (stage two) to leadership as a function, as a dynamic set of relations that operate at a certain moment in a certain situation. A corporation's organization chart may show that heads of divisions are formally appointed with well-defined authority and responsibility (stage one); they may have been selected and appointed because it was felt that their general ability, their work experience, and their "personality" fitted them for these positions of leadership (stage two); but the person who has the most telling influence on a particular decision may be far down the line or at a great distance to the right or to the left of the department concerned. The decisive influence may even lie outside the company; it may be a chance occurrence of minor events, none of which is intentionally set going by a leader or schemer. This brings us to stage four, where the notion of leadership evaporates in the thin air of probabilities.

I remember that once, when I was trying to introduce a new procedure in the Canadian army (where I was in charge of Research and Information), my long-prepared and tested scheme never reached the desk of the minister of national defense. His awareness of the problem and his decision in the matter were brought about by an article he

happened to read in the *Readers' Digest* on a trip from Montreal to Ottawa.

Here we see that the primitive notions of leader and leadership do not apply, and we can better describe what happened by using another term. The term that is popular today is *decision-making*, the pinpointed meeting of energy vectors at the proper time and the proper place that sparks the decision event.

This makes us realize that the personality or the action of the leader is not necessarily part of the decision-making process. The leader concept may apply to stages one, two, and three in face-to-face situations, and, even then, the decision that we credit to a particular leader may be only a critical point in the multidimensional network of vectors that unfolds itself under our eyes. In other words, the "time had come" for that procedure to be introduced in the Canadian army. Many chains of events—all unknown to me—were leading to it, but the chain that had brought about the decision was not the one on which I had worked. If it had been, I might have been given more credit for the result than I actually deserved.

Let us apply this scheme of analysis to *communication*, as a word and as a process. We shall see, then, how this analytic technique spreads, deepens, heightens, and expands—in several directions—the standard definition in the dictionary: "Communication is the imparting of thoughts, opinions, or information by means of speech, writing or signs."

At stage one, communication has not reached the level of explicit exchange of thoughts or information. It resembles the spinal reflex; the brain is short-circuited and the discriminating power of the cortex is not called into action. This type of communication may be described as either ritualistic or explosive, but in both cases it is meaningless in the sense that what is really meant or intended has no logical relation to what is being said or expressed.

Here is an example of the ritualistic type. You say "Good morning! How are you?" and I answer, "Fine, thank you!". Did you actually mean to ask about my health, and do I feel that I should inform you about it? Of course not; what is meant is something like mutual recognition. You said "I am paying attention to you and I expect you to do the same." My answer was "Very well, I understand and I agree." When a salesgirl calls an old lady, "honey," the "sweetness" of the message is bland. When we write "Dear Sir" at the beginning

of a letter and "Sincerely yours" at the end, we do not commit ourselves to any kind of affection or subservience, and our recipient knows it.

Strictly speaking, this type of communication is false to facts, but only sticklers for accuracy show concern for the falsehood. Yet, there may be cases where the ritualistic formula reacts upon its user and dampens spontaneity. You cannot say "Mr. President," "Your Majesty," or "Your Holiness" to the bearers of these titles without feeling psychological distance between you and them. The parliamentary practice of calling an opponent "The honorable member from so-and-so" helps maintain decorum in verbal fights.

I also consider as a stage-one communication the polite chitchat of casual social encounters in which one is expected to be pleasant, to avoid embarrassing silent spells, and to make conversation but to say nothing of significance. Some call it an art; to me it looks more like verbal doodling to avoid boredom or embarrassment.

Stage-one communication may be explosive as well. It is then an outburst of feelings in statements peppered with the value terms, uttered rapidly in a high-pitch voice. It happens when we give the other fellow a piece of our mind, or bawl him out, or tell him off. No doubt this relieves the sender of the pressure of his feelings, but whether it delivers a message that the recipient accepts or profits by is another matter. If we cannot make ourselves understood in a foreign country, we repeat our English-worded message in a louder voice or we articulate it with determined emphasis. In a discussion, we can hardly wait for "our turn" to burst into speech; we interrupt the other person or trip him up with rhetorical questions. If a lecturer invites comments from the audience, we jump up and ask a question that is nothing but a thinly veiled revelation of a personal problem or an attempt to show off. These and similar instances of so-called communication are nothing but the uncontrolled semantic reactions of an individual who is concerned with herself, her feelings, and her set of personal values, and who wants the rest of the world to satisfy her need for approval, recognition or domination.

At stage two, the message itself becomes the focus of attention. We want it to do justice to what we mean, to give the recipient a clear-cut picture of what we have in mind. We look for the right and the telling word; we take lessons in public speaking or in the dramatic arts to learn how to modulate our voice, how to pause at the psycho-

logical moment, how to gesticulate effectively, how to arouse the emotions of our listeners. In a written message we observe the rules of Rudolph Flesch or of the *Elements of Style*; and we make sure that the layout of our typewritten page brings out the salient points of our argument. We watch over the display of our printed announcements or our advertising copy. We use flip charts and the flannel board, and we draw diagrams. In a dialogue, both discussants may use such a procedure as role reversal to make sure that their statements interlock without a gap—like the pieces of a neatly cut jigsaw puzzle. The idea is that the more sharply defined the pieces and the better structured the message, the better the communication. That there is value in such practices, nobody can deny, but to take them as the crowning refinement of the art of communication is to reduce a living experience to the mechanical matching of cut-and-dried statements.

At stage three, one realizes that it is not sufficient to make his message a clear-cut picture of what he wants to transmit, it must also fit the requirements of the recipient; it must be in accord with his interests, his purposes, his attitudes, his knowledge, and his mental capacity. We then see communication as a process of relations, where the role of the receiver is no less important than that of the sender. We secure as much information as we can about the prospect we are going to meet. Once with him, we make him talk, make him say yes to noncommittal questions and thus induce in him a receptive mood. In a group, we invite suggestions from the audience, we write their statements on the board, we warm up our listeners with quick-fire questions that require simple answers, we set up role-playing skits, we break the large audience into "buzz groups" where individual members will have a better chance to participate and become involved, and we have them answer questionnaires, fill in forms, and write their impressions on slips of paper. The main purpose is not to commit ourself to take so many discordant views into account; it is to involve the listeners, to stir them up, to make them think, to bring them out of a state of passivity.

Stage-three communication also covers the case of the salesgirl who offers us a piece of sausage in the supermarket "just to have a taste of it," of the salesman who brings an "improved" vacuum cleaner to our house and invites us to vacuum our rugs with it, of the auto salesman who hands us a car key and suggests that we take a test drive, of the skillful lawyer whose relentless questioning extracts

from a reluctant witness the evidence he is looking for. This communication is tailor-made to an individual, a group, or an audience whose interests have been evaluated by the best available means and whose participation in the interchange is taken as very important.

Stage two paid attention to the "sending end" of the communication; stage three concentrates on the "receiving end." Stage three involves training in the art of listening. It also involves the art of reading—not necessarily at a high speed but at a pace in which the difficulty of the subject matter and the capacities and circumstances of the reader are set in harmonious balance. It brings to bear on the communication process the resources of many sciences and technologies.

Stages two and three are in keeping with the dictionary definition of communication, and they remain within the Aristotelian system. They also agree with the mechanical mode of thinking, including certain types of feedback that are still prevalent in our most highly rated logical activities. There is a sender, a message, and a receiver. The message is like a package of information, thoughts, and opinions that is neatly wrapped and then passed on from sender to receiver. It is a matter of doing something to somebody by using words, signs and symbols. These are psychological tools that one learns to manipulate with skill. Communication is what one does with words and what they do to us.

At stage four, communication assumes an entirely different form. Instead of being similar to an exchange of goods between two independent dealers, it becomes a vital transaction in which both participants feel involved to the very depths of their innermost selves.

To enter into communication is to enter a dynamic process that engulfs both the sender and the receiver, and from which they may emerge in a condition that neither can foresee nor control. It is the encounter of two semantic transactors who hold their thoughts, values, attitudes, and purposes, their past experiences, their present feelings, and their anticipations of the future in sensitive contact. The success of the entire undertaking will depend not so much upon their readiness to reach a detached objective understanding as upon their willingness to accept whatever change this joint experience might bring about in their respective outlooks on life and their resulting behavior.

The communicator, aware that her "map" does not represent all the "territory," gives opinions that are open-ended; the communicatee

listens with all the welcoming attention that she can muster, realizing that to evaluate what she is told she has to internalize it to some extent. Both see themselves as learners in the sense that they are ready to accept the lesson of this unrehearsed experience—the probability being, of course, that the better-informed, better-prepared, and more experienced of the two will derive more personal enrichment from the encounter.

Often the communication process is an intimate intercourse, as when we deal with values and feelings that lay bare the most sensitive parts of our unprotected self. The more intimate the contact, the more likely, if it is not properly handled, that it will cause bruises that may make more precarious subsequent relationships. It may also, when managed with skill and mutual respect, create a stronger bond of reciprocal appreciation and trust. Stage-four communication transcends the techniques of pure logic—Aristotelian and two-valued, or modern and multivalued. It is a phenomenon of psycho-logics, where feelings, values and purposes have to blend in agape—mutual trust.

In the stage-four type of communication between a speaker and an audience, the speaker will of course observe the rules of stages two and three, doing his best to present a clear message in terms that the audience will understand and accept. The main concern, however, will go beyond the technical aspects of performance, it will focus on his own overall attitude and behavior. The important thing is for the speaker to relive the experience he had when what is now being expounded became a discovery, insight, and fresh learning experience for the speaker as an individual.

The members of the audience join in the speaker's experience of discovery; the occasion is an experiment in listening. For the time being, they let their minds harbor ideas that may appear strange or even threatening; they keep their perturbances subdued when their most cherished values are challenged; they forgo, for a while, as much as they can, their need for semantic security. They are not simply permissive, for permissiveness, like tolerance, implies an attitude of superiority over the other person, who is allowed to rave and ramble. They are ready to question their own views and to give credit to the speaker for superior information and wisdom on the topic he is discussing. It is only after the entire experiment is completed that they resume their semantic autonomy—either confirmed in their pre-

vious stand or enriched by the insights they have obtained while listening.

Our mental constructs are not limited to a particular stage; most of the time they are a mixture of thinking models that belong to distant epochs in the history of Western culture. If we represent in a bar diagram the relative amounts of various types of thinking that enter into a particular concept, we would have Bachelard's epistemological profile, a picture of the spreads and peaks of our semantic transactions. This picture is not static; it varies from moment to moment. For example, I may be violently shaken at the first news of a personal disaster, and for a short moment my thinking may be dominated by a stage-one type of reaction, but I may regain my balance very quickly, particularly if I have trained myself in the practice of higher stages.

This training requires a conscious and constant effort at the beginning. It is a gradual ascent from the unconditional reactions of the animals to the fully conditional behavior of humans who are intelligent and free. As we make that ascent, we have to pass through a period in which primitive doctrines and languages must be revised. Mathematics and physics have made great strides in recent years because they have abandoned the thinking methods of earlier stages; they have done away with the old elementalism and the two-valued semantics of stage two.

5. The Participating Stage.

With the emerging fifth stage, we mark a radical epistemic shift. No one can predict the characteristics of this stage, so I offer the following as a suggestion.

Stages two, three and four are dominated by discursively derived knowledge. While the fifth stage encompasses those earlier developments, the emphasis moves away from the urge to know to an urge to make our way of life integrated with a pervasive ordering tendency. This ordering tendency can be observed in all visible 'forms'. Lancelot Law Whyte called it the "morphic" tendency from the Greek, meaning "generating order . . . " He wrote,

> All visible forms, from crystals and organisms to spiral galaxies, and all human artifacts were formed by morphic processes at some level in the hierarchies of nature.
>
> Believe it or not, the great science of the West has only now given a name to what can legitimately by called the most important class of natural

> process, without which there could exist no form, no life, and, I would add, no mind![11]

We recognize that the zest, which is living within us, springs from a fundamental urge that pervades the universe and is identical with the creative force active everywhere in nature . . . that form of energy that keeps the cosmic process going. Within the human semantic world, an awareness and an appreciation of the presence of such an ordering tendency can have a powerful effect. It can bring a sense of coordination with morphic processes in which the total human person participates, both within and without. As a temporary happening I call it a stage-five-type experience. As a way of life, this is called the Participating stage, and it presents the possibility of ending the dissociation between subject and object that takes place in our structured unconscious. Participating and related topics will be described in detail in Part III.

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[11]Lancelot Law Whyte, *The Universe of Experience* (New York: Harper Torchbooks, Harper & Row, 1974), p. 43.

CHAPTER 10

a reformulation

A Reformulation of Objectivity

There are many prescriptions of common sense that very few people object to, particularly when they are supported by what is generally taken as science. Two of them are: (1) take facts into account, and (2) be realistic. Both have an assumption that is firmly rooted in our culture, and this assumption has two elements: (1) There is an objective reality "out there," around us or within us, and (2) It is desirable to conform our thoughts and behavior to that objective reality. If we ask ourselves what prevents us from seeing and accepting them as they are, the common-sense assumption, confirmed by the psychology that floats freely in our cultural atmosphere, is that we have needs and desires—possibly hidden from us—that make us react unrealistically.

There is some truth in this assumption, of course; it is in keeping with sound psychological thinking. Let us consult the *Comprehensive Dictionary of Psychological and Psychoanalytical Terms* by English and English (published in Longmans in 1958) for two definitions related to this subject.

> **Realism**. An attitude of being sensitive to, and guided by, things as they are, rather than as one wishes them to be.
>
> **Irreality-reality dimension**. A dimension along with behaviors can be ordered according to the degree to which they are regulated by needs and desires, on the one hand, and by the objective situation on the other.[1]

On one side we have "things as they are," or "the objective situation"; on the other side we have "as one wishes they were," or

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[1]English and English, *Comprehensive Dictionary of Psychological and Psychoanalytical Terms* (Longmans, 1958), (italics added).

"behaviors regulated by needs and desires." It is either realism or delusion, objectivity or wishful thinking.

Our previous study of the epistemological profile has warned us of the dangers of stage-two "either-or" thinking. We have become suspicious of explanations by unicausality, and we are looking for more than one explanation—in fact, for a limitless number of postulated explanations. We therefore ask ourselves: What else, apart from our needs and desires, could possibly account for our lack of "realism," for our reacting to things *as they are not?*

One answer is: Our *structured unconscious* has something to do with this. By structured unconscious, I mean the complex network of methods of thinking-feeling-acting, the theories and doctrines that we have internalized more or less consciously throughout life. Many of these are embedded in the language that we use in thinking, listening, and speaking. This structured unconscious is different from the subconscious of psychoanalysis; it is the sound and sane nonconscious of common sense. It stands as a filter between our inner self and our perceptions, our subconscious and our supraconscious (Figure 10, p. 205). We do not react to things as they are, we react to whatever our structured unconscious makes of our perceptions, of our subconscious drives and affects, of our supraconscious illuminations and insights.

Here is an example of how it transforms our perceptions and rules over or physiological reactions. Read—preferably aloud, and slowly—the following paragraphs.

I am particularly fond of lemon juice. I enjoy sucking the juice of a really ripe lemon. It has such a clean, sharp taste. Last week, we went to the supermarket, my wife and I. As I walked past the fruit counter, I saw a pile of big, fresh, ripe, juicy lemons and that appealed to me. I bought a dozen of them and put them in the shopping cart.

When we came home, it was hot, and I yearned for the tart taste of lemon juice. We unpacked the groceries in the kitchen. I picked up one of my lemons, held it in a plate, took the bread knife, and cut the lemon in two. I could see the juice oozing in clear yellow drops. I took one half, brought it to my mouth, and sucked the cool fresh juice with delight.

Now you may continue reading in silence. As you do, observe carefully what is happening to your salivary glands. If your mouth waters, are you reacting to things as they are? Are you tasting lemon juice?

This, evidently, is not wishful thinking. To call his reaction a delusion is a bit too strong, suggestive of abnormal psychology, of neurosis or psychosis; but this reaction is a normal phenomenon. One way to account for it is to say that the words "lemon" and "juice" transacted with a structured unconscious that permeates your whole organism, and this transaction, like all semantic transactions, has its electrochemical aspect. If I had described the experience in a language that you do not understand, the response would not have taken place. It therefore seems legitimate to conclude that language had something to do with it.

The Structure of the World

One of Korzybski's favorite statements was "The only contents of knowledge is structure." He once gave me an objective lesson about it, and I think it is relevant to what we are now studying.

Driving back from New York to Montreal, I had stopped for a couple hours in Lime Rock, Connecticut, where he was living. When I came into his study, he was busy with a kaleidoscope. After the usual salutations, he put the instrument in my hands and told me: "Look!"

I had looked through kaleidoscopes so many times in my life that I was not ready to play with this one very long. I put my eye to it, aimed at the light of the window and gave it a few turns. "It is just a kaleidoscope like any other," I said to myself: "It gives an eight-sided pattern to whatever happens to be in the end piece. What's this idea in putting me through this child's game?"

I put the instrument back on his desk and attempted to have him talk of something else, but he was not in a mood to talk about anything else; he was in a mood to put me through an experiment. He took the tube, removed the end piece, and reached for another box that contained half a dozen more. After he had fitted the end piece, he handed the instrument back to me. "Look!" he said again.

I looked, turning the tube two or three times with my fingers. Same patterns, of course. What was the old man's purpose, I wondered? Was he getting senile? Or was it just plain cussedness, of which I suspected he had quite a bit. I put the kaleidoscope back on the desk. He grabbed it, put on another end piece, and handed it back to me with the same injunction: "Look! Look!".

I was getting annoyed; but annoyed or not, I had to go through the performance a third time—and as many times as there were end pieces in the box. Then he showed me his collection of end pieces: one contained bits of macaroni; one was half full of tiny nuts and bolt; one had, of course, the usual assortment of colored glass, and so on. "Well, what do you say now?" he asked as he lit another cigarette.

I did not say anything. I felt I had better stay at the silent level than burst into speech and give him a piece of my mind for those wasted twenty minutes.

He waited with a quizzical smile for what appeared to me a very long time—and a further waste of the precious minutes I had set aside to talk with him about serious matters. Then he took the kaleidoscope in his hands with deliberation, put the eyepiece near my face, and pointed his finger to the far end. Sententiously he grumbled: "Chaos *there*, structure *here*!"

I still did not understand, and I was too upset to try to appreciate the lesson, but on my way through the Adirondacks that night, it dawned on me. *The structure we see of the outside world is made by the instrument through which we look at the world!* This instrument is our structured unconscious.

Many people are convinced that, as science proceeds, we are learning to perceive better, and we are coming nearer and nearer the point where we could describe reality in very exact terms. They miss the fact that describing something is to distort it, shrink it, and betray it to some extent. All our contacts with the world around us are acts of abstraction, and a description is an abstraction from first-order experience.

Wittgenstein put it this way: "What can be shown cannot be said." Korzybski said it a bit differently: "Whatever you say it is, it is not." These two statements are diametrically opposed to the medieval definition of objective knowledge, the "equivalence of the mental image and of the thing it pictures." Korzybski developed his entire system from three premises that contradict the medieval view:

1. The map is not the territory;
2. The map does not represent all the territory;
3. The map is not a map of the territory but a map of the mapper himself in interaction with the territory.

The opposition of the two viewpoints is much more radical than appears at first sight; it took me many years to see how different they

are, and I am at a loss to convey my experience with words. One way of becoming aware of it is to put side by side two meanings of a simple verb that forms the basic link in most of our propositional statements, the verb "to be." The stated "to be" and the existential "to be" are not of the same order; the first refers to what we say of a thing, the second belongs to the silent level. The first refers to a human-made situation, the second does not.

The central notion is that we have no way of determining whether the world is structured according to the patterns we ascribe to it. And, even if we could do this, our mental picture would not *be* the structure of the world; the two would always be of a different order of existence. Usually, our descriptions,—or mental models—satisfy us fairly well as rough approximations, and we feel proud of ourselves when they do. A successful experiment does not prove that our hypothesis is right, it simply demonstrates that we have not yet brought its weak points to light. It says that what we construct in our mind has some resemblance with what the real world is like, but the trouble is that we never know how closely our thinking and the event fit in a particular case. There is always a margin of difference that we cannot even measure.

On one side is the "objective" situation; on the other side is the mental image we form of it. Which of the two guides our behavior, the situation itself or our mental image of it? The answer is clear: Our behavior is determined by what we believe the situation is, by the mental image we have of it. We act according to what we know, and we never know everything that could be known about any event in which we are involved. The part that we don't know may be the significant part, and, if we could become aware of it and accept it, it might change our semantic response completely.

If this is so, what is the difference between a normal human being who believes that the world is what he says it is and a mental patient who follows his delusions and hallucinations? The difference is not a difference in kind, it is merely a difference in degree. Neither mental image is 100 percent accurate. The percentage of the normal person is only higher than that of the mental patient.

As far as we know, the "is" of existence covers a limitless ocean of possibilities: the "is" of what we know and control is like a small volcanic island that has emerged from the boundless sea. "We are

immersed in a world full of energy manifestations, out of which we abstract only a very small proportion."[2]

The Limits of Observation

If we draw a spectral band of the full range of known energy manifestations, we have at one end the very short high-frequency cosmic rays and at the other end, the long low-frequency radio waves. In the center of this band is a small region of light and color that we can perceive with our eyes, the "peephole" through which we can observe what is going on around us. Compared to the full range of energy manifestations of which we know something, this peephole is very small indeed. What lies to the right and to the left of it was unknown to our great-great-great-grandparents; it was the world of the mysterious, which they interpreted with magic, mythology, or astrology. Today we have instruments with which to peer into the world of subtle energies that lies on both sides of our unaided vision. We have even harnessed some of these powerful energies and made them serve us in X-ray machines, radar equipment, and other inventions.

Within the narrow range of visible light itself, it was only twelve generations ago that Newton started the analysis of white into its component colors. Until then, very few people suspected that the beautiful colors of the rainbow were sunlight spread out in the sky by its refraction in raindrops. From Newton's discovery a new science was born, spectroscopy, with which we can make a chemical analysis of distant stars and galaxies.

Many other devices have sharpened our vision and made it penetrate into realms that formerly were closed to it. There are microscopes, electron microscopes, telescopes (with or without photographic plates), infrared photography, oscilloscopes, and so forth. We abstract from the world of cosmic energies more phenomena than our ancestors could; we know much more of what is going on in the physical world around us and within our bodies. The more we know, the better we realize that much more is left for us to discover (Figure 10, p. 206).

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[2]Korzybski, *Science and Sanity*, p. 238

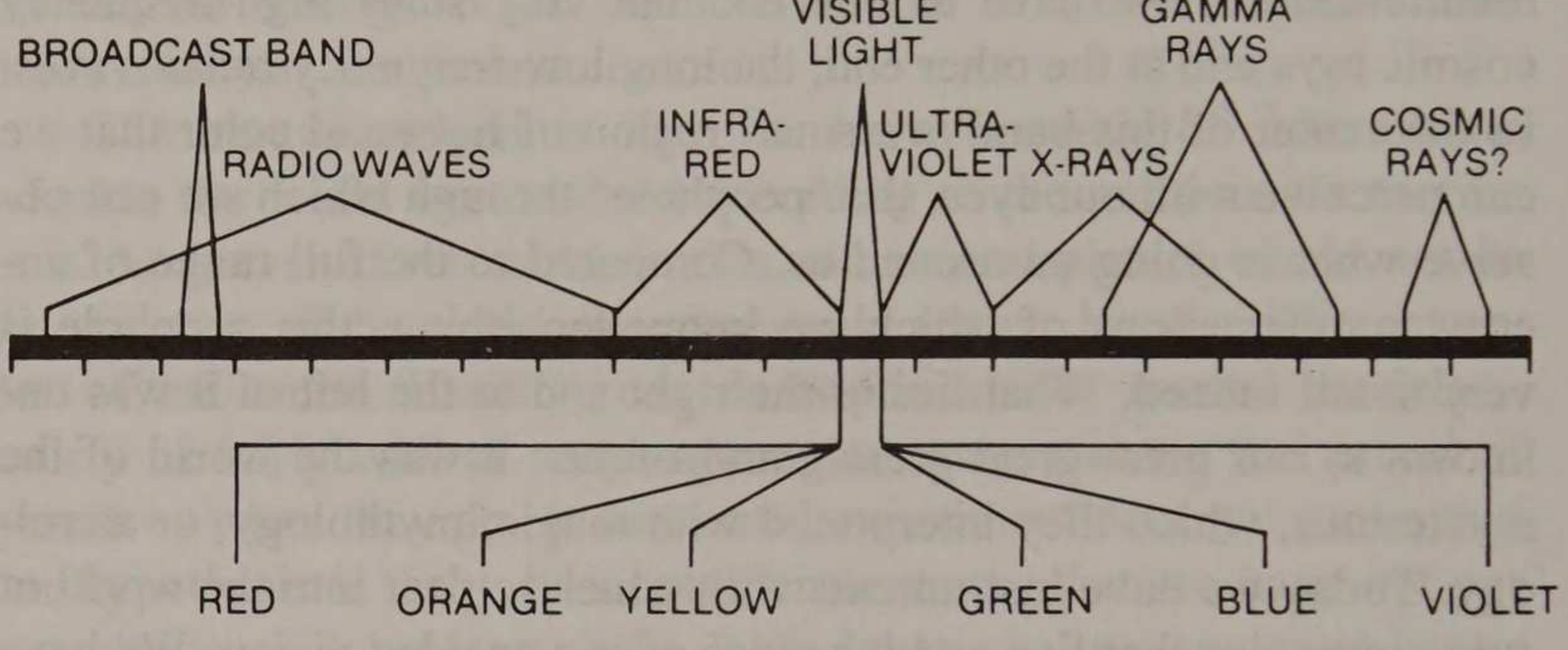

Figure 10. The energy spectrum

Looking at the physical world is a form of inspection to understand and manage the forces of nature. For ages, we have been engaged in another form of inspection, which is called introspection, or looking into ourselves. We introspect with the unaided eye of common sense. We observe our thoughts, our feelings, our emotions, our desires, our purposes, our frustrations, and our anxieties. We try to differentiate them, to understand them, and to manage them.

How broad is the band of human energies that we can observe with the unaided eye of common sense? How clearly can we differentiate within that narrow band? Not much, I think. In the psychological realm, we are just beginning to widen the range of our observations and to probe deeper within the limited band of introspection.

To visualize what I mean, let us imagine a spectral band similar to the one on which we spread the range of physical energy manifestations. The range of human energies goes from the subconscious on the left, through the conscious in the center, and to the supraconscious on the right. Our common-sense introspection is limited to the middle range, that of the conscious (Figure 11, p. 207). Within this conscious range, humans have tried for generations to probe in depth, to fathom the secrets of their own souls, to differentiate the currents and the whirlpools of activities that surge within people. To use the

analogy of the spectroscope, humans meant to let the light of self-knowledge go through the prism of self-analysis and spread itself into a spectrum that they could differentiate and measure, from the ultra-violet of creative thinking to the infrared of feeling and emotion.

The prism for self-analysis is our language and the logic we derive from it. As Werner Heisenberg put it in speaking of the physical world: "We have to remember that what we observe is not nature itself, but nature exposed to our methods of questioning." We must remember that what we see in ourselves—reason, memory, feelings, drives and needs—is not human nature in the raw but human nature seen through the lens of common-sense language, the structured unconscious. There are probably very many manifestations of human energy that cannot be detected through this lens, just as the cosmic rays and the radio waves are invisible within the narrow band of sunlight covered by the spectroscope.

Within the conscious range, a flock of psychologists, linguists, cultural anthropologists and sociologists are working hard to increase our awareness. I would compare them to the physical scientists who use the spectroscope and the microscope to penetrate the secrets of the molecule and the cell.

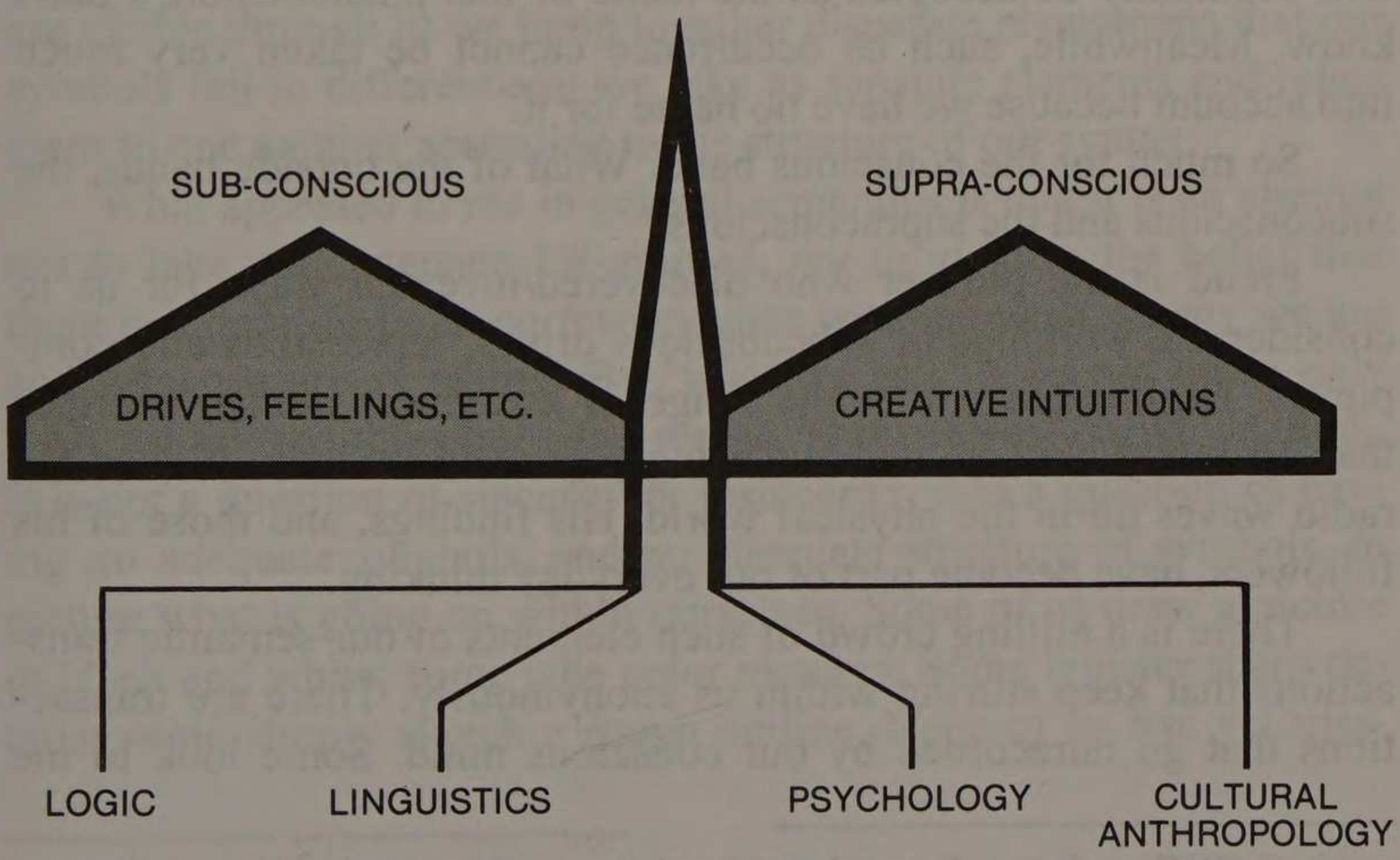

Figure 11. The semantic spectrum.

One of their early discoveries was that our language is a very imperfect instrument through which we look inside ourselves and report what we see. If we have no name for a phenomenon that occurs within us, we are apt to ignore it, or we describe it to ourselves so imperfectly that we miss its particular significance. If you go (and I strongly recommend that you do) to William James' classical *Principles of Psychology*, and read his chapter "The Stream of Thought," you will see how keenly aware he was of this difficulty.

> Suppose we try to recall a forgotten name. The state of our consciousness is peculiar. There is a gap therein, but no mere gap. It is a gap that is intensely active . . . If wrong names are proposed to us, this singularly definite gap acts immediately so as to negate them . . . and the gap of one does not feel like the gap of another . . . When I vainly try to recall the name of Spalding, my consciousness is far removed from what it is when I vainly try to recall the name of Bowles.[3]

Here is something within the range of the conscious, something that we can notice if we pay attention to it. Call it a gap, a movement of the mind in search of a memory that we feel is there; call it an attempt to recall, or what you will. None of these terms exactly describes what I am referring to; each is a figure of speech. Which term will eventually be accepted as the name of this phenomenon, I don't know. Meanwhile, such an occurrence cannot be taken very much into account because we have no name for it.

So much for the conscious band. What of the outside bands, the subconscious and the supraconscious?

Freud is the pioneer who discovered/invented ways for us to consider the workings of subconscious drives, repressions and complexes. He brought within the range of awareness human energies that operate within us without being perceived directly, just as the radio waves do in the physical world. His findings, and those of his followers, have become part of our everyday thinking.

There is a milling crowd of such elements of our semantic transactions that keep stirring within us anonymously. There are transactions that go unrecorded by our conscious mind. Some look to me

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[3]William James, *Principles of Psychology, I* (New York: Rinehart, Holt & Winston, 1950) p. 251.

like simple changes in direction, like indicators of a sharp turn. For instance, if I say, "He is clever, but . . .," the word "but" shows that I am going to back up or bend my track in a direction altogether different from what was expected. Some of these movements are not expressed; they are anticipations, purposes, hidden agendas, strivings, motivations that give a push and a pull to our thinking-feeling behavior. As George A. Kelly puts it: "A large proportion of human behavior follows nameless channels which have no language symbols, nor any kinds of signposts whatsoever."[4]

These nameless channels operate as powerful controls upon our semantic transactions. They are outside the field of logic, because logic has to use symbols and words, and these phenomena have no names or symbols by which they can be designated in a syllogism or an equation. Within this band of potential awareness are also the many ideas, principles, attitudes, and cultural determinants that we take for granted, that we do not question, that we accept as "essential" components of our human nature. It is the area of "of course" statements, of what we take as axioms of common sense, of basic principles that brook no contradiction.

Our structured unconscious is like a screen spread over the range of our awareness. We observe our transactional responses through that screen; we abstract only the bits and parcels of experience that are visible through it; we lump together disparate phenomena that our symbols fail to differentiate; we take as separate elements and relate them to one another according to the structure of our syntax.

What appealed to me in general semantics is that it is an attempt *not* to take our language for granted, *not* to yield to the belief that there is a point-to-point correspondence between what we say we are and what we are in reality. By "what we say," I do not mean only what we say to others but what we say to ourselves—what we think. It is not a question of sincerity or insincerity, it is a question of having no adequate symbols, and no adequate structure of symbols, to picture what is going on within ourselves. Some of us draw a picture in black and white; some take color pictures. Some register sharp details; some simply sketch a rough outline. None of us has yet mas-

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[4]George A. Kelly, *The Psychology of Personal Constructs, I* (New York: Norton, 1955), p. 130.

tered the skill of revealing, to himself or to others, the dynamic complexity and the throbbing tension of a single semantic transaction.

The third part of the psychological spectrum, the supraconscious, is veiled in even greater secrecy. Many people believe in the supremacy of reason and logic and simply refuse to accept the existence of some supraconscious. For them, it is the realm of imagination, of sentimentality, of mysticism—if not a misty smog produced in the mental sky by the morbid exhalations of a repressed libido. For them, you are either sane, unsane or insane. There is no room in their philosophy for the supersanity of creative scientists, artists and genuine mystics.

I do not share these views, although I realize that we know very little about the supraconscious. What we know is not yet sifted from the dross of allegories, figures of speech, or sententious statements that sound like conundrums. Most of the time, those who strive to behave "scientifically" do not welcome metaphors and generalities.

Science (with a capital S) has become the metaphysics of many among us; and, when Science is made commensurate with strict logical rationality, we limit ourselves to a narrow range in the spectrum of self-knowledge. We interpret the standard definition, "Man is a rational animal," as a complete description of what we are. "Rational" easily becomes the equivalent of "reasoning" and logical reasoning becomes the measure of what we are ready to accept as human in the full sense of the word.

In the ages of faith there was a way out of this human-made prison. Most people accepted rationality as the upper limit of human nature, but they also accepted a whole realm of suprarational phenomena—an order of existence beyond the reach of unaided human nature. This was the world of untapped possibilities. I am ready to accept it. That this world has dimensions well beyond what we can imagine at the present stage of our development, I admit as well. The thinking tools we know are probably inadequate for surveying the world of the conscious, let alone the world of the supraconscious. We have to create new tools as we go on.

This is what chemists and physicists had to do as they penetrated deeper and deeper into the atomic world. When they saw atoms as round balls with hooks on them, they were using models that were too simple. These models were borrowed from the world of the gross

objects of common experience; they did not belong to the world of the atom.

Later, chemists and physicists compared the atom of hydrogen to a simple planetary system. More complex atoms were compared to more complex systems of a similar type. These analogies helped give results that the analogy of balls with hooks could not give.

Scientists eventually discovered that the planetary system model was limited, and they invented other models, of a more abstract nature—some expressible only in mathematical formulas. In the process, the term "atom" became a misnomer. By etymology it means "unsplittable," and this was the reason for its choice at the beginning; it was intended to be a descriptive name for the ultimate particle of matter that would resist fractionation. We now know, from experience, that atoms can be split, with a great release of energy. But nobody seems to care about the contradiction that the unsplittable of the Ancients has become the fissionable of the Moderns. We accept that what common sense says it is, it is not.

When shall we question the "objective validity" of what we say of mind, soul, personality and such? The physical scientists would not have split the atom if they had believed that it is what the word implied.

Science as Human Enterprise

The story of Pygmalion falling in love with the ivory statue he had carved is a classical picture of man's idolatrous worship of his own creations. We forget that our institutions, our religions, and our sciences are human-made, and we eventually endow them with qualities and powers that are superhuman. We no longer claim that they have a supernatural origin and were revealed to us by some divinely appointed messenger, but we keep behaving toward them as if they were God-given and endorsed by God.

Of the idols that are so worshiped today, probably none holds such an exalted position as Science. I do not object to having a high regard for it provided we do not detach it entirely from its makers, human beings.

We are convinced that all problems can be eventually solved if we have the necessary personnel, equipment and money. But this is an oversimplification and a generalization, although it is true that breakthroughs have sometimes been achieved by concentrating the

work of many experts in a chosen area (the production of the atom bomb is an example that nobody can deny). But it remains that there is something unpredictable in the advances of science. When the scientists go into the laboratory, they are very much like the fisherman who goes fishing. They may come out with a tremendous catch, or they may come out empty-handed. Science as it is lived by those who are in it bears little resemblance to science as seen by outsiders. When a highly respected physicist of our generation, Professor Erwin Schrodinger, calls science a fashion of the time, we are so startled that we wonder if he is being facetious. But his statement, in a talk he gave to the Physics and Mathematics Section of the Prussian Academy of Sciences (February 1932), is explicit: "Science is dependent on the fashionable frame of mind of the epoch of which it forms a part."[5]

Of course, there are sciences and "sciences." In general, we acknowledge that the human sciences—the humanistic, behavioral, or social sciences—are greatly influenced by the culture in which they grow. But another class of sciences, the exact sciences—of which physics is the outstanding member—is considered free from subjectivity. It is claimed that the findings of the exact sciences are the same all over the world; they are not influenced by the political creed or the religion of the experimenter.

Why Experiments Are Made

The exact sciences are the sciences that Schrodinger—a physicist in the same class as Einstein, Bohr, de Broglie, and Dirac—said are a fashion of the time. He admits that experiments in the exact sciences have a high degree of objectivity (or "intersubjective testability")—which means that a physical experiment or observation will be the same for all observers if the conditions and the technical methods are the same—but *how many* of these experiments are carried out, and how many are *not* carried out that could or should be? A subjective choice is made right here. Science, in its totality, does not claim to give us the rounded picture of all reality; it gives us *a* picture of *some*

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[5]Erwin Schrodinger, *Science, Theory and Man* (New York: Dover, 1957), p. 104.

reality, pictures of the segments of reality scientists have decided to study.

A thousand and one reasons, many of which are not scientific at all, cause scientists to perform certain experiments and not to perform others. Some experiments are not practicable until the appropriate techniques are available. What can today be done in Antarctica was not feasible in the days of Scott and Shackleton, and we could not send a man to the moon until we had (first) a booster that was powerful enough. There are also cases where the available finances determine what one can do; even if one of its citizens were the most creative genius of our times, a small and poor country could not build a cyclotron.

Many experiments have "suggested themselves" to scientists but have not been deemed interesting enough or sufficiently related directly to their actual undertaking. Sometimes, a scientist may have felt that he knew what the results would be and that it would be a waste of time and money to check and verify.

Other experiments have been performed successfully, but were so ahead of the thinking of their time that they were not considered significant. Schrodinger cites the case of Grimaldi, whose experiments in the seventeenth century on the diffraction of light could be interpreted as the first demonstration of the indeterminacy principle, formulated by Heisenberg in 1927. At the time, however, nobody attached any importance to Grimaldi's experiments.

If a theory is diametrically opposed to what is generally accepted in the world of professional scientists, it has a very bad reception. In fact, it may be so disturbing to the official scientific community that some of its most respected representatives may forget their dignity and behave like the religious zealots of the ages of faith. An outstanding example of this type of aberration is the case of a book, *Worlds in Collision*, by Dr. Immanuel Velikovsky (published by Doubleday in 1950).[6]

Finally, we must remember that any advance depends on the data already available, and data, in turn, are the results of the work of pre-

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[6]For the story of this incident, you may consult The Sociology of Science" in the monthly periodical *Current* (February 1964), or the sources mentioned in *Current: Harper's* (August 1963), and the *American Behavioral Scientist* (September 1963).

vious generations. We therefore go back to the original decision of primitive people to begin a search for the understanding of nature's secrets.

What was the purpose of primitive people when they first attempted to understand nature? It was simple and practical: they wanted to survive; that is, to preserve what was already good in their way of life and to discover what could be better. Science is both conservative and creative. It has to be consistent with the common sense of the day, and it has to improve our condition. In other words, science does not exist for its own sake; it is a human enterprise with a practical purpose.

What of *pure* science? Is it not a disinterested search for the truth? Is it not born of pure curiosity, irrespective of the practical consequences? Yes, it is; but this search for the truth is directed and sustained by the values that are important for the individual scientist. It is an attempt to translate into concrete terms what he or she considers to be of greatest importance. The choice of a field of research and the evaluation of findings are very much a matter of values.

Professor Schrodinger illustrates this in the following manner. Suppose you have just given a lecture on some research that you have completed and a colleague asks why you are making such a fuss about this particular topic.

> Then you will try to show all the connections your theme has with the others. You will try to defend your own interest in the matter. I mean that you will try to defend the reason why you are interested. Then you will probably notice that your feelings are much more ardently aroused than they were in the lecture itself. And you will become aware of the fact that only now, in your discussion with your colleague, have you reached those aspects of the subject that are, so to speak, nearest to your heart.[7]

"The aspects of the subject nearest to your heart"—didn't we discuss this earlier when we spoke of the cortex that intellectualizes and of the thalamic region that integrates all of our behavior? Doesn't this remind us of the emotional order, which Hermann Keyserling takes as the basic pattern of our relations with ourselves and with the cosmos? And so we have gone full circle and are back where we started,

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[7]Schrodinger, *Science, Theory and Man*, p. 95.

with people alive and struggling in a world where they want security and mastery. Science is not an end in itself; it is simply another means of achieving our purpose.

The Acceptability of Scientific Theories

What makes a semantic transaction in a scientific theory or otherwise acceptable to other semantic transactors? At a symposium held in Boston and co-sponsored by the National Science Foundation and the American Academy of Arts and Sciences, Dr. Philip Frank, lecturer in physics and in the philosophy of science at Harvard, flatly contradicted the generally held view that science is a discipline that stands on its own.

> Among scientists it is taken for granted that a theory "should be" accepted and if and only if it is "true"; to be true means in this context to be in agreement with the observable facts that can be logically derived from the theory. Every influence of moral, religious, or political considerations upon the acceptance of a theory is regarded as "illegitimate" by the so-called "community of scientists" . . . This view tells the truth, but not the whole truth.[8]

Frank then explains why science cannot be evaluated in isolation.

> If we consider human behavior in general, we look at physical science as part of a much more general endeavor that embraces also psychology and sociology.[9]

Humans, even as scientists, cannot divorce themselves from their semantic world taken in its entirety, and they cannot ignore the fact that their fellow humans are also semantic transactors.

Dr. Frank mentions many historical facts in support of his statements. He discusses at length the problem the scientists of the seventeenth century had in accepting Copernicus' theory of the sun as the center of our planetary system. Francis Bacon, the most conspicuous

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[8]Philip Frank, "The Variety of Reasons for the Acceptance of Scientific Theories." *Scientific Monthly* (September, 1954), p. 139.

[9]Frank, "The Variety of Reasons for the Acceptance of Scientific Theories," p. 140.

adversary of Aristotelianism in those days, refused to accept it—and even fought against it. Later, Galileo—the most frequently cited advocate of progress in science of his generation—failed to accept Johann Kepler's theory that planets move along an elliptical orbit and not along the circumference of a circle. So it goes: unanimity in science is often long in coming.

Newton's physics supported belief in a God who was an extremely able engineer who created the world as a machine. Darwin's theory of evolution was attacked on religious and moral grounds. The emergence of life from nonliving matter is rejected by people who feel it would weaken belief in the existence of a soul. The quantum theory is interpreted by some as a refutation of mechanical determinism in the workings of the universe and as an argument in favor of free will.

This brings us back to Schrodinger's statement that science is a fashion of the time. In other words, it is one outward expression of the prevalent culture.

> Our civilization forms an organic whole. Those fortunate individuals who can devote their life to the profession of scientific research are not merely botanists, physicists or chemists, as the case may be. They are men and they are children of their age . . . In short, we are all members of our cultural environment.[10]

The consequence is that, in all our activities, a general world outlook is dominant, or tends to dominate. A civilization is not at peace with itself until its various institutions align themselves according to a common world outlook. This world outlook, in turn, may be brought about by technological developments and also by ideological movements. If the two fail to advance at a comparable speed, there is tension and misery. For instance, the Industrial Revolution was mainly a technological development, and it took many generations for employers to attune their sociological attitudes to what was going on. I remember the days when labor unions and collective bargaining were opposed by well-meaning people, and meanwhile, our civilization witnessed useless fights between segments of our population.

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[10]Schrodinger, *Science, Theory and Man*, p. 99.

We are now in the midst of another technological revolution, the revolution in communications. It has shrunk the planet to the dimensions of a federation of small independent states without a central government, and this technological revolution requires a radical change in the methods of thinking that were in fashion generations ago. Western humanity is not the prototype of humanity at its best; our particular brand of democracy is not the highest form of political wisdom for all people in all places; our logic is not the only reasonable brand of logic. Finally, and this is most important, our science is not the highest human achievement. We must not worship science—it is a servant that may easily take the whole household.

The worthiest objective is for us to be human; and the great human enterprise is just that. All the knowledge that we may acquire, all the techniques that we may invent, all the skills that we may master are subservient to this main enterprise. Science is a powerful means for achieving our ends, but it is only a means.

Korzybski also saw science as a technique at the service of human interests.

> The greatest men of science have always had wide human aims and interests. From the non-elementalistic point of view, they probably became productive because of this broad human urge.[11]

"This broad human urge" calls for a broad formulation in our days, when the great religions of the world face one another and are forced to admit that none of them is *the* world religion. Whether we call this formulation a common outlook, a common metaphysics, or a common religion, the term is not important after all.

Some have suggested the term "New Humanism" to distinguish it from the old humanism rooted in the now obsolete scientific attitude of pre-Einsteinian years. A French writer, who succeeded in bringing together a brilliant group of scientists, artists and writers, who made them willing collaborators in his ultramodern magazine *Planete* (now published in French, Italian, Spanish, German and Dutch), compares the old humanism to the new:

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[11]Korzybski, *Science and Sanity*, p. 728.

> At the level of the old humanism, all we have in this world in mutation are some useless good intentions, and all we can do with our intelligence is to see in despair the absurdity of everything and the threatening signs of a dark future.

In contrast to this pessimistic view, he proclaims a new faith, consistent with, and nourished by, an evolutionary view of the entire cosmos.

> What is beginning to infiltrate up-to-date consciousness is that we are here solely to facilitate the passage of something that will come after us. We are not here to enjoy what we are and what we have achieved. *We are here to be and to help the development of being*. And everything that detaches us *from having* and bring us *to being*, to being more as individuals and being more as humankind, must be taken as an advance toward the humanism of the third millennium . . . In a certain sense, the notion of evolution gives a broad and messianic meaning to the idea of Man the Maker of the World, and I think that we shall mobilize more effectively the men of tomorrow by reminding them that we are here to push—as far as we can—our knowledge, our powers of action, our understanding, and our contacts with outside universes so that there may take place the changes that will give birth to a new form of humanity.[12]

The Self-questioning and Self-correcting Character of Science

There is a characteristic of the scientific enterprise that is becoming more evident and influential as people are growing to cultural adulthood. Science is the one human invention that possesses a built-in capacity for self-correction through self-questioning and maintaining a constant self-renewal of honesty in purpose. In the end, this capacity takes over and it satisfies our sense of fairness and justice.

Generations ago, it took a long time for the wrongs done to pioneering scientists by their fellow intellectuals to be acknowledged and corrected. Galileo was made mute for the rest of his life, and Giordano Bruno was not even allowed to live and wait for recognition. Things are different today: libel, vilification, and character assassination are still possible, as in the case of Immanuel Velikovsky who was, for many long years, *persona non grata* on college and university campuses. Lately, he is receiving widespread recognition as

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[12]Louis Pauwels, "What we Are and What We Believe In," *Planete*, No. 21, translated by J.S. Bois (italics added).

his views on the Sun, Venus, comets and meteorites, Jupiter, Mars, the Moon, the Earth, and ancient history are confirmed. He is invited to speak at such places as Yale, Harvard, Columbia and Dartmouth. In February 1972, the Canadian Broadcasting Corporation had a full program on his life and work. To quote Velikovsky when he was publicly acknowledged at Harvard: "I did not come for revenge or triumph, I come to find the young, the spirited, the men who have a fascination for scientific discovery." Both he and his audience were exemplifying science as a self-correcting and self-renewing enterprise.[13]

Summary

In this chapter we have explored structural complexification in human life and proposed an epistemological profile as a way of evaluating that complexification, from the level of the human race to the level of the human individual. We also proposed stage four, the postulating stage of creative processing, as the level of functioning most appropriate to our present stage of development. This is the main thrust of this text and introduces the seed notion of Epistemics as the art-science of innovating. Later, we will describe stage five, participating, for which a stage four orientation is suggested as a necessary preparation.

Consistent use of the epistemological profile by an individual can produce, over time, an awareness not possible by any other means that I have encountered.

One thing that I have tried to emphasize here is that each time a scientist, or any creative individual, creates a postulate, she or he invents a nonmaterial structure, a program of action that will determine the conditions of future experiments. This is the tuning of one's whole self to the ongoing cosmic process as revealed by the work of one's predecessors.

We can humanize all of our institutions, including science, by giving up practices held in high honor for centuries: instead of philosophy of "the world out there" standing in the objective light of dis-

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[13]See the special issue of *Pensee*, a periodical published by the Student Academic Freedom Forum, P.O. Box 414, Portland, Oregon, Vol. 2, No. 2, May 1972, entirely devoted to the topic: Immanuel Velikovsky - How Much of Yesterday's Heresy is Today's Science?

passionate observation whose structure is discovered by the strict logic of induction and deduction, it will be what Lancelot Law Whyte called an *organic* philosophy; a description of human beings as the makers of their world within the limits of their capabilities and for satisfying their need to participate.

I now want to go more deeply into the notion of structure. With the use of a mental model that I have borrowed from Kenneth Boulding, we will see that structure connotes something more than static or mechanical. A deeper understanding of structure can help to bring us into new awareness of the systems at work in human affairs.

CHAPTER 11

structure as fields of activity

To know something is to see it as belonging to a structure, to a system, to an organized whole in which it has a definite place and function. The world may be seen as a hierarchy of wholes, of energetic structuring fields of activity, superimposed upon one another in an increasing order of complexity. Thus, structure is multiordinal in that it means something entirely different within different levels of existence. This is important in our use of mental models, analogies, and in the next chapter we will examine our use of language structures.

Mental Models and Their Use

Thinking Models as Standardized Analogies

The word structure occurs repeatedly in Korzybski's *Science and Sanity*, and it seems almost to dominate his thinking. Of the ten parts of the book, seven have *structure* or *structural* in their titles. Part VII (whose title has apparently nothing to do with the notion of structure, but deals with non-Aristotelian training) contains a detailed description and a long explanation of a diagram that has become something of a trademark for the whole system. This diagram, the *Structural Differential*, is intended to convey the author's central message of *consciousness of abstracting*, and its name clearly shows Korzybski's concern for two key ideas: (1) *differences*, which make each person, thing, or situation unique in space and in time, and (2) *structure*, which accounts for the inner arrangement of parts, or elements, of each unique person, thing, or situation abstracted as a distinct whole

from the cosmic space-time flow—from what we called *WIGO* in an earlier chapter (p. 82).

In varied forms of expression, Korzybski repeatedly stated his belief that "in structure we find the mystery of rationality, adjustment, etc., and we find that *the whole content of knowledge is exclusively structural*."[1] Nor is he alone in feeling this way: fitting thought elements into the proper structure has become a main concern of the epistemology of our generation. Many new words, or old words used in a new way, replace such terms as "idea," "thought," "concept," or "reasoning." We now hear of *Gestalt, configuration, conceptual organization, constructs, patterns, schemes, conceptual coordinates, closed and open systems, maps, structures, multidimensional manifolds* and *models*. Reasoning is no longer seen as a chain of propositions linked to one another by the laws of syllogism, as the old terms "therefore" and "non sequitur" imply. Thinking and reasoning is an activity that involves movements in many directions, like building a house, adjusting a complicated piece of machinery, or piloting a plane with an eye on a panel of dials and lights.

Through some sort of telepathy scientists who have no personal contact with one another work in a similar fashion to overthrow the old order of things. They are revising their methods of thinking, each in their own field. Whether they know of Korzybski does not matter so much; if they are progressive, they have to rediscover what he discovered years ago, and they have to push forward in the direction he indicated.

Two such scientists, who would deny any affiliation with the general semantics movement, are Montreal psychologists, well known as experimenters and writers in their field: Drs. Hebb and Bindra. In 1952, they contributed an article to the *American Psychologist*, the professional journal of the American Psychological Association, which dealt with the problem of communication by means of the spoken and written word; and one of their statements sounds as if it had been written by a general semanticist.

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[1]Korzybski, *Science and Sanity* (Lakeville, Conn.: International Non-Aristotelian Library, 1933, 1941, 1948, 1958), p. 61 (italics added).

> The fundamental difficulty of verbal communication remains: to get an overview of a *complicated structure* that must be apprehended bit by bit.[2]

Words come out of a speaker's mouth one at a time and enter the listener's ear in the same serial order, but they are really labels that express elements of a structure in the speaker's mind, and they are intended to create a similar structure in the listener's. This they often fail to achieve.

> The task that a speaker sets his listener is to achieve a two-or three-dimensional structure from a series in one dimension. It is the task of making a house *at once* out of a series of nails, boards, scantlings, and bricks delivered one at a time in a rapid series. Conversely, at the speaker's end, it is the task of taking the house to pieces just as rapidly, and shipping the parts in the right order to allow the receiver to put it together right.[3]

This reminds us of those American millionaires who dismantled European monuments stone by stone and rebuilt them on their estates in this country. A speaker takes apart the structure of his own mental construct and ships the parts one by one on the air waves. The listener, who has not seen the whole construct before it was dismantled, has to rebuild it by figuring out how the parts interlock with one another.

Analogies

It is now recognized that formal logic is something artificial, something for show, like the marching past of military parades; it is not used on the fighting lines of political debates, labor negotiations, addresses to the jury, or family arguments. In actual life, we do not use formal syllogisms, we think with analogies.

> The idea of some philosophers that logic has anything to do with the mental processes of the great majority of men is totally wrong . . . The rules of logic are abstractions which in practical life are rarely used—so rarely, indeed, that flagrant logical errors pass by easily and are often not

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[2]D.O. Hebb and D. Bindra, "Scientific Writing and the General Problem of Communication", *American Psychologist*, October 1952, p. 571 (italics added).

[3]Hebb and Bindra, "Scientific Writing and the General Problem of Communication," p. 571.

> detected even by specialized minds trained in abstract thinking. Every political speech is full of such instances. Men do not think in logical terms; men think predominantly in the elastic terms of analogy.[4]

This apparently radical quotation is nothing but an echo of the exclamation of a rigorous follower of the inductive method, Johann Kepler, who said:

> I cherish more than anything else the Analogies, my most trustworthy masters. They know all the secrets of Nature, and they ought to be the least neglected in Geometry.[5]

According to Dr. Hebb, the well-known research psychologist, the use of analogies is not restricted to popular and practical thinking. He repeats Kepler's views and relates them to today's conditions.

> The worker in the laboratory does not merely report and expound by the aid of analogy; that is how he thinks, also. The atom was once a hard little round particle, or later one with hooks on it. Recently it was a solar system. The classical dispute of physics about the nature of light was really asking, Is light like a shower of pebbles, or like ripples in a bathtub? The ultimate answer, Both, was one that was hard to accept. Why? Because it fitted into no preexisting conceptions; waves are waves, and pebbles are pebbles—there is nothing in common experience that has the properties of both.[6]

This shows that, although analogies are useful, they can also be a source of difficulties. They give our thinking processes a pattern from which it is not easy to break free. We must therefore use them with discretion—and "hang loose." When the mental pattern of an analogy has little in common with the empirical pattern of the phenomenon we are studying, it is dangerous to be too rigorously consistent; for this may take us farther and farther away from reality. The skill to choose adequate analogies is important for sound thinking.

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[4]Rudolph Jordan, *The New Perspective* (Chicago: University of Chicago Press, 1951), p. 267.

[5]Quoted in George Polya, *Mathematics and Plausible Reasoning* (Princeton, N.J.: Princeton University Press, 1954), p. 12.

[6]D.O. Hebb, *The Organization of Behavior* (New York: Wiley, 1949), p. 119.

As an example of suggestive analogy, George Polya asks us to consider the hand of a human, the paw of a cat, the foreleg of a horse, the fin of a whale, and the wing of a bat. These limbs are differently used, of course, but they are composed of similar parts similarly related to one another. "Two systems are analogous," he concludes "if they agree in clearly definable relations of their respective parts."[7]

In recent years, a new discipline called Synectics has been developed that makes use of metaphorical analogies in creative activities, mainly in business and industry. They are now extending their work in the field of education. To quote one of their publications:

> Over twenty-five years ago, Synectics research was directed toward the possibility of increasing the innovative and learning output of individuals and groups. This research resulted in the Synectics Technique for the conscious use of metaphor in problem-solving situations.[8]

To abstract a set of "clearly definable relations of parts" is what we meant by relational abstracting (p. 110). When we compare two or more such abstracted structures and find out that they have common characteristics, we reach a higher order of abstraction, that of *mental models*, or standardized analogies. These become tools for further thinking, and the better the tools the better the thinking. A skillful thinker is like any other skilled artisan: he has the most modern set of tools available, he knows which tool is best suited to what he has to do, and he uses every tool with professional dexterity.

Empirical Systems and Mental Models

How many such tools, or general patterns of structural thinking, are now available to us? An economist-philosopher of our generation, Kenneth Boulding, suggested a list of eight.[9] In each case, he points to an empirical system, after which a mental model is designed.

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[7]Pólya, *Mathematics and Plausible Reasoning*, p. 13.

[8]William J.J. Gordon, Introduction to Synectics (Cambridge: Porpoise Books, 1972), p. 1.

[9]Kenneth Boulding, *The Image* (Ann Arbor, Mich.: University of Michigan Press, 1956), Chaps. 2, 3, and 4, pp. 19-63. The whole book is most interesting and challenging. The author suggests the name *eiconics* as the name of "an abstract discipline consistent with a great many metaphysical or epistemological viewpoints".

In the following pages, we deal with only seven empirical systems and corresponding mental models. Boulding was speaking of levels of organization, and he described human society as level eight, a most complex structure made of human beings as elements. We stop at the human individual as the most advanced system-model that has evolved up to now.

SYSTEM-MODEL NO. 1: STATIC

The first empirical system is of the *framework* type, like a house, a table, a chair, a monument, a machine standing idle. It could be the whole world as seen as made of permanent, or relatively permanent, things—mountains, lakes, roads, towns, forests, continents; or as a living organism that is mentally dissected into anatomical parts: the roots, trunk, branches, and leaves of a tree, or the limbs and the organs of the human body.

From this framework system we form a static mental model. This involves a simple enumeration of the constituent parts of a whole with descriptions of their size—which is larger, which is smaller—and of their relative positions in space—which is above, which is below, which is to the right, which to the left. There may be a statement of their function, but not of their functioning.

The plans of a house are of this type, they tell where the kitchen, the living room, the bathroom, and the bedrooms will be in relation to one another. For a static structure such as a house, the static mental model is quite sufficient; a three-dimensional mockup would be a bit better, of course, but it would still be of the same static type.

We often reduce to such a static model structures that are too complex and too fluid to be adequately represented in this form—and if we think about them with such a mental tool, our thinking is necessarily inadequate. The standard organization chart is such a static model: it shows what we could call the anatomy of a company—where the president stands with respect to the other officials (at the top, of course), how many divisions there are (each headed by a vice-president), who reports to whom, who is responsible for what.

This type of thinking model belongs to stage two of Bachelard's scheme of human development; it is merely classification, both horizontal and vertical. It has the rigidity and the "either-orness" of what is unfortunately taken as clear and straight thinking. We may stay marooned at this level when we look at such diagrams as the Struc-

tural Differential (p. 100) or the semantic transaction diagram (p. 32), which are intended to convey a much richer message.

This type of thinking model also deals with the world of nouns that we became acquainted with at home and in the elementary grades, the world of substances that stand by themselves and that we tend to see in isolation. Such structures do not really exist in a world of processes. The boundaries that we assign to "objects" are determined by our sensory equipment or by the categorizing determined by our language.

> We dissect nature along lines laid down by our native language. The categories and types that we isolate from the world of phenomena we do not find there because they stare every observer in the face; on the contrary, the world is presented in a kaleidoscopic flux of impressions which has to be organized by our minds—and this means largely by the linguistic systems in our minds. We cut nature up, organize it into concepts, and ascribe significance as we do largely because we are parties to an agreement to organize it in this way—an agreement that holds throughout our speech community and is codified in the patterns of our language.[10]

The only binding energy that holds together the parts of a framework empirical system is gravitation, or inertia. The parts stay in their respective positions simply because they are all stuck to the earth by the law of attraction. They are passive; their characteristics are determined by the conditions of their environment.

Whenever our thinking is classificatory and hierarchical, we are unwittingly using a static mental model. The stratification of socio-economic classes in upper, middle and lower; of management in top management and middle management; of formal education in graduate, undergraduate, high school, grade school, kindergarten; and the distinction between superior and inferior; between master and slave; between high-grade and low-grade; between first class and second class; between lofty theories and earthy objectives; between high ideals and down-to-earth practices; these and similar stratifications and distinctions belong to an up-and-down view of the world that dates back to the time when the earth was thought of as a flat plain, with

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[10]Benjamin Lee Whorf, *Language, Thought and Reality*, ed J.B. Carroll (Cambridge, Mass.: M.I.T. Press, 1956) p. 213.

heaven above and hell below. All tend to make our thinking static and stratified.

SYSTEM-MODEL NO. 2: MECHANICAL

The empirical system from which we derive the second mental model is the *clockwork*, a machine made of parts that are interdependent in activity and kept going by energy supplied from an outside source. *Mechanical structure* is the corresponding mental model.

> This is the level of the predetermined dynamic structure repeating its movements because of some simple law of connectedness among its parts. The great clock, of course, is the solar system itself, endlessly repeating its complex motions in the majestic wheel of the firmament. This is the world of mechanics. It is governed in the small by Newton's Mozartian equations; it is governed in the large by Einstein's atonal system. This is the universe of eighteenth-century deists—wound up by the great Clockmaker in the beginning and unwinding ever since.[11]

With this mental model we pass from elementalistic thinking, from analysis of parts, to consideration of the whole as a working unit. It is the clock working as a whole that keeps time—no individual axle, cogwheel, spring, or pendulum does it by itself. Every part is necessary, of course, and every part has its individual function, but no part can be dissociated from the group of co-working elements; the value of each part is determined by its contribution to the working of the whole.

Mechanistic thinking of this type is prevalent in our industrial culture. Our analogies are derived from whatever we are familiar with, and, because we live in a world of machines, we get many of our analogies from machines. This type of thinking is a first step toward a further understanding of how we function. It is better than static analogies but still very short of adequate in human affairs. No single organ of our body, no single component of our personality can account for the total value of our behavior. In a team, each member has a contribution to make that may be necessary to achieve what the group has been assembled for, but no member can claim full credit for the achievements of the group. If we push this type of thinking far enough, we become keenly aware of our interdependence with the

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[11]Kenneth Boulding, *The Image*, p. 20.

people who are, as we are, parts of a common organization. When we spread our outlook over the planet—the Sputniks and the Explorers force us to do so—we see that no nation is self-contained any longer. If a nation fails to work in proper timing with the rest of the huge political and economic machine that is humankind today, the whole system may come to a standstill or damage itself badly in a third world war.

In a business company, a type-two mental model would not limit itself to the enumeration of functions; it would describe the relations between them in terms of relative autonomy and role responsibility; and it would draw flow charts to show the movement of goods and the accompanying circulation of paperwork—and also the mutual control they exercise. A truly holistic model will take shape in our minds if we visualize, apart from the formal rigid organization, the informal organization, the spontaneous clustering of people around personal centers of leadership, influence, prestige, or competence that appear, disappear, weaken or wax stronger, depending on circumstances that they themselves may have helped arise or that they resist stubbornly.

This clockwork model is a model of action and reaction, of cause and effect, of movement in space and time. It applies to humans and to machines whenever human "faculties" are taken to operate according to the laws of Newtonian physics. We see the world as a stage where actors either join in a common game or push one another in a contest. This type of thinking lends itself to an evaluation of opposing forces, to strategy and tactics, and to a balance of power.

Machines are inactive until they are set going by the proper form of energy; indeed, the world of machines is a static world waiting to be stirred into action, gathering and maintaining momentum as long as energy is poured into it and slowing down when energy is withdrawn. In our terrestrial world, where gravitation works relentlessly, inertia eventually brings every machine to a stop. Our thinking about machines is still in conformity with Aristotelian physics: nothing moves unless it is set moving by the action of the mover.

Our language is replete with mechanical analogies that we often take as adequate descriptions of human behavior. We speak of stimulus and response as if our organism was habitually at rest like a motor that needs a starter to get going. We *formerly* described a *human being* as a semantic *reactor* as if the initiative for our behavior

always came from an outside source of energy. We set up an organization as we put together the pieces of a mechanical contraption, and we pour our energy into it to *make it work*. We speak of decision-*making*, a process by which we *weigh* the pros and cons; we *keep in balance* the many factors that *are at work* in a situation; and we *plan a course of action* in a sequence of steps *to be taken in the proper order*.

Establishing an assembly line, organizing a crew of men that will fight a fire, and keeping a restaurant functioning smoothly at lunchtime are operations that make use of dynamic thinking. This means thinking in four dimensions, adding timing to the spatial relations of our parts or units. Quite often, this fourth dimension, timing, is the key to success. In industrial operations, it has become a major concern, and it is the reason why time studies, flowcharts, and a variety of other techniques are applied in a methods department.

This type of space-time thinking has achieved what much of the general public admires when they think of science. A large airport is a good example of clockwork thinking in operation; there has to be room for all the big jets that wait for their loads along passageways that stretch out from the main building, landing strips that are clear of obstacles, service trucks, garages, refueling facilities. In the air, there are lanes and corridors that are invisible to the common observer but definite for the pilots and for those in the control tower. This moving complex receives travelers from all corners of the world as it sends other travelers in all directions at the rate of hundreds per hour.

In human affairs, we have the thinking of a surgeon in the operating room, of a moderator in a group discussion, of a politician in a campaign, and of a public servant in decisions of international and historical importance. This is multidimensional thinking of a multitude of space and time factors weighed and combined into one operating mental unit as trigger-sensitive as the booster of a satellite. Our generation has achieved unprecedented technologies by building a powerful adjunct to the human brain, the electronic computer.

SYSTEM-MODEL NO. 3: SELF-REGULATING

The empirical system in this case is a machine with a feedback control, and the corresponding mental model is called a *self-regulating structure*.

There is nothing absolutely new in this type of mechanical system—mechanical governors have been in use for many years—but our attention has recently been drawn to the regulating feature by the increased use of servomechanisms and by the appearance of the science of cybernetics. The world is no longer seen as made exclusively of actors and "acted upon" and causes and effects, which, in their turn, become causes of other effects *ad infinitum*. Causes may produce effects that react upon their own causes, that increase their activity with positive feedback, or keep it within a specified range with negative feedback.

We now speak of steady states, of homeostasis; of which is the tendency for an operating system to keep itself within a range of optimum activity, below which it will not stay for long and above which it will not allow itself to go. A simple example is that of our furnaces and refrigerators with their thermostats, which maintain a level of temperature within a preset range. A more complex mechanism is installed in a guided missile, which can enable it to pursue even a shifting target. Such a machine has what we could anthropomorphically describe as a purpose, an objective, and a degree of self-control. It does what it is designed to do, judges whether its performance is in keeping with its assigned purposes, and corrects deflections from its proper course.

Feedback thinking is closer to living systems, and it becomes extremely rich in possibilities when we apply it to human situations. At the physiological level, animals and humans are clear examples of feedback systems. If we run, our heart beats faster to accelerate the circulation; if we are hot, we perspire to cool off; when we are satiated, we feel no more appetite; when we are tired, we want to lie down and rest. Whatever happens to our body, it reacts to keep itself in functioning condition.

At the psychological level, culture is a kind of steady state that is not easily disturbed; in fact, all habits of sensing, feeling, thinking and moving can be seen as steady states that provide for automatic corrections of whatever interferes with them. People can accept only so much change at a time. If we try to feed them too substantial a diet of rich ideas, they will stop assimilating them. They will easily digest what they are used to, but they may not even taste a different but healthier fare. Sometimes, the feedback system itself is preset against the long-range welfare of the individual, but it nevertheless keeps

working—and we have alcoholism, drug addiction, compulsory eating and such. If feedback is taken into account, we can understand why some people do not want to think. They want to be entertained. They have developed an addiction to stories of sex and violence, to plain gossip, or to shallow vituperation against a common enemy.

As an organization grows older its feedback mechanisms grow more powerful, and it develops a momentum that keeps it on a steady course. We can see this phenomenon in churches, in business firms, in educational situations, in political parties, in professional associations, even in schools of thought.

When we use this model to evaluate the behavior of individuals or organizations, we understand many phenomena for which the previous models could not account. We see human beings, singly or in groups, as self-preserving and self-regulating systems that offer an inertial resistance to outside interference. This applies to teaching, preaching, persuading and the like.

In the light of this knowledge, self-control ceases to be the result of strenuous efforts to keep our instincts and our emotions in check by sheer will power; it becomes, instead, a matter of intelligent skill in manipulating the feedback loops within our organism. It could be positive or negative feedback. Positive feedback works like the amplifier in a radio or television set; it increases the awareness value of reactions so faint that we may not even suspect we have them. It is sensitivity training in action; it is a simple, and too often, a neglected way of increasing the strength of constructive attitudes. If we love somebody, we should tell the person; it will make our love stronger and better. If we are depressed and we talk about it—to ourself or to others—we will make it worse for ourself. The difficult thing is to keep the negative feedback functioning and to stop talking about it. People quite often think they can talk themselves *out* of something, but it is still talking and talking—either pro or con—induces positive feedback and amplifies the trouble.

Physical Models in General

All three of the preceding thinking models can be classed as systems. In the framework model, we enumerate and classify the parts of a system. In the clockwork model, we see the parts interacting upon one another in a sequence of reactions that may reach to the very limits of our historical and geographical world. In the feedback

model, we see systems as self-regulatory. Our own inner world may be seen as a feedback system; it maintains itself in a steady state of self-consistency, and this may interfere with its adaptation to changing conditions and to its own development.

Thinking is an aspect of our semantic transactions. It mirrors the pattern of the organismic processes that involve our feelings, our habits, our physiological condition, our evaluative relations with our environment, our past experience, and our expectations. By a singular phenomenon of circularity, it *determines the shape of these transactive patterns as it mirrors them*. Depending on how we formulate them, our semantic transactions are made static or dynamic, or they are narrowed or broadened, shackled or set free. Our thinking projects as it reflects; it plays the part of a living template that gives a shape to our behavior. To understand this is to find a new meaning in the classical saying "As a man thinketh in his heart, so is he." If we train ourselves to think differently, we change our view of the world; we give a new direction to our activities; we actually transform the world in which we live.

This reveals the importance of the mental models we habitually use. The richer they are, the richer our life becomes. Model-making and model-handling has become a most powerful tool of today's technology.

In the old days, when an inventor wanted to build a machine—as when the Wright brothers built their biplane—the procedure was first to "guess" a design that might work, then build it, then test it, then make changes and test it again. The process of designing, building, testing, and rebuilding went on until a satisfactory product was obtained—or until the inventor's funds ran out.

Today, the first design is translated into a mathematical model, which is a set of equations that represent the required performance of the future machine. Instead of building an actual machine and testing it, the designer tries many possible alternatives in the variables of these equations and uses a computer to figure out the answers. As many mental models as necessary are built, tried, and modified instead of going through the labor and the cost of building a machine that might cost millions. I read somewhere that with only a slide ruler an engineer could "construct" and "test" a model of an electric motor in two days of work with no expense of material.

Operations research is concerned with mathematical models as well; it deals with human activities inasmuch as they are determined by technical and situational factors. We know how valuable these techniques were in the last war, and we have seen them spread over all the business world in recent years.

The purpose of the thinking models we are now describing is different; they are far from reaching the sharp formulations of mathematics. They are intended to deal directly with semantic activities. They are an attempt to put order and system in what we do when we plan an interview, prepare a speech, handle a professional problem, manage a delicate situation, or attempt to stimulate our ability to think creatively.

The static model is simple and consistent with our language structure. The mechanical model goes beyond the subject-predicate structure of our language; it corrects elementalistic thinking. The third model takes some time to get used to because it introduces the rather new notion of circular causality. All three models are within the range of mechanical thinking.

If we limit ourselves to them, we are dealing with ourselves as if we were mere robots or guided missiles. One valuable result of the present classification of empirical systems and mental models is probably that it prevents us from accepting as adequate a level of thinking that is below the empirical world we are dealing with. The world of humans lies beyond the world of mechanical models, cybernetics, operations research, or computers; it requires the use of mental models of the biological type, which we will now describe.

Thinking with Biological Models

The closer the mental model is to the empirical system of which it is the analog, the more realistic is the thinking. A model that is much more simple than the phenomenon it is intended to illustrate shrinks our thinking to the model's dimensions and causes us to miss the complexity of the phenomenon.

A Zen master is quoted as having said: "Can thought review thought? No; thought cannot review thought." He then attempts to prove his point by an analogy, "As the blade of a sword cannot cut

itself, as the fingertip cannot touch itself, so a thought cannot see itself."[12]

I would say it differently. The Zen master takes a mechanical object, the sword, as the mental model of the mind, a living object, and he ascribes to the mind the limitations of the sword. Of course, a sword cannot cut itself; but are the mind's capacities or limits the same as the sword's? What are we describing here: the mind, which is of a higher order of existence, or the sword, which is of a lower? What is the measure of what? If one takes the sword as the measure of the mind, he reveals nothing of the mind that makes it different from the sword—and he imposes upon the mind the limitations of the sword. A static model, the sword, is a misleading analogy in dealing with a living process. (The analogy of the fingertip is a bit better; the fingertip cannot touch itself but it can turn back on the inside of the hand and feel it).

If we content ourselves with the mental models that we have described so far, we are imposing upon life processes the limitations of mechanical thinking. All human enterprises are expressions of living activities. When we attempt to manage them as we would manage machines, we take life out of them. Humans become robots; natural flowers are replaced by plastic structures. We look for stability, but we create fixity; we plan progress, but we suppress growth.

To overcome these crippling limitations of physical mental models, let us see what mental models of the biological type have to offer. Kenneth Boulding proposes four of them.

SYSTEM-MODEL NO. 4: SELF-REPRODUCING

The basic unit of all living organisms is the *cell*. The mental model that corresponds to it could be described as a *self-maintaining and self-reproducing structure.*

The cell has the characteristics of all previous systems plus something different and distinctive; it is made of many parts that interact among themselves, as we saw in clockwork models. It is a feedback system as well, reacting to whatever imperils its existence. This feedback system is not limited to an objective set by human beings, however; it has within itself a program of self-maintenance. In

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[12]Alan Watts, *The Way of Zen* (New York: Pantheon, 1957) p. 53.

fact, it is this activity of survival that makes up the very texture of its existence. The cell can never be at rest, like an idle machine. For the cell, to exist means to keep functioning, to ingest an input, to transform it into its own substance, to eliminate the waste matter, and to prepare for reproduction. In the three systems we studied earlier—the framework, the clockwork, and the feedback—the parts had an existence of their own. They could exist independently of the system into which they had entered. Each beam, each board, each nail that is part of a building, each piece of metal that makes a machine, existed independently before it was brought into the structure of the building or the machine. It could again exist by itself if the structure were dismantled.

Not so for the parts of the cell; their existence depends on the existence of the cell itself. They are not interdependent bits that were put together to form the cell, and they cannot be kept in storage once the cell has disintegrated. They are functions made material, as it were; for the cell and its parts to stop functioning is to cease to be.

When we build in our mind a mental model that is an analog to this cell system, our cognition becomes permeated with change as its very texture. We do not operate as mechanical systems that move within the arches of time, we internalize time as an integral dimension of our own being. We become time-bound and time-binding, emerging anew from our former self at every beat of our heart.

In the measure that we are aware of this, in the same measure are we able to differentiate between live and dead issues. Married life, for instance, would be of the framework type: a static cultural organization that endures for years without noticeable changes. It could be the clockwork type as well: a preordained interactive play of common interests and purposes. It could be of the feedback type: keeping within the bounds of civility the expressions of feelings that might endanger the partnership. But in all these cases, marriage is not a living process. It does not renew itself as it goes along. It is a memory kept going like a machine that needs rewinding or refueling every so often. A clear distinction between the mechanical and the biological type of thinking makes one aware of these differences and enables a conscious adjustment to circumstances.

Cells are open systems, feeding on the resources of their environment but selective about what elements they abstract from this environment. They bring to a higher level of potentiality the energy

they absorb. They have a definite *within*, an autonomous functioning inside the membrane that separates them from, and simultaneously relates them to, the milieu in which they exist.

Finally, they reproduce themselves once they have reached the proper degree of maturation. If their reproduction is kept under the hierarchical control of the organism to which they belong, we have normal cells for growth and repair; if they start reproducing themselves wildly, they become cancer cells that may eventually destroy the organism.

I do not know why or how Communists chose the word cell for their organizational units, but I am impressed by the aptness of the word. It suggests life, growth, and multiplication. For them, it may mean the development of a sound organism; for many of us, it is viewed as the beginning of a cancerous growth that threatens our body politic. To continue the analogy, we know that there are various procedures, some more drastic than others, to destroy cancer cells, but prevention is better than cure. If our science of the human organism had reached the point where we knew how to keep it functioning perfectly—or almost so—we might not have to deal with malignancies. The application of all this to any organism or organization is obvious.

SYSTEM-MODEL NO. 5: SELF-EXPANDING

Here the *plant* is the empirical system, and the mental model is a *self-expanding structure*.

This system-model is exemplified, on a large scale, by a pepper tree that I planted five years ago. The tree has characteristics that make it different from the systems I have described so far. Unlike my study, and unlike the furniture and the machines it contains, the pepper tree is made of parts that have kept changing from the time I planted it. They are different from what they were years ago: the trunk is bigger, the branches more numerous, the bark has changed from smooth to scaly. It is—and it is not—the tree that I planted. It has become, by its own activity, something that cannot be represented by a purely mechanical mental model. If we use a microscope to study its ultimate structure, we discover that its basic unit is the cell, which we took as the empirical pattern of our first mental model of the biological type.

This system-model includes all the previous ones and combines them into a complex whole. As a physical system, the tree has a definite shape, and, if I take a picture of it, the picture can easily be identified as that of a pepper tree. It functions within the rhythm of the seasons; and it has feedback properties as well: it repairs damage done to its bark and limbs, and it keeps within its trunk and branches the humidity necessary to survive and to grow in this dry climate. The tree, like every cell of its structure, is an open system; it maintains itself by feeding on its environment, and it gives back to its environment the results of its life processes.

Finally, the distinctive characteristic that makes the tree different from the cell system is that all its parts, although they came from a unique mother cell, have kept on differentiating themselves from the very beginning. The cells of its leaves are different from the cells of its roots; the cells of its seeds are different from the cells of its bark; the cells of its flowers are different from the cells of its wood. Its phenotype is different from its genotype. It is an organization that is not put together by humans, it is an organization that has grown according to a pattern buried in the chromosomes of its mother cell. This pattern evolved as the tree grew; and the tree stayed within the general pattern of the species while becoming individual and unique.

Here we have not only activity as we had in the clockwork model, self-control as we had in the feedback model, and self-maintenance and survival as we had in the cell model, we also have growth and patterned development as essential features of the system. We have time as an integral dimension; we have balance and symmetry that are free from rigidity and stylization. We have an organization of cells, each of which has become specialized; each receives something from the others and gives something to the others, all working for the maintenance and the growth of the organism as a whole. We observe changes that are not proportional. A seed does not grow evenly in all directions, like an inflated toy balloon; it grows roots that dig down into the soil, a stem that breaks through to the air above, and branches, leaves, flowers, and fruits that follow their own form of development within the general pattern of the species to which the tree belongs.

How much more meaningful as a telling analogy is this system compared to the dumb interrelatedness of parts in a human-made machine, even a feedback machine! Here we have a wealth of dimen-

sions far beyond the usual categories of space and time. We have movements along vectors that defy reduction to plane or solid geometry and any form of visual representation. No wonder that growth as a distinct phenomenon has been so little studied up to now: it involves a self-propelling complexity that our physical thinking models cannot represent.

Life involves a resourcefulness that no human-made machine and no human-contrived organization can provide. A robust tree makes the most of its environment; its roots reach for bits of soil through cracks of a rock, or lift and break walls that press them down; its branches spread their leaves to absorb as much sunlight as possible. Life is a resourceful and cooperative process endowed with an innate rhythm. By drawing our analogies from its workings in grass, weeds, bushes, and trees, we can enrich our mental resources and reach a fuller understanding of our own behavior.

Learning, for instance, could be seen as a growth process. If we admit that every human is as different from his fellows as every plant species is different from another, we easily accept the fact that no two persons learn the "same" subject in the same manner. In the spring, almond trees shoot out flowers before they grow leaves, while their neighbors, the pecan trees, produce leaves first and flowers afterwards. The leaves of some amaryllis turn from intense green to pale yellow, and dry up and die before the main stem grows and opens its long bud to form the deep chalice of its elegant pink flower. Similarly, of those who study general semantics, or any subject, in the same class and under the same teacher, some will exhibit various orders of assimilation of the topic; for example, one may take as fundamental what another judges to be secondary. Many students produce more "flowers" than "fruit"; and the proportion of seeds that will reproduce their kind is infinitely small.

Some plants propagate themselves as weeds and demand little or no cultivation, as do many popular ideas and fashions. Other plants require expert care and cultivation because they are delicate and valuable; they are like the arts and the theories that are a challenge to the climate of our culture. The cultural climate is more amenable to human control that the geographic climate; moreover, we can develop cultural species, such as hybrid corn and frost-resistant wheat that thrive in whatever conditions the environment offers. Consequently,

problems of education, propaganda, and cultural change become matters of semantic ecological planning.

The same mental model could be used to study the growth of an individual's philosophy and style of living. Cultural heredity could be compared to organic heredity, the difference being that the cultural progenitors, parents, teachers, leaders, heroes, great individuals, "stars," transmit to the young ones what we could call a pattern of semantic genes, of accepted "truths" and values that play the part of the genotype from which they will develop as phenotypes. For example, deep below the phenotypic individual characteristics is a distinct genotypic pattern that makes a Mormon different from a member of any other well-defined cultural group. The same is true of any other cultural heredity. Consequently, problems of close personal association, including marriage, of course, become matters of symbiosis like grafting branches to trees of a similar family, and not simply matters of "give and take," bargaining or mutual concessions.

SYSTEM-MODEL NO. 6: SELF-MOVING

The empirical system is the *animal* form of life, and the mental model that corresponds to it is a *self-moving structure*.

In the course of evolution, life forms reached a point when they could detach themselves from their moorings, move about to discover the world on their own, and modify outside conditions to suit their purposes. Animals are not rooted to a spot like plants and trees; they move about to find and create more suitable environmental conditions by which to live, grow and multiply.

They receive information from a distance by means of their sensory organs. They show consciousness of self: they flee danger, they stalk their prey, they recognize who is kind to them and who does not want them around. They can express moods and needs. They can be conditioned like Pavlov's dogs and trained like circus performers; they can learn by insight like Sultan, the great ape of which Köhler wrote. They have a limited anticipation of the future, like the mountain lion who jumps where the fleeing deer is likely to be and not where it is now. They react to the clapping of an appreciative audience; they play for their own enjoyment; they practice courtship and they make love. Plants and trees ensure their individual survival and that of their species, but animals go one step beyond this: they enjoy living for its own sake.

This empirical system is so close to the human form of life that we are easily led to derive from it a mental model of ourselves that we imagine is adequate. As Korzybski would repeat again and again, "We copy animals in our nervous system." We even limit our ambitions to a lower ceiling, to that of the plants, when we speak of survival as a human objective. We often fail to accept as desirable some characteristics that distinguish animal behavior from that of lower forms of life. Mothers try to keep their grown children psychologically tied to their apron strings, while the mother bird pushes her little ones out of the nest in due time. Fathers keep interfering with the day-to-day planning of their child's life, while animals let their progeny shift for themselves as early as their senses and their limbs can manage it.

If we use the self-moving mental structure as the analogy through which we observe and interpret the behavior of individuals and organizations, we accept more easily certain phenomena that a lower type of mental model cannot account for. A company may, as the common saying goes, "have roots in a community," as the cotton mills did years ago in New England; but if conditions elsewhere are more likely to ensure their survival and growth, as the mills found was true in the South, their manufacturing plants are bound to move someday, somehow, when circumstances are judged to be opportune.

A school of thought, a cultural movement, a religious organization, and other semantic biota can be seen as families of self-moving members, none of which has to remain close to the place of origin, geographically or psychologically. They do not simply "branch out" like the limbs of a tree, they go on their own, eventually blending themselves with different environments and undergoing variations that modify the outward features of the phenotype, or even bring about radical mutations of the common genotype. When we think in terms of system-model No. 6, we find this most normal. Tradition that prevents emigration from the original flock reduces a biological system to a lower form of life. It is bound to fail in the end.

A world of considerations invites our survey when we meditate on the vistas spread before our gaze by the acceptance of the self-moving biological structure as a mental model. To the characteristics of earlier standard analogies, it adds the capacity to seek and to choose the location that makes possible the preservation of the self and the self-image. Behavior is determined by a value system that is

culturally inherited, almost as animals' instincts are transmitted from one generation to the next by the genes of the mother cell. Adaptability to the environment is limited by the range of cultural inheritance; modification of behavior is restricted by the guidance of tradition; and resourcefulness remains at the service of conservatism. There is a flexibility as to means, with inflexibility as to ends. Anticipations are patterned on the summation, by statistical means or otherwise, of past experiences. Tradition assumes great importance.

SYSTEM-MODEL NO. 7: SELF-REFLEXIVE

We have now reached the human level, that of the *self-reflexive* living structure.

Human life is the most complex process that we know. We are conscious of our functioning within a hierarchy of multiordinal units, all special to our species: family, community, nation, cultural group, and humankind as a whole.

We are conscious of time as an integral dimension of the experiences of each of these units: time-bound and time-binding. We abstract relations among items of experience (objects), and establish relations among them that are other than those offered by unaided nature (plastic compounds, transuranian elements, transformation of waterfalls into electric power, organization of economic and political units, etc.) We express these relations, whether discovered or invented, in symbols, and this web becomes the texture of the world in which we live.

We are autonomous to a high degree, and conscious of our autonomy. We are capable of changing our environment, including other forms of life and energy, to suit our purposes, our ambitions, or our passing fancies. We are capable of self-observation, self-criticism, and self-management. We may be conditioned, but we are capable of overcoming conditionings that were self-imposed or induced from outside.

We have gradually eliminated from the planet, our place of abode, practically all threats to our existence from lower forms of energy, physical or biological, and we are left with one overawing danger to our survival and happiness. This danger lies within ourselves and within those of our kind. It comes from the fact that some human organizational units are bent on making their human-made

self-image victorious over all other self-images, at whatever cost to themselves and to the rest of humankind.

It is the purpose of general semantics and epistemics to play a part in the laborious creation of a human mental model that will facilitate the impending metamorphosis that most advanced thinkers are hoping for. From the rather pessimistic *Man, The Unknown* by Alexis Carrel,[13] we pass to books more symptomatic of optimism about ourselves, such as *Human Potentialities* by Gardner Murphy,[14] *The Next Development in Man* by Lancelot Law Whyte,[15] *The Phenomenon of Man* by Teilhard de Chardin,[16] that formulate, each in its own manner, the same purpose that Alfred Korzybski held—the development of a new kind of human being.

What are the advantages of such a graded enumeration of seven empirical systems and their mental correlates? Boulding answers:

> One advantage of exhibiting a hierarchy of systems is that it gives us some idea of the present gaps in both theoretical and empirical knowledge. Adequate models extend up to about the fourth level [the cell] not much beyond. Empirical knowledge is deficient at practically all levels . . . One of the most valuable uses of such a scheme is to prevent us from accepting as final a level of theoretical analysis which is below the level of the empirical world we are investigating . . .
>
> The level of the "clockwork" is the level of "classical" natural science, especially physics and astronomy, and is probably the most completely developed in the present-stage of knowledge, especially if we extend the concept to include the field theory and stochastic models of modern physics.
>
> Beyond the second level adequate theoretical models get scarcer. The last few years have seen great developments at the third and fourth levels. The theory of control mechanisms ("thermostats") has established itself as the new discipline of cybernetics, and the theory of self-maintaining systems or "open systems" likewise has made rapid strides. We could hardly maintain, however, that much more than a beginning had been made in these fields.

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[13]Alexis Carrel, *Man, The Unknown* (New York: Harper & Row, 1935).

[14]Gardner Murphy, *Human Potentialities* (New York: Basic Books, 1958).

[15]Lancelot Law Whyte, *The Next Development in Man* (London: Cresset, 1941).

[16]Teilhard de Chardin, *The Phenomenon of Man* (London: Collins 1959).

> Beyond the fourth level it may be doubted whether we have as yet even the rudiments of theoretical systems. The intricate machinery of growth by which the genetic complex organizes the matter around it is almost a complete mystery. Up to now, whatever the future may hold, only God can make a tree.[17]

If the mental models in use stop at level four, how far are we from thinking about ourselves consistent with our empirical level seven? The gap is frightening, now that the whole planet may soon become a mere plaything for our unpredictable species, the unknown, whose reactions we cannot anticipate because we have as yet no adequate mental model to guide us. We have just begun to observe ourselves through model three, that of the electronic brain, and we are so proud of our achievements along those lines that we are almost ready to take that machine as the ideal of what we should be.

When we play at being scientific in our human self-study, we ignore the realm of values because our most advanced physical model of ourselves, the electronic computer, is not responsive to values as such. And we try to deal with system seven by using models at level two.

We are just beginning to put some order in our thinking by means of this hierarchy of mental models. When we join the mental model we use to the empirical system, with which we have to deal, paradoxes disappear. The "physical" models are so dominant in our culture that we have used them more often than is appropriate in this textbook itself. The time has come to be aware of their danger and to profit from every opportunity to translate "physical" analogies into biological ones. For instance, if I am tempted to say that the notions in the book are useful *tools*, I remind myself that it would be more profitable to bring it to higher levels. This training is not a matter of "tooling our brain," it is a matter of growing to a degree of maturity sufficient to bear fruit. We cannot produce oranges with tools; we cannot solve a level-five problem with a level-two procedure. If we want oranges, we have to wait for the tree to produce them. The fruits we expect take time and proper cultivation to grow and ripen.

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[17]Kenneth Boulding, "General System Theory - The Skeleton of Science," *Management Science* (April 1956): 205-7, *passim.*

Starting with the plant, all biological units require (1) time to function and grow properly, (2) proper soil and climate, (3) proper feeding and care, and (4) occasional pruning. This simple enumeration is more suggestive than a long list of do's and don't's.

CHAPTER 12

structure in languages as shapers of ideas

I look at a textbook for the study of Spanish, and it is like most language textbooks: each chapter or lesson consists of a few rules, a vocabulary, and some exercises. The vocabulary presents, in two parallel columns, the English term on one side and the equivalent Spanish term on the other side. In one column is "the family" and on the same line in the other column is *la familia*, on one side "the husband" and on the other side *el esposo*, "the wife" and *la esposa*, "the mother" and *la madre*, and so on.

Back of this parallel presentation of English words and their equivalents in the language we want to learn is a hidden assumption, a seemingly obvious truth that we are taking for granted. The assumption is that the two languages are nothing but equivalent and alternative methods of naming the same objects, of expressing the same thoughts. The objects are there, in the outside world; the ideas are there, in peoples' minds; all one has to do is to learn what to call objects or ideas in the new language: "brother" or *hermano*, "I have a bad headache" or *me duele mucho la cabeza*.

If, later in our studies, we hit upon a few expectancies that cannot be translated in such a direct, equivalent manner, it does not change our basic assumption. We know that these exceptions—like all exceptions—"confirm the rule"; and the rule is that the two languages are simply two different ways of naming the same object, expressing the same idea, describing the same event. The objects, events, and the ideas do not change; only the words that we use to refer to them change in spelling and in sound. The mother of a family is the mother, whether we call her "mother," *madre*, or *mere*.

If we want to express an idea, the words may not fit so snugly in the same slots; we may have to say, for instance, *ud tiene razon* to mean "you are right," but the objective meaning is so obviously the same that our former assumption is not disturbed. It still seems evident that two different languages are two different ways of reporting the same human experience. In our current *episteme* (See Chapter 2, page 17), when this experience is "pure thought," free from emotional bias, we take it that we have strict logic, rock-bottom human common sense, and we deem it independent of whatever language we may use.

All this sounds quite reasonable, but it is not the way up-to-date science sees it; in fact, it is just the opposite of what is accepted today. Listen to Clyde Kluckhohn, the late Harvard anthropologist:

> Every language is a special way of looking at the world and interpreting experience . . . One sees and hears what the grammatical system of one's language has made one sensitive to, has trained one to look for in experience. This bias is the more insidious because everyone is so unconscious of his native language as a system. To one brought up to speak a certain language, it is part of the very nature of things.[1]

Another scientist, Benjamin Whorf, the linguist says:

> Each language is not merely a reproducing instrument for voicing ideas, but rather is itself a shaper of ideas.[2]

There is no such thing as *pure* logic taken as a set of rules for pure thinking. There is no logic that is independent of a symbol system. What is logical in one system may or may not be logical in another.

> We cut up nature, organize it into concepts, and ascribe significance as we do largely because we are parties to an agreement to organize it in this way . . . this agreement, is, of course, an implicit and unstated one, but *its terms are absolutely obligatory*; we cannot talk at all except by subscribing to the organization and classification of data which the agreement decrees.[3]

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[1]Clyde Kluckhohn, *Mirror for Man* (New York: McGraw-Hill, 1949) p. 159.

[2]Whorf, *Language, Thought and Reality*, p. 212.

[3]Whorf, *Language, Thought and Reality*, p. 213.

We cannot talk and we cannot think *discursively* without making our thinking agree with the structure of our language.

The languages that most of us are familiar with—English, French, Spanish, German—have so much in common that the differences stressed by linguists and cultural anthropologists are not striking. Whorf called these languages Standard Average European, or SAE languages. To become aware of the control that language has on our thinking, we have to compare SAE to languages belonging to entirely different families, such as the Indo-Chinese, the Japanese, the American Indian, the Semitic, and such. Once this is done, it becomes evident that different languages have different logics and different maxims of common sense.

We seldom question the common sense of our own language; it seems that whatever lies within the range of common sense needs no further proof, no further check, no further explanation. This common sense is woven in the very texture of our everyday speech. For instance, everybody knows that the past is gone, the present is here, and the future has not happened yet. This undeniable fact is the basis of the tenses of our verbs: the past, the present, and the future. They are part of the conceptual framework within which we study history, manage the present, and plan for the future.

What is evident for us is not at all evident to people who belong to a different culture: they can get along very well, planning their lives and communicating among themselves, without using our conceptual framework of past, present and future. I take the word of the anthropologists for this; they have found, for instance, that the Hopi language has no tenses like ours. In that language, writes Laura Thompson,

> ...the duties of our three-tense system and its tripartite objectified "time" are distributed among various verb categories, all different from our tenses; and there is no more basis for objectified "time" in Hopi verbs than in other Hopi patterns; although this does not in the least hinder the verb forms from being . . . adjusted to the pertinent realities of actual situations.[4]

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[4]Laura Thompson, *Culture in Crisis* (New York: Harper & Row, 1950), p. 162.

Regardless of culture, the point is that our conceptual structure of the world is an arbitrary construction, an invention of our prescientific ancestors. Our dealings with the world and with our fellow humans have to follow patterns that were established centuries ago.

> You cannot say in Chinese, "Answer me yes or no," for there are no words for yes or no. Chinese gives priority to "how" and nonexclusive categories: European languages to "what" and exclusive categories.[5]

In other words, assumptions about the nature of reality and patterns of thinking are embedded in every language, and they do not necessarily correspond to equivalent assumptions and patterns of thinking embedded in other languages. These patterns of thinking vary from culture to culture. The Hopi get along very well without saying "I was," "I am," or "I shall be." The Chinese can wiggle out of a yes-or-no alternative without losing face. To many people in our culture, both sound illogical, nonsensical; to them, it is plain common sense, and they might justly wonder why we should quibble about it. For them, as for us, "it is as natural that experience should be organized and interpreted in these language-defined classes as it is that seasons change."[6]

Please take some time to ponder this last quotation. It is natural that seasons follow one another in a certain order: spring, summer, autumn, winter. Spring is between winter and summer; it comes again and again, always holding the same place in the yearly parade. We take it where it is, when it is; we did not choose its place.

Time as a succession of past, present and future seems just as natural as the seasons in their yearly sequence. We see the present between the past and the future as we see spring between winter and summer. But the present is there only because somebody created it as a pattern of thinking about a process-happening that had no definite place, borders or size. Somebody put it there long, long ago. Once the thinking pattern was invented and put into circulation, nobody thought of inventing a different one to modify our reaction to that process-happening. Time (past, present and future) became the good and only pattern. It reigned unchallenged in that segment of human

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[5]Kluckhohn, *Mirror for Man*, p. 160.

[6]Kluckhohn, *Mirror for Man*, p. 159.

experience until a long-haired scientist recently questioned the wisdom of our primitive ancestors and linked time with space. But in the common-sense transactions of daily life, time is still "past," "present" and "future," as the grammar dictates. It follows a sequence, just as the seasons do.

When a science writer, Melville Thistle, appears to ignore the "natural" sequence, as in one of his serious-humorous talks we entitled *We Can Change the Past*, it sounds more paradoxical than common sense would allow. It is like putting summer before spring on next year's calendar. We can imagine it, if we want, we can joke about the incongruous thoughts it triggers; but "Don't fool yourself," says common sense, "you cannot change the natural order of things, therefore you cannot change the past."

This "natural" order of things, invented and established by the unwitting creators of our culture, corresponds to what we have elsewhere called the system-function, the overarching vault that encloses all our doctrines, theories and statements.[7] Our reasoning self denies the existence of whatever fails to fit within this system, which is the solid structure of absolutes that limits our world as it holds it together.

How did you and I happen to accept this system-function? How old were we when we did? On what evidence did we decide to accept it? You cannot answer these questions, and neither can I. We did not accept it; we were born and reared with it. It emerged with us as we emerged into conscious life. We took it for granted, as we took our hands and feet for granted, in an implicit act of faith that this is the way things are since this is the way everybody sees them and speaks about them all around us. Some of these things were there as results of nature's activities, and we had to accept them as our ancestors had. Some were there because our forebears had put them there, but we did not know the difference. We took for granted the world as presented to us, growing with us, and limited by the articulated wisdom of the language our parents spoke. It is through the screen of that language that "logical" evidence has been filtered ever since.

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[7]J. Samuel Bois, *Explorations in Awareness* (New York: Harper & Row, 1957), "Statements, Theories and Doctrines," Chap. 5, pp. 28-34; and "An Important Distinction", Chap. 8, pp. 51-58.

At the origin of our conscious life there is an act of faith, an unwitting acceptance—without antecedent evidence—of the interpretation of the cosmos made by some primitive ancestors who happened to react in a certain way to the world around them. This blind act of faith is at the bottom of the most supercilious logic. As Dr. Vannevar Bush put it in his report as president of the Carnegie Institution of Washington in 1955: "Our reasoning appears sound to us only because we believe it is and because we have freed it from inconsistencies in its main structure; for it is built on premises which we accept without proof or the possibility of proof." We believe that the way we have grown to react is the only way, the genuine "human" way. Our formal logic improves that way of reacting, makes it more efficient; it does not change its foundations. Something is set in advance in the mechanism of our thoughts and feelings: they will operate within certain limits.

The pervasive influence of the interpretation of the cosmos implied in our SAE languages is something like gravitation in the physical world: it is everywhere, acts everywhere, and, consequently, is not easily detectable. It took centuries for scientists to discover gravitation. First, they had to note phenomena that escaped the attention of the common person, and from these observations, they devised a theory. Then they tested their theory by experiment. Today, they have reached the stage where we can rocket ourselves out of the earth's gravitational field and experience weightlessness.

The pulling force of the logic in which we were born and reared was not any easier to discover. Anthropologists and linguists took note of phenomena that escape the attention of the common person. For instance, Benjamin Whorf observed that our behavior is in part determined by the manner in which we describe the circumstances in which it occurs. From this and similar observations a theory was devised:

> No individual is free to describe nature with absolute impartiality but is constrained to certain modes of interpretation even while he thinks himself most free. The person most nearly free in such respects would be a linguist familiar with very many widely different linguistic systems. Yet no linguist is in any such position. We are thus introduced to a new principle of relativity, which holds that all observers are not led by the same physical evi-

> dence to the same picture of the universe, unless their linguistic backgrounds are similar, or can in some way be calibrated.[8]

I know of one case where a scientist rocketed himself out of our cultural logic and reported on his experience, as the astronauts and cosmonauts report their experience of weightlessness in space. The scientist was Dr. Clyde Kluckhohn, the anthropologist, who studied the Navajo Indians. In spite of his careful observation and his open-mindedness, he could not make sense of their value system and their legal norms, but after he began to think as a Navajo and not as an Anglo-American, their system of values and their rules for settling disputes became logical and obvious. After these Navajo concepts had been brought into the open, they formed a consistent philosophy. Without that philosophy, the facts that he saw could not be understood as the Navajos understood them; with that philosophy, the Navajo way of understanding them was the only one that made sense.

When an astronaut returns to earth, we are ready to accept his version of how he felt when he was freed from the influence of gravitation. Similarly, we have to accept the anthropologist's report when he tells us how it feels to live in a world of thought where our logic exerts no influence. He is one who knows that we can remain human without clinging to our particular brand of logic; and from this we can conclude that our value system and our norms for settling disputes are not the only possible ones in a world in which humankind can continue to exist.

It is not easy for us to get the feel of cultural logics very different from our own. All we can do, at the moment, is accept the fact that they exist and peer into some of the regions that are within our understanding.

Looking at our own language "from the outside" makes us realize that it is not consistent as we are wont to believe. For instance, we divide most of our words into two classes, nouns and verbs, as if nature were clearly divided into two classes: (1) a class of things that are rather permanent and (2) a class of actions that are transitory. "House" is a thing; it stands there permanently. "To enter" the house is an action, the movement from outside to inside; it is transitory. The trouble is that we also use nouns to describe transitory events, to

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[8]Whorf, *Language, Thought and Reality*, p. 214.

which we thus give a sort of permanency that they do not possess. We speak of "waves," "sparks," "flames," "storm," "noise," "emotion," and we use verbs to describe lasting and stable events such as "to keep," "to continue," "to persist," "to dwell." We even use nouns to refer to something that does not exist until an action takes place to bring it into existence. For instance, nobody "has" fists, and "to have" fists you have to close your hands. Instead of saying "I have fists," it would be more logical to say "I fist my hands."

The Hopi have a way of using numbers that I believe is more logical than ours. They use cardinal numbers, 1, 2, 3, . . . only for things that form an objective group. Thus they say "two horses," "three men," "four trees," and so on, because there can be such actual groups of these. But when it comes to things that cannot form an objective group, they use ordinal numbers, *first, second, third* . . . Thus, they will not say "ten days" because ten days cannot be collected as an objective group. "They stayed ten days" becomes "They stayed until the eleventh day," or "They left after the tenth day."

Back of our own picture of the world is the Aristotelian concept of matter and form, which makes it difficult for us to accept the ultramodern view that matter and energy are the same. In Hopi, this difficulty does not exist because the warp and woof of their cosmos is not matter but something that is much more fluid and process-like. To express it, Whorf uses the gerund of a verb that is now obsolete in English, the verb "to event," and he speaks of "eventing." This is much closer to the physicist's concept of energy and action—without reference to a substratum of that energy or an "actor" who does the action. I want to convey something of the kind when I speak of the world of general semantics as a world of *happenings-meanings*.

If we look into other cultures, we will find still other methods of mental functioning, which are different from ours and different from the Hopi. Here is a passage from a personal communication that received a few years ago from a general semanticist who teaches languages in Japan.

> In the East, the world within which man lives and moves and has his being is apparently perceived as a great indeterminate esthetic continuum of space, intersected and cut up by "objects" or "things" of *beauty*, large and small, of definite shapes, sizes, colors, hues and textures, which form varying and everchanging patterns of space between them, clearly seen as entities of *beauty* (for which there are words in the vocabulary). The whole

> is set in a background of space that is a thing of beauty in its own right. In terms of Western logic, "the beauty of empty space" is for practical purposes a nonsense expression; it is a basic principle of Eastern esthetics—which is the same as saying that it is a basic principle of Eastern life.[9]

A well-known psychiatrist put it as follows:

> Though obvious, it is also perhaps well to emphasize that fact that distinctions between organic and psychogenic are sometimes far from absolute. Organic changes in the organism must occur not only in the psychopath, the schizophrenic, and the hysterical patient, but in all people in response to every item of experience. He who learns French, gets married, dissects a cadaver, is frightened by a dog, or looks for a new word in the dictionary, can scarcely be conceived of as emerging with the synaptic patterns of his nervous system entirely unchanged. It would not be profitable to confine our concept of what is organic to the cellular level with so much already known which shows that molecular and submolecular changes (colloidal, electrochemical, etc.) are regularly resulting from our acts of learning or, if one prefers, from all our conditioning. He who ever saw a miser, an honest man, a bigot, a golf enthusiast, or a person who genuinely loves another will not have to be told that such changes can be enduring.[2]

Are non-Aristotelian logics more inclusive than the SAE logic that gives shape to the "thought-world" in which we live, move, and have our being? Dr. Lanier is inclined to think so.

> Just as the Aristotelian logic is a special case of the all-inclusive non-Aristotelian logics (as the Euclidian geometry is of the non-Euclidian geometries, and the Newtonian physics is of the non-Newtonian physics), so the particular structure of the world which characterizes the Western languages and culture is but one special case of the more inclusive worlds of the non-Aristotelian languages and cultures of the East.
>
> The West is stymied by the symmetrical patterns of its own Aristotelian logic, by the values in which it cannot see, cannot understand, cannot enter into the structures of the East, because it cannot pierce the walls of its own culture. Conversely, however, the Language-Logic and the Thinking-Feeling structures of the East, and the cosmological world to which they are geared, offer no essential barrier to an understanding of those whose

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[9]E.A. Lanier, private communication to the author (December 2, 1955).

[2]Hervey Cleckley, *The Mask of Sanity* (St. Louis: Mosby 1950), p. 442.

> neuro-linguistic system comprehends within its delicate complexities the Western—and perhaps—other structures and points of view.[10]

This vividly reminds me of a remark that another general semanticist, my friend the late Charles Tarver, made to me one day as we were contrasting our views on a topic that I don't happen to remember just now. "Charlie," I said, "I see you locked behind the bars of the Aristotelian mental prison." "I do see bars between us," he rejoined, "but I wonder who is in and who is out."

Who is in and who is out? Who is locked within a restraining system that he accepts as the system of the whole world, and who is free to move from his system to any other? Dr. Lanier's opinion cannot be dismissed lightly: we know that the Japanese copied our technology with great ease not long ago and are not behind us any more; and what of the Chinese?

Most of us know no more about the linguistic forces that bear upon us than the savage knew of the forces of gravitation. We imagine that thinking and talking are free activities, of which we can be masters as long as we keep our emotions in leash. Nothing is farther from the truth. Thinking is still a mystery, as the movements of the planets and the comets were mysteries in the Middle Ages; we are just beginning to survey the tremendous energies that are at work in our "inner space." The study of the cultural determinants of logic is one avenue open to us. In a world of plurality of cultures, we have to accept a plurality of logics.

Summary

In the preceding two chapters on structure, I described mental models using Kenneth Boulding's levels of organization. This presents structure in terms of fields of activity in ever-increasing levels of complexity. This construct makes it possible to detect the harmful implications of the static and mechanical thinking models that we use most of the time in human affairs, and alternatively to begin to profit from the biological models that introduce the notions of growth, development, and maturation in our thinking about ourselves and about the institutions we live with and create.

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[10]E. A. Lanier, a private communication to the author (December 2, 1955).

I also discussed how various languages are different in structure, not just in vocabulary, some languages more than others; and that there is no one-to-one logical correspondence between such language systems.

Self-reflexive awareness in the use of language and analogy keeps us out of the "gravitational pull" of assumed "objective realities" and static "universals" buried in our language structure. With analogy, we forget that they are analogies. We take them for accurate descriptions of what is going on. Without awareness, we unconsciously expect what is going on to fit our units of discourse. We expect the expected.

At stage four, we realize that we are the model makers; that when we invent a human model, we are that which is modeling itself. We are structurally more than any model that we can make of ourselves or of our experiences.

CHAPTER 13

the human equivalent of the cosmic propulsive energy

Of the various aspects of our semantic transactions, thinking is the one to which we have given most of our attention so far. We studied the process of abstracting, developed our awareness of orders of abstraction and of circularity, learned to analyze our mental constructs by means of the epistemological profile, listed mental models in increasing orders of complexity, have given consideration to the human time-binding capacity—from the primitive who invented symbols by a kind of elemental intuition to the scientist of today who chooses postulates from a much richer intuition sanctioned by conscious design.

In Chapter four you were introduced to the non-intellectual aspects of our semantic transactions, i.e. the neurological, self-moving, and feeling activities. In the latter area, we spoke of affects and values as integrators of the semantic system.

Now I wish to go further into the affective domain, which includes motivation, personality development, needs, drives, 'feelings', etc. I am not limiting the use of the term "feelings" to "emotions." The latter may be seen as classified feelings such as anger, enjoyment, shame, fear, excitement, etc. I am including our value sense, which is a kind of intuitive understanding of what is going on.

I want to start with a survey of three areas: motivation, affects and drives, and the role of the central assembly. The latter involves the integrating action of the semantic transaction system. It is here that the semantic transaction, through the translogical order of the central assembly, can take part in and partake of the propulsive force that keeps the universe in existence. Through a fine sense of feeling,

this propulsive force manifests itself at the human level as love—the natural medium in which the rising course of psycho-social evolution can proceed.

On Motivation

What gives unity and consistency to our behavior is not so much the logical meaning of the theories we hold true as the value-meaning of what we hold dear. The cortex is at the service of the centren-cephalon, and not vice versa. As a consequence, the *B* aspect of our semantic transactions—which covers not only affects and emotions but also attitudes, purposes, desires, ambitions, and values—has an importance of its own.

How do we analyze and measure feelings and purposes? The task is not easy; it requires finding a common dimension for those hard-to-define urges, drives, and affects that give movement, direction, warmth, and color to our life. In textbooks on psychology, this usually comes under such headings as "personality," "motivation," "personal development," "levels of aspiration," and so on.

There is a plethora of theories of personality that are current in psychological literature. Some of these theories stress hereditary factors, but not so much nowadays as was the fashion years ago; it has become less acceptable to blame our ancestry for what we are. "I was born that way" does not carry much weight today. Many theories take into account the early experiences of the individual, and they remind us that these experiences have created unconscious determinants that remain active all through life. This view is quite popular with general semanticists who speak of a cultural unconscious, of methods of thinking-feeling-acting that we take as natural because they grew with us as our body did. They know that our methods are patterned after the syntax of our mother tongue and after the mechanical models that are prevalent in our culture.

In theories of personality, we read about such topics as personal development, emotional maturity, self-identification, self-actualization, self-concept, and other explanations where the self is at the center of things. The theories based on association and reward—of the early Pavlov type—that were once so prevalent have not disappeared entirely, but they have receded into the background. Today we emphasize purpose, drive, and direction of the organism-as-a-whole, influenced by and influencing its environment.

To decide which of the many theories to adopt is very much a matter of consistency with one's outlook on life. In general semantics, we are aware of multidimensionality and abstraction: a situation may be studied under one of its many dimensions by conscious choice. This does not mean that other dimensions are completely ignored; they are there, of course, and we know that they could be taken as alternative scales of measurement.

The personality dimension that I have found the easiest to detect and measure, at least qualitatively, is *motivation*—as described in Dr. Abraham Maslow's *Motivation and Personality*.[1] Motivation is what impels us to do certain things rather than others; to wish for certain things rather than others; to react to persons and situations in a manner peculiar to ourselves.

Maslow has devised a scale of the five needs that he calls instinctoid. Whatever has been researched and published on the hierarchical order of these needs, it seems that one notion is emerging that is gradually being accepted: self-actualization, mentioned as the top and overarching instinctoid need. Self-actualization as primary motivation subsumes the lower needs of physiology or hunger, security, belonging and recognition. Self-actualization covers a cluster of urges, drives, tendencies, and characteristics that are not easy to describe. It corresponds roughly to what other personality theorists call the "mature person"; and to the notions of emotional balance and self-acceptance it adds a notion of drive, of open-ended achievement.

The self-actualizing person is attracted by the new, the unfamiliar, the challenging, the mysterious, the difficult to understand, the not-yet-known. He accepts being thrown into situations that he cannot rehearse beforehand. If he is kept at a job that offers no more challenge, he may become disinterested and may quit for what appear to be trivial reasons.

He has a high degree of self-acceptance and a low degree of self-defensiveness. He does not expect perfect performance from himself or from others; he accepts what happens; he does not fret and fume over losses; he does not make an issue of minor things.

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[1]Abraham H. Maslow, *Motivation and Personality* (New York: Harper & Row, 1954). I recommend a careful reading of the whole book.

But he is not a Milquetoast, either. At times, he may appear ruthless, fatalistic, and heartless. He will take a stand, against all opposition, if he feels that it is his duty to do so. He will do it in apparent disregard for the feelings of persons who view the situation differently. When he does so, he does not mean to fight and crush persons as individuals, he wrestles with situations he feels he has to correct and recreate.

He is from a culture within a culture, but he has grown to be independent of the shibboleths of this culture. He lives in a wide frame of reference, has a code of ethics that may appear unconventional, is deeply religious without strong institutional affiliations. There is nothing solemn about him; he has a sense of humor that can be sharp without hostility. At times he may let himself become too involved with neurotics, bores, and unhappy people. He is open-minded but not easily led. He is willing to seek all the information he can get on a problem of great importance, but he realizes that, in the end, life is made of a series of gambles.

Our instinctoid needs may all contribute at the same time, in various degrees, to the motivation of a particular course of action. We could trace a profile of our needs as we can trace a profile of the intellectual skills that we use, from sensing reactions of the primitive to the sophisticated wisdom of the relativistic scientist. By tracing such a profile of instinctoid needs, we learn to differentiate them. This gives us a clue as to how to manage our energies both for immediate results and for long-range objectives.

Maslow relates to the basic values held dear and sees them eventually dominating our behavior, so it is important to take them into account. Our conscience is not simply a list of do's and don't's that mirrors the law or some code of conduct transmitted by tradition, it is also, and in great part, the urge to gratify certain instinctoid needs as they surge within ourselves under the impact of time and circumstances. The art of managing these needs is no less important than the art of sound thinking.

Viewed in the light of biological models, self-actualization becomes the easily assumed advanced stage of the growth process, common to human beings as well as to all living things. It is the tendency to achieve maturity, to insure the continuation of the species while giving the individual a feeling of achievement to the fullest of her potentialities. In the case of humans, full achievement is never

reached as a closure; it invites new rebirths in a never ending evolution. The study of this area of human activity is the subject of epistemics as a science-art of innovating. George A. Kelly is working in a common area when he suggests to do away with the whole notion of motivation as usually discussed in psychology. He views it as the conative manifestation of the very broad cosmic urge with which we participate.[2] In such a case, various theories of motivation could be seen as alternate descriptions of how we obey that urge, depending on the culture we exemplify unwittingly or in an expanding awareness.

We have not yet reached, and it may possibly be a long time before we reach, the stage of knowledge in the study of feeling and purpose at which we can use refined scales of exact measurement. We are still at the qualitative stage, where our main task is to invent new classifications that are free from the implications of our commonsense language and to devise original patterns of thinking about the whole set of phenomena thus reclassified. This has to be done without ignoring the empirical and experimental findings of previous generations, but also with a definite attempt to order them differently.

Drives and Affects

Another approach to the study of *B* activities is that of Sylvan Tomkins.[3] There is much that is old and much that is new in the two volumes that emerged from Tomkins' more than twenty years of research. The work is laborious, as any report of a new orientation is bound to be and is hard to read, which may save it from a facile and spurious popularity; but they contain a great deal that may help organize our thinking and direct our observations in matters of feeling, purposes, and values.

The behavior processes that activate our organism and direct its activities may be considered at three different levels. At the lowest level, that of the nonconscious, are biological mechanisms (of the feedback type) whose function is to keep our electrochemical and self-moving activities in harmonious balance. To this level belong the

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[2]George A. Kelly, *The Psychology of Personal Constructs* (New York: Norton, 1955).

[3]Sylvan Tomkins, *Affects, Imagery, Consciousness, I and II* (New York: Springer, 1962).

general adaptation syndrome of Selye[4], blood-clotting when a vessel is cut, convergence of leukocytes to combat infection, muscular tension to achieve postural balance, elimination processed through fasting under supervision. Most of these adaptations operate below the habitual level of awareness. Their action is of the reflex type, automatic and undelayed.

Next comes the level of drives. Drives may be considered the conscious expressions of the physiological activities of an organism that manages to remain alive and functioning both as an individual and as a member of its species. The most urgent drive is the drive for air; next comes thirst, or the drive for water; and sleep, or the drive for rest; next the drive for food and for the elimination of waste; then the drive for avoidance of pain; and finally the sex drive.

Drives provide information about the condition of the organism and the motivation to do what it requires at the moment. "They know what they need to know, to do what they have to do."[5]

Drives are specific, they are felt where the consummatory response is likely to produce results. The drive for air is felt in the respiratory organs, for food in the mouth and stomach, for defecation in the lower intestines. When a drive is repressed for too long, however, it spreads its disturbance all over the organism. It then reaches the level of affects and of thinking activities.

In drives there is awareness, increased variability, and possible delay of consummatory responses, as well as activation of the learning system—reactions that can be modified by experience and conscious training. For instance, the drive for air may be delayed because of the condition of the environment, such as being under water or in a poisonous atmosphere. Through training, a person can learn to delay his breathing for longer periods.

Affects are different from drives. They do not operate in or on an organ, but are responses of the whole organism. "The specificity of the drive system is such that it instructs and motivates concerning *where* and *when* to do *what* to *what*."[6] Affects, on the contrary, are

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[4]Hans Selye, *The Stress of Life* (New York: McGraw-Hill, 1956).

[5]Tomkins, *Affects, Imagery, Consciousness, I*, p. 31.

[6]Tomkins, *Affects, Imagery, Consciousness, I*, p. 172.

general in structure, and may find their consummatory responses in a variety of outlets. Your distress and my distress may vary more than your hunger and mine.

> Since the affect system has a more complex structure than the drive system, we should expect to find a greater range of inherited variability within the affect system than within the drive system.[7]

Apart from inherited variability, affects are made different in their manifestations and in their expected satisfactions by the culture in which we are brought up. An American company had succeeded in making a low-price, perfectly clean and hygienic protein flour from whole fish. But, for many years, the company was not allowed to sell or export it—not even to countries where people are starving for lack of protein—because in our culture we simply don't eat fish that has not been eviscerated and cleaned.

Affects may amplify the energy of the motivational system. Hunger plus impatience is more uncomfortable than simple hunger.

> A knowledge of pain perception goes beyond the problem of pain itself: it helps us understand the enormous plasticity of the nervous system and how each of us responds to the world in a unique fashion.
>
> In higher species at least, there is much evidence that pain is not simply a function of the amount of bodily damage alone. Rather, the amount and quality of pain we feel are also determined by our previous experiences and how well we remember them, by our ability to understand the cause of the pain and to grasp its consequences.[8]

Affects may also attenuate, mask, or interfere with drives. Disgust, distress, or apathy may interfere with hunger. Surprise, fear, distress, or apathy may interfere with the sex drive.

Learning has more to do with affects than with drives. The objects of affects become values that stand in a hierarchical order, depending on their importance in the training we received at home, at school, in the church, and in our general cultural environment. Values can be defined in terms of affects: "Whatever one is excited by, en-

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[7]Tomkins, *Affects, Imagery, Consciousness, I*, p. 179.

[8]Ronald Melzack, The Perception of Pain," *Scientific American 204* (February 1961): 41.

joys, fears, hates, is ashamed of, is contemptuous of, or distressed by, is an object of value, positive or negative."[9]

Affects influence thinking activities as much as they influence drives. They are influenced, in turn, by the words we use to describe them. By the use of properly chosen words we may amplify positive affects or attenuate negative affects.

Self-management depends very much on the skill one has acquired to choose *ex tempore* the words with which to describe, to oneself and to others, the affects that surge within. At times, a violent description of negative affects—hostility, hate, anger and the like—may have a cathartic effect, as some psychological theorists still claim, but it reminds us of the drastic purges that were in fashion centuries ago and that were deservedly ridiculed by Moliere at the time when the medicos of his days were prescribing them with pompous solemnity. Modern medicine has emerged from this stage of ignorant violence. It is about time that we learn to eliminate our negative affects without tearing apart our psychological innards. Instead of being afraid of a possible repression, as if it were something like ptomaine poisoning, we can keep our whole system functioning freely if we learn to delay our reactions in the proper manner. To delay them does not mean to ignore or to curb them by sheer will power, it means to be aware of our spontaneous affects without interpreting them right away, without passing a quick and uncritical judgment on who or what caused them. They can then be managed, or even transformed, by a conscious choice of appropriate responses, verbal or nonverbal.

A neutral response that is plainly descriptive of what is happening may work "miracles" more easily than one might anticipate. For instance, instead of saying "I hate you for what you think of me!" try something like "I feel uneasy about what you just said." Instead of saying "It was stupid of me!" try "I wish I had done it differently." Instead of tearing your hair, pat it gently; instead of banging on the table or clenching your fist, just relax your shoulders. You won't "blow a fuse," you won't break a blood vessel, and you won't be poisoned by swallowing your own bad feelings. Your affects will not

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[9]Tomkins, *Affects, Imagery, Consciousness, I*, p. 329.

sour within you; you will find, with amazement, that it really feels good.

Instead of enumerating affective components of behavior as simple units, such as love, hate, fear, jealousy, Tomkins presents them as continua along which a gradient of intensity may be visualized. For example, we have an affective continuum of interest-excitement, of interest growing into excitement, or of excitement dwindling to mere interest. He lists two positive affects: interest-excitement and enjoyment-joy; five negative affects: distress-anguish, fear-terror, shame-humiliation, contempt-disgust, and anger-rage; and one that he calls "interrupter"; surprise-startle.

With the exception of startle, affects act in a self-reflexive way and become specific activators themselves. In terms of the first-order experience represented by the circle below the parabola in the structural differential diagram (Figure 5, p. 100), we see that self-reflexiveness does operate and can be trained at this first level of abstraction.

> The experience of fear is frightening, the experience of distress is distressing, the experience of anger is angering, the experience of shame is shaming, the experience of disgust is disgusting, the experience of joy is joying, the experience of excitement is exciting.[10]

The reduction or interruption of a positive affect is punishing; the reduction or interruption of a negative affect is rewarding. The toxicity of negative affects, such as anger that makes us have our own way for the time being, may be compared to the toxicity of certain drugs that destroy some bacteria or relieve some intense pain but at the same time produce side effects that are damaging to the whole system in the long run. Such damaging affects, if left to run their course, may be more damaging than the situation that was the occasion of their appearance.

Our time-binding capacity, or the capacity that we have to keep the past and the anticipated future within the range of our conscious now, is not an unmixed blessing. It demands more skill than the instinctive running away from trouble or danger. It makes possible the continuous activation of unpleasant past experiences and anticipated

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[10]Tomkins, *Affects, Imagery, Consciousness, I*, p. 296.

fears, disgusts, or humiliations, whose very presence produces anxiety. To reduce it, it is useful to learn the skill of intentionally narrowing the span of awareness to a limited now by whatever nonverbal means are available, such as sensory awareness, muscular relaxation, living at the silent level. Trying to do it by directed thinking or feeling activities, such as "trying to forget it" or "telling oneself to be sensible about it" and other such common-sense suppressions, leaves the negative affect within the range of awareness and lets its self-reflexive activation continue by amplifying feedback. This reinforcing feedback of negative affects was formerly called the "law of the reverse effort", meaning that the more one attempts to control them by mere willpower, the stronger they become, eventually turning into chronic moods or into semantic states.

There is another way in which negative affects can be reduced or transformed, and it was described years ago in Dr. Matthew Chappell's *In the Name of Common Sense* (Macmillan, 1949 [rev. ed.]), later published as a paperback (by Collier) under the title *Worry and Control*. I have often wondered why it is not more generally recommended in books on clinical psychology. I have used it more than once in particularly resistant cases, and it helped produce rewarding results.

The idea is to surround the centrencephalon (the thalamic region in Korzybskian terminology) by a cortex made active with memories, cold and unemotional at the start, that were once concomitant with the affects, now absent, that we want to bring back to life. If we keep at it for a sufficiently long time, *without any willful attempt by the subject to stir up emotions by autosuggestion or otherwise*, the former affects will grow—where they apparently had left some traces—and, in time, they will refresh the whole organism. An example will illustrate what I mean.

A self-declared homosexual came to our office in Montreal; he had been forced by his family to leave England and start a new life in Canada, if he could. He said that he had one year or so of psychoanalysis and wanted some help. To my question whether he had ever had any interest, however slight and passing, in persons of the other sex, he answered with definite no's and never's. I kept telling him to look deep in the recesses of his memory, and one day he told me he recalled that, when he was seven or eight, his mother had spent a

summer at the seashore, where she had a friend who was the mother of a girl of about his age.

He was quite sure, he said, that they had played together on the beach. "There was really nothing heterosexual about it, as far as I can remember," he said, "but since you insist so much on my relating any experience with persons of the other sex, this is one that technically belongs to that class." I asked him to write a description of whatever he remembered from that vacation, the cottage, the beach, the sea, the games they played, his mother, her friend, anything at all. He came back with only three lines, and I urged him to write more details. "Well," he said, "it may be mere invention on my part, but I shall do my best to follow your prescription."

After three or four weeks, he had more than two single-spaced type-written pages. A bit later, he came to me in a state of mild excitement. "That season was not the only one I spent with Sissie at the seashore," he reported. "I had forgotten all about another summer I passed with her, and that time it was more than neutral games."

A few years later he died, still a bachelor, but he had neutralized his tendency to form homosexual liaisons with adolescents and had established satisfactory relations with more than one female friend.

The Central Assembly

This is not the place to enter into a detailed study of the few affective continua that Tomkins discussed in his two volumes: interest-excitement, enjoyment-joy, surprise-startle, distress-anguish, and fear-terror; such a study is beyond the scope of a general methodology. There is, however, an integrative approach to the whole semantic transaction system that fits with what we have already stated in earlier chapters on the role of the centrencephalon and on psychologics. Our semantic reactions are controlled in direction, intensity, duration, and stability by an idiosyncratic patterning that we may call the *central assembly*.

Tomkins described the central assembly as the transmuting mechanism (it transmutes messages in the nervous system into conscious reports) plus those components of the nervous system which are functionally connected with the transmuting mechanism at a given moment. This central assembly is not strictly anatomical; it is not limited to a neural feedback firing in reverberatory circuits, cell assemblies, and phase sequences. It integrates, at a more comprehen-

sive level of existence, the various aspects of our semantic transactions: thinking, feeling, self-moving, electrochemical, environmental, past and anticipated future.

Of all these aspects, logic—whether classical, symbolic, mathematical, or metaphorical—deals only with thinking. Psycho-logics add new dimensions to the thinking phenomenon, taking into account orders of abstraction, multiordinality, differentiation of mental models, the structural more, the semantic jump. It also postulates a translogical order in the whole complex system of semantic transactions.

The description of the role of the central assembly could be taken as an attempt to formulate the psycho-logical, or translogical, order. The central assembly could be seen as a dynamic self-reflexive system that integrates the various types of activity as a set of so many subsystems. Thus the central assembly reactivity pattern, or central assembly set, or the whole space-time individual integrates the dynamics of thinking, of feeling, of perceptive and muscular habits and skills, of electrochemical functioning, of transacting with the environment, and of binding together within the now memories of the past and anticipations of the future.

Each of these subsystems has its own pattern. None of these patterns can be assumed to correspond structurally to the syntactical order of our subject-predicate language, refined or not by the wisdom of common sense or by the techniques of logic.

Love, or Altruism as a Passion

One of the nonintellectual aspects of our semantic transactions on which the new human sciences have not yet cast much light, comes under the much-abused terms *love* and *loving*. For the general public these words cover a multitude of activities, from the lofty dissertations of Eric Fromm in *The Art of Loving* to the gross memories of Henry Miller in *Tropic of Cancer*, from the studies of good neighbors, saints, and mystics made by Pitirim Sorokin to the lurid tales of the whorish achievements of a Fanny Hill. On the opposite side we have the daily recounting of crimes of violence, the persecutions and destructions due to the human refusal to accept all humans as related, small wars and preparation for the "big war", covert hatreds within families, open feuds between generations. Love and loving, and their opposites, hatred and hating, refer to a phenomenon that spreads from the narrow circle of the individual to the billions of human beings all

over the globe, a phenomenon that manifests itself at the heights of detachment and heroism and at the depths of the most sordid selfishness. Can we make sense of all this?

Taking a fresh view of humankind as a natural phenomenon that cannot be dissociated from the ongoing drama of cosmic evolution, a modern scientist-philosopher wrote that

> Love has always been carefully eliminated from realist and positivist concepts of the world; but sooner or later we shall have to acknowledge that it is the fundamental impulse of life, or if you prefer, the one natural medium in which the rising course of evolution can proceed.[11]

That "fundamental impulse of life," why should it be kept out of our scientific picture of the world? How does it fit with what Korzybski had in mind when he spoke of "the *affective, personal raw material*, out of which our ordinary meanings are built"?[12] If love—or whatever we mean when we use this word—is the pulsating and propelling energy that keeps evolution emerging from lower to higher forms of life; and if the affective element in our own life is what gives substance, cohesion, and value to our ordinary meanings, what prevents us from acknowledging its supreme importance when we claim to develop a system to make awareness possible and practical? The time has come when we must face this central human phenomenon with a mind that refuses to be disturbed. Surgeons can operate without a tremor in the brain and in the heart of living subjects; why can't we, with the same scientific calm, explore the most vital parts of our thinking-feeling self?

Some speak of love as a matter of interdependence that we have to accept as a fact of life. This is true, no doubt, but it sounds cold and dispassionate. I prefer Sir Charles Sherrington's expression, *altruism as a passion* (from *alter*, the "other"), which means concern for all other human beings simply because they are human. This concern must become more than a so-called attitude, or a readiness to act in a definite way, and something more than a mental recognition that

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[11]Pierre Teilhard de Chardin, *The Future of Man* (New York: Harper & Row, 1964), p. 54.

[12]Alfred Korzybski, *Science and Sanity* (Lakeville, Conn.: International Non-Aristotelian Library, 1933, 1941, 1948, 1958), p. 22.

we are interdependent; it must be a real *passion*, something like a personal need that feeds on itself, on its own gratification as a source of greater intensity.

It began, thinks Sherrington, when the lowest form of life, the solitary and independent cell, took the first jump to a richer level of existence, that of the multicellular organism. Each individual cell gave up something of its heretofore previous independence to become joint possessor of a higher form of autonomy from its environment and was enriched by the multiplication of energies as it became integrated in the organism in formation. From that eventful moment, which marked a definite quantum jump in the evolutionary process, "union differentiates" as Teilhard de Chardin put it. It brings individuation to a higher level: from being one among many individuals, similar in nature and function, to being one among many differentiated coparticipants in a nature of higher order and in functions that are richer and more numerous. Union differentiates, and raises to a new level of existence, what was only a distinct unit within a class—isolated and independent, but restricted in function. Union differentiates and enriches what it joins together. It creates altruism as a new relationship on the cosmic scene.

> At first glance such altruism may strike the biologist as contrary to the broad trend and polity of life. That makes the more notable the fact that evolution nevertheless has brought it about...Biology cries, "The individual for itself." What are the most successful individuals which Life has to show? The multicellular. And what has gone in their making? The multicellular organism is itself a variant from the perennial antagonism of cell and cell. Instead of that eternal antagonism, it is making use of relatedness to bind cell to cell for cooperation. The multicellular organism stood for a change, insofar, from conflict between cell and cell to harmony between cell and cell. *Its coming was, we know now, pregnant with an immense advance for the whole future of life upon the globe. It was potential of the present success of living forms upon the planet.*[13]

But individuation and self-centeredness quickly reappeared. Multicellular organisms, made of the cooperative interaction of many individual cells, began fighting among themselves, each to ensure its

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[13]Charles Sherrington, *Man on His Nature* (New York: Mentor Books [New American Library], 1964), p. 270 (italics added).

survival and that of its own species. Nature became the scene of predatory living.

> Predatory living has prospered and prospered hugely. It has brought into existence countless millions of lives which otherwise would not have been but for it would forthwith perish. It has produced beautiful types of form and motion. It attaches as corollary to "zest-to-live" a "lust-to-kill." It develops its own gift of killing to heights of skill and ingenuity which astonish.[14]

Nature became "red in tooth and claw." Life, as such, was no sacred thing. When *Homo sapiens* appeared, in their turn, they made room for themselves and their broods by the same methods of predatory living: fighting and killing other forms of life or subduing them through domestication.

For generations we have kept this successful pattern of behavior, not only in dealing with animals but also in dealing with competing groups belonging to our own species. The tribe became a superorganism that equipped itself with weapons to fight and destroy other tribes. Nations became larger and more complex organisms that survived and prospered by the conquest of other nations. Eventually, we all reached the present era, during which two world wars shook the whole planet and made it clear that the whole race runs the risk of total annihilation if it relies on conflict as the arbiter of its destiny. And now, we must ask ourselves: "What is the next step in evolutionary advance that will replace conflict as a mode of survival?"

The answer that the human sciences propose is altruism and intelligent planning. Altruism must come first. It must permeate all the activities of the individual and all the workings of the organizations that are created; otherwise, the planning will keep some old patterns of conflict that will vitiate the whole undertaking. Hidden assumptions in the realm of values have to be dug out and brought into the open; they form the tangled web of the roots of common-sense ethics, and they are just as difficult to eradicate as the common-sense logic of obsolete epistemology.

Conflict has to be ferreted out of our daily life, in all its most subtle manifestations, and replaced by an altruism that has to be cul-

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[14]Sherrington, *Man on His Nature*, p. 270.

tivated, fostered, and developed until it becomes the acquired dominant passion. Once this passion has become "natural" for a sufficiently large number of members of our species, the metamorphosis of humankind into a higher form of life will take place as a normal stage of the evolutionary process. We are now in the throes of this transformation.

That it should be accompanied by a wild release of unruly behavior need not surprise us: the world of values goes through a stage of turbulence that portends the new order. Instead of fighting the turbulence with methods that have become obsolete, it is up to us to understand what is going on and to hasten the coming of the new order. That it should be viewed with pessimism by old-style humanists, who in despair see only the absurdity of everything and the threatening signs of a dark future, need not disturb us either. The old humanism that limited itself to fighting organized religion is bypassed, and a new synthesis of whatever is worthwhile in human experience is in the making.

It is true that the human condition is in peril at the moment, but it is also true that, for the first time since they have been on this planet, human beings know that their fate is in their own hands, and they know that they can develop the skills necessary to cope with the situation.

> Everything leads us to think that we are in a phase of explosive metamorphosis, which is not only the result of human intelligence and purpose, but which is a phenomenon due to the whole ascending movement of life on the parcel of the cosmos we inhabit. It is a great and pathetic event that men of today are beginning to become aware of. This fact transcends them and concerns them at the same time. It involves them in a responsibility at the level of humanity as a whole and of the cosmos itself.
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> But this explosive metamorphosis may also turn into a regressive explosion if we slow down and remain in the old humanism instead of founding a new humanism, preparatory to a superhuman condition. A superhumanism, we may say. At the level of the old humanism, we understand only through a fog of ineffective good intentions the ancient religious precepts, the meaning of which is perhaps clear for none but the superreason and the superintelligence to come. For instance, "Thou shalt not kill" may perhaps correspond to a superhuman vision of the harmonies of life, and we shall not understand that commandment until our reason has progressed. "Love one another" means nothing. It is nothing but a pious wish, unless we substitute for it the transforming powerful effort suggested by the other pre-

> cept: "Accept and understand one another, help one another to develop and progress."[15]

Sherrington expressed himself in a slightly different manner, but his message has much in common with that of the French writer.

> It is as though the door of Nature had been pushed ajar and man were peeping through, there to get a glimpse of his own story and some fresh understanding of himself. In several ways his fuller knowledge has spelled disillusion, disenchantment. In him, evolving mind has got so far as to become critical of its way of its own life. He is disillusioned the more to find he is part in the same dispensation. The regime is, if he asks his "heart," one for which he cannot seek his heart's approval...But ancient trends die hard...He must try to shed from his gene-complex some subhuman ingrained elements. The contradiction is that he is slowly drawing from life the inference that altruism, charity, is a duty incumbent upon thinking life. That an aim of conscious conduct must be the unselfish life...Of all his new-found values perhaps altruism will be the most hard to grow.[16]

Whether we see the task that confronts us as shedding from our gene-complex some "subhuman ingrained elements" or as founding a new humanism to replace the despair of existentialism and the ineffectiveness of the theories of the absurd, the new postulates call for a dual operation. Part of it consists in doing away with whatever traces of conflict and conflict-fostering tendencies we still countenance more or less consciously in our life; part of it demands that we give unalloyed love—the fundamental impulse of life—the freedom to transform each of us into a new type of human being.

Conflict and Conflict-fostering Practices

Back of self-centeredness is a hidden mechanism that accounts for most of our readiness to enter into conflict with whoever comes our way. This mechanism is the projection of our self-image into the view we have of humankind and the disparaging judgments that emerge from contrasting the two images. The old precept used to be "Do not judge and you shall not be judged," as if it were proper to

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[15]Louis Pauwels, "Ce que nous sommes et ce que nous croyons," in *Planete*, 21 (Paris, 1965): (translated by J. S. Bois).

[16]Sherrington, *Man on His Nature*, p. 266.

prevent the other person from judging us and permissible to judge ourselves. I prefer the shorter, "Do not judge, *period!*"—neither the other person, nor ourselves, because in both cases we run the risk of being wrong most of the time. If we again refer to the Structural Differential, (Figure 5, p. 100), we will realize that none of our interpretation can be commensurate with our first-order experiences, and still less with what is going on.

Conflicts arise between what we think we are and what we think the other person is, between what we think she said and what she thinks we said, what we think she meant and what she thinks we meant. But all these are projections that both of us thrust forward like the lances of medieval jousters in tournaments. Drop the lances. Approach each other in a friendly and trusting contact, viewing each encounter as a new experience, unpredictable in all its details, which we can make more pleasant and fruitful if we don't prejudge it. Once the experience is over, let it flow in its place in the stream of life, without holding to it; otherwise, we run the risk of creating an eddy that slows us down or keeps us turning in circles.

Even when we have to make a decision, we should not judge it as the best, or the only one we can or should make. It is the one we happen to see as the most expedient under the circumstances. Let life flow around, above, and below it, carrying it away in its ever-changing course. Again, all we can do is "hang loose."

Such a general attitude will reduce the potential conflicts to a tolerable minimum. It means that we will never be an exploiter of another person's foibles, of his ignorance, his fears, his anxieties, prejudices or mistakes.

We will not make a display of a difference in social status if we enjoy the higher one, except if it might give more security to whomever we are dealing with.

We will not make a display of our skills, as in a wrestling or boxing match, or in a competition where others may be emotionally involved.

We will not play the role of a logician who picks on words that are poorly chosen, asks for sharp definitions, notes trivial contradictions, and poses rhetorical questions to trap the unwary.

We will avoid words or phrases that imply a contest and/or a victory in communication, such as "winning an argument," "fighting for one's opinions," "standing pat against all opposition," "convincing

or persuading" the other person, "refuting an objection," "proving our point." Instead of this, we may "answer a question," "express our own semantic transactions," "explain what we meant"—and remain calm even when we feel we are misunderstood in matters that do not involve imminent danger to others or to ourselves.

We will avoid challenging questions, such as "Why don't you do it this way?" "Can't you see what is wrong with that?" or "Why do you act the way you do?"

We will avoid using terms that are tantamount to imposing our own set of values upon the other person. For instance, "You should...," "You ought to...," "You must...," "If I were you, I would..."

Finally, we will abstain from terms that brand the other person's behavior or utterances as worthy only of reproof or condemnation. We may state that we don't accept them as we see or understand them, but there ends our freedom of evaluation. This does not prevent the self-actualizing person from not letting anything or anyone budge her from a position she thinks she has to assume, but it leaves her free to take a new decision when an apparently slight change in the situation gives it a new structure.

Love as a Transforming Agent

The avoidance of conflicts is not enough; the correction of practices that invite conflicts is not enough either. There is need of what Sherrington calls a "soul-growth," which will bring about a higher self.

One thing seems certain: this growth phenomenon is outside the field of science as we know it today. It is not an achievement of our discursive powers, of the two-valued logic of Aristotelianism, or of the infinite-valued logic of general semantics. In fact, for one who would limit the Korzybskian system to consciousness of abstracting, the remarks that follow are irrelevant.

It is one of the discoveries of the contemporary human sciences that our concerns are not all cognitive in the generally accepted manner. Insofar as many genuine human experiences have aspects that are affective, science—at least at the present time—does not relate to them as such. Have we any reason to believe that it will always be so, and that science will forever be kept outside the world of affects? I don't think so. We are just beginning to realize that intellectuality is only one of the many human characteristics. To our power of creating

classes and organizing our world in a logical order, we now add a capacity to sense and grasp a different kind of order, the order of pure relatedness, nearness, and compatibility. No experience reveals that order more vividly than the love experience.

> New verities are felt before they can be expressed; and when they are expressed for the first time they are unavoidably wrapped in a defective garb. At their birth they appear like a faint gleam in the dark, and they attract us. But, at first, we do not know exactly in what direction and at what level the source of light can be found. And so, we grope for a long time, hurting ourselves against dark obstacles, enticed by misleading reflections, until we come into the light that guides us to their source.[17]

We are far from the quantitative procedures of actuarial science at the moment; we are not looking for large numbers of phenomena that we can group in well-defined classes. We are picking, within our personal world of readings, observations, experiences, and speculations, whatever seems to us worthy of further experiencing and observing.

Count Hermann Keyserling spoke of an "emotional" order and an "emotional" reality.

> The particular quality of emotional reality depends entirely on its being personally experienced. The world of emotions is essentially that of personal experiences; indeed, it is the world of experience par excellence; for it is only when feelings decide that the term "inner experience" becomes endowed with the meaning everyone involuntarily attributes to it. From this follows what is of essential importance: *the realm of the Emotional Order is one throughout and in all respects with what we call the Soul*...And everyone understands "soul" to mean an entity not only different from, but higher than reason.[18]

"When feelings decide," it is "an action of the soul, an entity different from and higher than reason." How can we translate this in terms that we are familiar with, say, in the description of the epistemological profile? We could say, gropingly and hesitatingly as Teil-

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[17]Pierre Teilhard de Chardin, *La Vision du Passe* (Paris: Editions du Seuil, 1957), p. 17 (translated by J. S. Bois).

[18]Hermann Keyserling, *South American Meditations* (New York: Harper & Row), p. 254.

hard suggests, that the experience of being in love starts with what we shall later describe as a unifying or stage-five-type experience, with a feeling of supreme integration, of unity in diversity, that is experienced as the deep "reality" of human adult life. The task is then to take that newly experienced form of superunity as the basic postulate of an awareness of transcendent oneness and of a blending of individual differences. One does not have to create unity, unity is there at the start; but one must foster the growth of our awareness of it—the "soul-growth" of Sherrington—by letting educated "feelings" decide again and again, over and beyond reason and logic.

This brings us to what seems to me the main difference between love and rationality. We do not love because it is reasonable to do so in a particular case, we love first, and reason then adapts itself to the new conditions created by the love experience that has been accepted and is now willed deliberately. Things that appeared impossible before become possible and easy; interests and concerns that were nonexistent before become central and binding, without any feeling of pressure exerted from outside. It becomes a world of complete altruism and trust.

This type of trust, held fast when the discursive minds of individuals are at loggerheads, is the powerful bond that makes love victorious in spite of violent conflicts at the level of strict logic. And when this type of victory has once been experienced, its creative power takes over and makes coming misunderstandings as nothing but the harbingers of greater unity and joint insight.

Love, as we understand it here, has very little in common with the culturally accepted way of making oneself lovable by pleasant manners, interesting conversation, sharing of hobbies and interests and sex attraction. "What most people in our culture mean by being lovable is essentially a mixture between being popular and having sex appeal."[19]

In this, as in many other things, the new humanism transcends the standards of our culture without, however, neglecting whatever it contains of lasting value. Sex, as we shall see, has a part to play in love as a growth experience.

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[19]Eric Fromm, *The Art of Loving* (New York: Harper & Row, 1956), p. 2.

We may help ourselves if we consider love under three aspects. They do not exhaust the characteristics of that peculiar transcognitive experience, but they put some order in our thinking about it. Love may be seen as (1) appreciation, (2) tenderness, and (3) commitment.

Appreciation refers to beauty, proportion, radiance, attractiveness, genuineness, alertness, intelligence, grace and taste. All this is relative, of course, and it is more a matter of mutual compatibility than of conformity to some "objective" standard. Personal appreciation does not mean a Miss America or a Mr. America contest.

Tenderness refers to the affective-unitive aspect of the mutual relationship. Sex belongs here, but it cannot be divorced from the amenities of words and behavior that make life pleasant, free from petty clashes and trivial arguments, humorous and cheerful, filled with comforting sympathy when pain or trouble occurs, and that doubles the value of joy and success by sharing them as personal experiences.

Finally, there is the aspect of commitment, of determined choice and consistent perseverance. It gives love a stability that does not depend exclusively on attractiveness or on compatibility, which may be felt at times and missed at times. Commitment means a solid determination to "make a go" of the vital undertaking, whatever may happen. Eric Fromm puts it this way:

> To love somebody is not just a strong feeling—it is a decision, it is a judgment, it is a promise. If love were only a feeling, there would be no basis for the promise to love each other forever. A feeling comes and it may go. How can I judge that it will stay forever, when my act does not involve judgment and decision?[20]

These three aspects—appreciation, tenderness, and commitment—have to be kept alive on both sides, and this is what makes the life of a human couple not a *state*, as is commonly said, but a *joint enterprise* of growing together through expanding experiences of stronger trust and fuller understanding.

In the revolutionary period we are going through, marriage is one of our institutions that is particularly affected. From being a permanent state, bolstered by religion, law, and social mores, it has be-

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[20]Fromm, *The Art of Loving*, p. 56.

come a private enterprise, the success of which depends mostly, if not exclusively, on the skill of partners determined to make it a means of self-actualization in companionship. It becomes a test of self-management shared night and day, an achievement in the art of living with another self whose autonomy we can't ignore. It is at the same time a marvelous opportunity to experiment with love as the experienced impulse of life in evolution.

This is what some scientists see as the new function of the human couple in this period of intensified human development. The human couple can experiment with love-energy under all its aspects and in all its modalities and can report the results of their growth experience to the interested scholars.

In some of his most penetrating speculations, Teilhard de Chardin ventures into this domain, when he discusses the role of sexuality at this moment of history.

> If man and woman were principally for the child, then the role and the power of love should dwindle as human individuality develops and as, on the other hand, the density of the population on earth reaches its saturation point. But if man and woman are principally for each other, then we understand that the more they humanize themselves, the more they feel by that very fact the increasing need of getting close to each other. This second alternative is the fact that is verified by experience...Evolution does not come to a close; but it continues further toward a more perfect concentration, linked with an ulterior differentiation that is achieved by union...The complete human molecule is already something more complex and, therefore, more spiritualized than the individual taken alone. It is a duality that involves both a male and a female element. It is at this point that appears the full function of the cosmic role of sexuality...Love is an adventure and a conquest. It manifests itself and develops, like the Universe itself, by means of a continuous discovery. To love really means, for two persons, to be carried passionately, one by the other, towards a higher possession of their individual self.[21]

In other words, the human couple may be seen as an experimental plot of land where love, or altruism as a passion that embraces all aspects of life, is cultivated with care until it reaches maturity and produces the fruits of knowledge we need for playing our role as par-

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[21]Pierre Teilhard de Chardin, *L'Energie Humaine* (Paris: Editions du Seuil, 1962), pp. 91-96 *passim* (translated by J. S. Bois).

ticipants in the emergence of a new and better humanity. From being the "fundamental impulse of cosmic life," love would become humanity's powerful agent for its self-transformation.

A New Human Being in the Making

There is an abundant literature on the ideal state, the dreamland where people live healthy, happy, and wise under a government that is perfect in its laws and in their application. All writers of utopias, from Plato in *The Republic* to the psychologist B. F. Skinner in his *Walden II*, built this world of fantasy according to their individual preferences. All, however, made it clear that the world they describe is nowhere to be found; it was their way of criticizing the world in which they lived and of expounding their own theories.

It is not my intention to add one more version of the human dream for a perfect world. Nobody knows what the world is going to be in the next generation; we are on the road to a condition that we do not know in advance, and all we can do is increase our chances of making it a bit better than the one we now have. We are on the road to a land that we never saw; let us translate into practical rules of behavior the desire we all have for better things.

If we take the long view of our presence on this planet and the presence of other forms of life, we see a slow process of evolution. For millions of years this evolution was strictly biological; recently, for only a few thousand years, it has been cultural. The form of life to which we belong seems able to exert a distinct influence on its own evolution and that of other forms of life. In reviewing this general process, we see definite jumps or mutations when new specimens are produced, most of which are doomed to die in a short time; very few survive to "possess" the earth. The strata of the soil will show us, in fossilized form, the sequence of biological mutations.

A chemical and physical sequence had unfolded itself prior to the appearance of plants and animals now preserved in geological strata. It continues today around us and within us, all powerful and unrestricted. We have to extend our awareness of this evolutionary process to a world view, from whatever we picture as the origin of existence to the constantly receding limits of a future in ceaseless becoming.

Nothing can stop the evolution of humankind; but now that we are aware of it, thanks to sciences that have developed in the last

hundred years, we are able to play intelligently the part that we had played before by mere instinct. We now know that *Homo sapiens* is not simply another species in the animal kingdom. With the appearance of our species on the planet a new age began, the age of life specimens able to reflect upon themselves and upon the universe. Teilhard de Chardin calls it the psychozoic era. For Korzybski it was the beginning of time-binding, of the cultural evolution of which we are capable and for which we are responsible.

This brings us back to the very first topic we discussed: the conceptual revolution of our time. We occasionally spoke of a gap that has been widening for half a century between our technology and our management of human affairs. The physical sciences tell us more about where we are than do the psychological sciences. People who still believe that a human being is an animal endowed with reason are as much behind our time as people who claim that the earth is flat and the center of the universe. I agree with Benjamin Whorf's comparison of the man who does not know what science has discovered about the cosmos to the man who knows nothing of the influence his language exerts on his thinking and behaving.

> As this man is in conception of the physical universe, of whose scope and order he has not the faintest inkling, so all of us, from rude savage to learned scholar, are in conception of language...Natural man, whether simpleton or scientist, knows no more of the linguistic forces that bear upon him than the savage knows of gravitational forces. He supposes that talking is an activity in which he is free and untrammeled...He implies that thinking is an OBVIOUS, straightforward activity, the same for all rational beings, of which language is a straightforward expression.[22]

One of the consequences of this ignorance is that when we get into trouble in family life, in business, in politics, or in international affairs, we look for explanations and remedies everywhere but in our processes of thinking, evaluating and communicating. The main purpose of these chapters is to remind us that the latter is where we should look first. General semantics is a collection of methods, derived from the sciences of this generation, for the purpose of guiding us in the study and management of these processes.

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[22]Benjamin Whorf, *Language, Thought and Reality* (New York: Wiley, 1956), p. 251.

In the understanding of the physical universe, the second conceptual revolution brought about the discovery of gravitation. Prior to this, gravitation was everywhere, of course, but it so thoroughly penetrated the workings of nature that it was practically impossible to detect its existence as something different from a property of matter itself. Now that it has been overcome in space flight, its existence is a matter of common knowledge.

There is an activity in the psychological universe that is as pervasive as the assumption that the activity of gravitation is in the physical cosmos. It is the activity of abstracting. To become aware of it is not any easier than it was to "discover" and to invent ways to see that material bodies are not light or heavy by nature but are simply gravitating.

Abstracting, the orders of abstraction, and multiordinality account for a dimension of our thinking that few people take into account, the vertical dimension. This dimension makes it possible for us to differentiate between first-order experience and description, between report language and interpretive language, between neutral terms and value terms. These dimensions do away with the confusion that arises from the use of such terms as "fact," "situation," "problem," "thing," "event"—of any term that is so general as to be like the infinite in mathematics, equal in extent to one of its parts. They make it clear that there are no impersonal statements, that whoever claims to speak in the name of the Law, Science, or Religion, or of any of the accepted personifications of Wisdom, Truth and Goodness, is actually voicing personal thoughts and preferences. Wendell Johnson called this ventriloquizing.

> Ventriloquizing is usually an unconscious process, but it may be done deliberately by men who know quite well what they are doing. In fact, since the time of Aristotle it has been taught in universities as part of rhetoric...For example, an American political speaker presents...proof of his views by declaring them to be the views of Washington or Lincoln and the very essence of American policy. He speaks, thus, as with the voice of the Founding Fathers.[23]

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[23]Wendell Johnson, *People in Quandaries* (New York: Harper & Row, 1946), p. 67.

Abstraction shows us there are no purely objective statements either. When we say "This is a beautiful place," we are projecting our own evaluations, investing the place with beauty that is of our own making. If another person, with a different background, different tastes, and different standards of beauty, says "This is an ugly place," a General Semanticist would not be disturbed in the least. He knows that the place does not exist independently of the way human participants relate themselves to it. It is seen as a different experience for two different observers; it is not that the place is either beautiful or ugly.

Awareness of abstraction would reduce the number of "why?" questions and "because" answers. Or it would at least make us realize that when we are dealing with whys and becauses we are dealing with interpretations, projections, and opinions, and not with bare facts. Should we entirely exclude whys and becauses from our talking and writing? I don't think we should; it may be very interesting or important to know what other persons think about certain topics.

The use of *I* and *Me* is natural for persons who are aware of abstraction and projection. They know that what they say is much more informative if it is not put, implicitly or explicitly, in the mouth of an all-knowing "goddess of supreme wisdom," the idol that stands behind most absolute statements. Here are some samples of absolute statements, and a suggested translation that uses the first person singular.

Instead of saying "Everybody knows that..." would it be more informative to say "Of the four persons with whom I discussed that in the past week, three had this opinion about it"? Instead of "Nobody would put up with that," wouldn't it be more informative to say "I know of nobody who I think would accept that"? If, instead of "The real trouble is...," we say "From what I know of the situation, I think that this-or-that might help remedy it," wouldn't our statement be more within the range of practical wisdom? There is no limit to the possibilities of such an exercise in translation.

The second point to remember is that the technology of mental work has gone through many changes, comparable to the changes that have taken place in research and industry. A well-equipped medical laboratory of fifty years ago would not answer the needs of an up-to-date hospital. The locomotive that pulled the first transcontinental trains across the Rockies are kept in museums and not on operating

tracks. Model T, even Model A, Fords are practically never seen on highways. The pot-bellied stove and the ice refrigerator are relegated to technologically underdeveloped settlements. In the short span of human life, we remember when the radio was a startling novelty and television was mentioned only as a distant possibility. All these changes we now take for granted when it comes to the physical aspect of our lives, but it is time that we take stock of our mental equipment, throw out what is definitely obsolete, and learn to use the most advanced technologies that the human sciences can offer.

The first thing to do is to determine the age of the mental tools we are now using: are they of the period of the Roman chariot or the period of the jet plane? (Professor Gaston Bachelard has given us a five-point scale against which we can measure the relative modernity or obsoleteness of our mental equipment.) Some of our tools may date back to pre-Aristotelian days, when primitive people took their uncritical sensory reactions as the measure of things; and there must be some people who still function that way, at least in certain areas of their life. My reason for saying this is that I see and hear many commercials that would appeal only to people who are still functioning at the primitive level. These advertisements cost money, and I don't think the sponsors would continue them if they were not worth what they pay for them.

If our mental technology is of the classificatory type, it belongs, at best, to the Middle Ages, when the Western world remained almost frozen in a certain pattern for many generations. If that type of thinking were entirely discarded, the segregation issue would not even exist; debates would be cooperative searches for truth or practical wisdom, not contests to bring out a winner; capitalism and communism would not be discussed as two diametrically opposed economic religions; noncommitment would be accepted as a justifiable attitude in international politics. Our newspapers and magazines seem to show little difference between the prevalent thinking of our times and that of the days when people were either believers or heretics, saints or sinners, civilized or savage, free men or slaves. The either-or manner of thinking is so deeply embedded in our habits that we find it extremely difficult to recognize it in ourselves. From the days of grade school, when we had to labor through long lists of synonyms and antonyms, we have been told that there are two sides to any

question, a right one and a wrong one. No wonder our thinking is still of the black-and-white, yes-or-no type.

In the seventeenth century a new mental technology was inaugurated. It was the revolution that brought about classical scientific methods. If we use that technology, we know that there may be not only two but many sides to any question, and that the more of them we take into account the greater are our chances of viewing a question in its proper perspective. We do not oversimplify things; we try to build mental models that are as similar to the situation as possible, taking time and change into account, realizing that every decision is a gamble and every step we take is an experiment with life. But we are confident that the accumulated knowledge of many generations has given us a backlog of precedents on which we can depend, and most of the practical issues with which we are confronted are decided by those precedents.

Finally, we may transfer to human affairs some of the mental techniques developed in the physical sciences since the advent of relativity and the quantum theory. Here we are aware that the backlog of information accumulated in the human sciences since the beginning of this century is limited, in most cases, to our own Western world and does not apply to humankind as a whole. We know that different cultural postulates will create different kinds of individuals. We search not so much for a residue of common characteristics in all cultures but for a formulation of a higher order that will transcend them all, while giving each an opportunity for genuine development.

There is a good deal of groping at this level. There are group dynamics, psycho- and socio-drama, client-centered therapy, psychosynthesis, studies of psychological constructs and creativity. The trouble is that they are far from having the resources and the backing that is given to the physical sciences. Many of the advances made in these areas had to be made outside our well-established educational institutions because these advances occasionally question the value of certain practices that are standard in these institutions. We are at the growing edge of the technology of human self-management.

Apart from a general awareness of abstracting and a conscious rating of the stage at which we function mentally, it becomes important to know how these intellectual activities are integrated around a core of active motivation. Here the motivational construct of Maslow becomes useful, making it possible to differentiate the self-

actualizing persons who enjoy giving of themselves from the needy ones who still derive their psychological sustenance from what the environment can give them in security, belongingness, and recognition.

This bring us to what we may call the fully functioning "human nature," and Gardner Murphy, in his *Human Potentialities*, calls it the third human nature. The first one is the general biochemical and nervous organization that made humans able to be conscious of their consciousness, to think, to learn, to develop an individuality, and to accumulate experience from one generation to the next. We may call it the biological human nature, the original time-binding form of life. Every member of the human race, from the aborigines of Australia to the scientists and writers who receive the Nobel Prize, has this nature in common.

The second human nature in Gardner Murphy's scheme is the human being molded by culture, by ways of living not transmitted by heredity in the genes, but standardized and transmitted as the normal way of life. This second nature is passed on to the young and is accepted by them as an essential part of their human heritage. It takes a high degree of awareness to differentiate cultural inheritance from genic heredity.

The third human nature is now in the making. It emerges from the present conditions that bring cultures face to face, cultures that have lived in practical independence and ignorance of one another from time immemorial. The new human being who is now emerging wants to understand these cultural diversities and to live her or his sense of purpose in the sweep of the cosmos. This third human nature is in sharp contrast to the second nature from which it emerges. The second human nature, if left to itself, tends to get more and more rigid and standardized through the stabilization of habits, through the fixation of values, and through technology that gives us more and more power of the nonhuman energies within our influence. The third human nature does not belittle this power but gives it priority to the understanding of ourselves and to the managing of a specifically human form of cosmic energy. This new human being sees this energy as a characteristic of the whole planet on which we live and understands what Teilhard de Chardin meant when he wrote:

> To a Martian capable of analyzing sidereal radiations psychically no less than physically, the first characteristic of our planet would be, not the blue of the sea or the green of the forest, but the phosphorescence of thought.[24]

This phosphorescence would be the radiation emitted by the *noösphere*, the covering of the planet that has spread to all the continents since *Homo sapiens* appeared on the scene, that shows in spots on the oceans, and even in layers of space that are close to the earth. It would be the glow of the increasing amount of nerve cells that surround the planet like a net, and which, if taken as mere physical substances, must weight millions of tons. The incessant activities of these trillions of flashing units create the world of human thought viewed as a planetary phenomenon, the complexity of which defies all imagination.

Years ago I was in correspondence with a semanticist friend, Charles Tarver, Jr. of Dallas, Texas. Charlie was a businessman, and a member of the Board of the International Society for General Semantics. Our correspondence was a meditation in great depth. Occasionally, we would meet, and each time I met him, there was a distinct increase in my potential wisdom in the now. He made me think, made me reexamine and reevaluate my wisdom of yesterday. As he said, "We were, in some degree, able to multiply our existence."

For me, Charlie Tarver was a typical specimen of what I understand Gardner Murphy to mean when he speaks of the third human nature, and what I personally mean when I speak of a "new human being in the making." He was active and successful in his business life, altruistic in his dealings with those near him, and devoid of any pretension of reforming the world. He found time to keep himself abreast of developments in mathematics, the physical sciences and the human sciences, occasionally engaging in a thought experiment. This type of free-moving, yet circumspect, meditation has an important role to play in the life of any person who feels responsible for a share in improving the human condition.

The outstanding individual will tend now to merge again in the continuity of the social background, but in a new manner. Personality will mature

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[24]Pierre Teilhard de Chardin, *The Phenomenon of Man* (London: Collins, 1959), p. 183.

> further, but one aspect of maturing will consist in an awareness of the social and hereditary continuity which expresses itself in the thoughts and ambitions of the individual. Thus the special individual who contributes to the development of the tradition will not appear as an arbitrary or autonomous subject bearing a separate burden and responsible for a separate achievement, but rather as one of the many formative organs of the social process. This will enable the individual to be more straightforward in asserting his vision, since he can recover something of the innocence of the ancients whose creative powers were not disturbed by undue awareness of themselves. The burden of European subjectivity can now be discarded, the formative personality being aware not only of himself, but of all the social tendencies which make him what he is. The subjective loneliness, and its companion, the messianic temptation of genius, may thus lose their intensity.[25]

Individuals of this third human nature are still few and far between, but they exist all over the world. When we meet, they recognize one another despite differences of language and cultural habits.

They do not form cliques; they are not much concerned with formal organizations and propaganda by means of mass media. They look for personal contacts, for the cross-fertilization of minds in an exchange of tentative formulations that are free from the formalities of strict logic.

I think they can be easily recognized by the three characteristics we have reviewed in this section: (1) They are aware of the vertical dimension of thinking, whether they describe it as orders of abstraction or otherwise. (2) They are at home at the fourth stage of human development, as described in Bachelard's profile; in other words, they can translate one set of postulates into another set, and they can remain undisturbed if no translation appears possible for the moment. (3) They have the self-detachment and the self-commitment of what Maslow calls the self-actualizing persons.

Summary

From Dr. Abraham Maslow, I borrowed his postulated scale of instinctoid needs, from the basic physiological drives to self-actualization. For an overall incipient theory of affects and for another integrative approach (the central assembly) to the whole se-

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[25]Lancelot Law Whyte, *The Next Development in Man* (London: Cresset, 1944), p. 213.

mantic transaction system, I turned to Sylvan Tomkins, whose work unfortunately stopped short in the middle of my presentation. Finally, I swung open the door of the world of values by introducing the topic of love as a transforming agent and dealing with the avoidance of conflict-fostering practices.

When I speak of nonintellectual aspects of human behavior, I do not mean to belittle the intellect and the part it plays in changing personal values, but to emphasize that the *X, A,* and *B* areas of the semantic transactor are 'silently' but inherently involved in all of our activities. Intellect is not just a logical affair.

In relating this to all that we have covered so far in the book, I am quite willing to accept an analogy proposed by Alfred North Whitehead. He suggests that we see the immense mass of living human existence as a huge developing organism. This organism would consist of each and every human being as a distinct cell. Today we know that the overall health of an organism is closely linked to the cleanliness and freedom from waste of each of its constituent cells. This involves all the known activities of the human transactor; electrochemical, meaning proper nutrition; self-moving, meaning proper exercise; and development of unusual skills, feeling activities that reflect the realm of values, where altruism as a passion or plain love for one another are gradually replacing conflict as a normal constituent of common-sense behavior; and the thinking activities where we work to create a genuine ecumenism in thoughts and philosophy of life.

And so, the apparently humble and limited action of the individual, who profits from the accumulated science and best-tested practices of our time-binding predecessors, contributes as much as he or she can be expected to do toward the healthy growth of the whole humankind.

All these findings do contribute to make us hope that the day is near when the plain individual will have more influence than she or he expected on the health and vigor of the human race. In fact, the individual eventually becomes aware of his or her personal responsibility for the overall peace, smooth functioning, and welfare of all participants in the psycho-social evolution. This in turn may be seen as the growing tip of cosmic evolution itself.

CHAPTER 14

the practice of awareness

The practice of awareness demands an orientation based on the awareness of a control unit that can structure the "messages" coming from the various aspects of our semantic transactions and can, in turn, guide our experience. To express it differently, it calls for the multiordinality of the self, involving self-reflexiveness, feedback, and self-participation.

Through advances in science and other fields, more and more indicators are coming within the range of cultivated sensitivity, and there are many more than we suspect that can be observed by the person who wants to know, manage, and participate in his or her own experience.

Our Many Selves

A major practice proposed by general semantics is to make an effort to free ourselves of the logic of Aristotle, of the Ideas of Plato, and of the many offshoots of Greek philosophy that have been cultivated all through the ages in our Western world; to live in a mental world that is as up to date as the latest advances of technology, a world of semantic Early Bird satellites and supersonic transport planes. General semanticists focus upon humans, whom the biologist Alexis Carrel still considered the "great unknown" not so long ago, the powerful searchlights of all the new human sciences they can mobilize. With Teilhard de Chardin, they consider our humanness not as a "nature" among other "natures," but as a phenomenon unique in its class and worthy of being observed with an entirely fresh mind. With

George G. Simpson and Julian Huxley, they place our species back where they found it, in the stream of evolution where they see it as a key element at the present stage of cosmic history. Here is how *Homo sapiens'* role was described at the close of a scientists' symposium held at Princeton in 1955.

> As man has gone on with his own development, he has become more conscious both of the general process of organic transformation and of the important role he himself has come to play. Instead of bowing himself out of the picture, as he did when he followed the canons of seventeenth-century science, he now takes a central position in the stage, knowing that the performance itself, in the theater of consciousness at least, cannot go on without him. He begins as an actor, singling himself out from his animal colleagues, already something of a prima donna, but uncertain of what part he shall learn. In time he becomes a scene-painter, modifying the natural background and finding himself modified by it, too; and he is driven to be a stagehand likewise, shifting the properties to make his entrances and his exits more manageable. It is only after much practice in all these roles, as actor, scene painter, stagehand, costumer, that he discovers that his main function is to write the drama, using many of the old plots left by nature, but giving them a new turn of the imagination and working the events up to a climax that nature without his aid might not have blundered upon in another hundred million years.[1]

How long would it have taken for evolution, unaided, to endow us with the capacity to fly faster than sound, to dive under the polar cap, or to orbit the planet on which we live? It might never have happened had we not envisioned these achievements with our imagination, planned them with our thought, and made them materialize by means of the technology we have created. The more we know about our species and the better we recognize the importance of our role in changing the face of the earth, the better it will be.

But knowing is not enough. Socrates' prescription, "Know thyself," will be put in the museum of antiquities with the logic of Aristotle and the Ideas of Plato unless it is translated into rules of conduct. In this, as in any other field of endeavor, the time has come to pass from *knowing-what-it-is* to *knowing-what-to-do-with-it*, from science to technology, from theory to practice.

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[1]Lewis Mumford, "Prospect," in *Man's Role in Changing the Face of the Earth*, ed. William L. Thomas et al. (Chicago: University of Chicago Press, 1956, p. 1145.

In the present case, practice does not mean "how to make friends and influence people"; it does not mean "leadership," "propaganda," the use of mass media, the display of force, or techniques of law enforcement. None of these reaches the core of a human being. We know now that humankind is made of radically autonomous units, each destructible, of course, but absolutely independent—as was demonstrated time and again in the concentration camps of recent wars and as is acknowledged by any therapist of experience.

No one, moreover, semantician or not, even if he holds a most exalted position in politics, finance, education, or religion, deals with "man" in general, with humankind as an integrated whole, or with "human nature" as a tangible unit that can be controlled, modified, or transformed. Each of us deals with individuals, singly, and finally with our own self as the *one* actor in the scenario of life of our age.

Each individual with whom we deal is the final and only arbiter of what he or she will think, wish, or do. And I am the final and only decider of what I shall think, wish, or do. Something can be done *to* me, of course, but nothing that is done to me is ever constructive unless I eventually accept it as my own.

And so, the technology that we have to develop is technology of self dealing with self, in the light of whatever the contemporary sciences have to offer.

Self-1, Self-2, Self-3...Self-n

We hear a good deal about the self today. Psychologists speak and write about the self-concept, the self-image, self-actualization, self-acceptance, self-esteem, self-defensiveness. We seem to enjoy coming out of our skin and looking back at that "objective" somebody that looks very much like us, and whom we claim to observe in sort of a detached way. The self is like an actor on the stage, playing the main part in the drama of our life.

Who does the observing of that self who performs on the stage? Is it not my own self? Then which is my *real* self, the actor or the observer? If you look closely you may discover another personage who deserves to be called self: the director of the play, the one who decides what to do and how to do it. We may then discover yet another self, the one who is now talking about the actor, the observer, and the director. Since this self talks about the others, there is an implicit claim to be none of them. And what of the self that is actually talking

and theorizing to us about those four initial selves? We could continue this without end, creating a new self every time we want to talk about the last one we have conceived in the series.

Self becomes a multiordinal term used on a scale of objective abstraction dealing with Self-1 as the actor, Self-2 as the observer, Self-3 as the director of the play, Self-4 as the theorizer who is now describing the situation in terms of multiordinality and so on, the only end being at the level at which we decide to stop our analysis, or Self-n.

Every one of these selves is as "real" as any other; every one of them is a first-order experience and, thus, a low order of abstraction, while being at the same time differentiable from every other one with respect to the order of abstraction that makes it the container or the contents. In fact, these selves are not separate "entities," as they say in philosophical parlance, they are orders of vertically differentiated activities that may be conceived as going on simultaneously, the higher ones managing the lower ones. When we speak of Self-1, Self-2, Self-3...we are using a shorthand expression to mean "I-operating-at-level-one," "I-operating-at-level-two," and so on.

We may also condense two, or many, levels into one. For instance, we could combine Self-2 and Self-3, the observer and the director of the play described above, and create a more complex Self-2, an observer-director, producer, and scriptwriter, as was suggested in Lewis Mumford's statement. Self-2 would then be sort of a manager of Self-1, extemporizing constantly, as we have to do in life, passing from one unrehearsed situation to another. This brings us to a simplified diagram, Figure 12, p. 294, that contains only three selves: *1, 2,* and *3*.

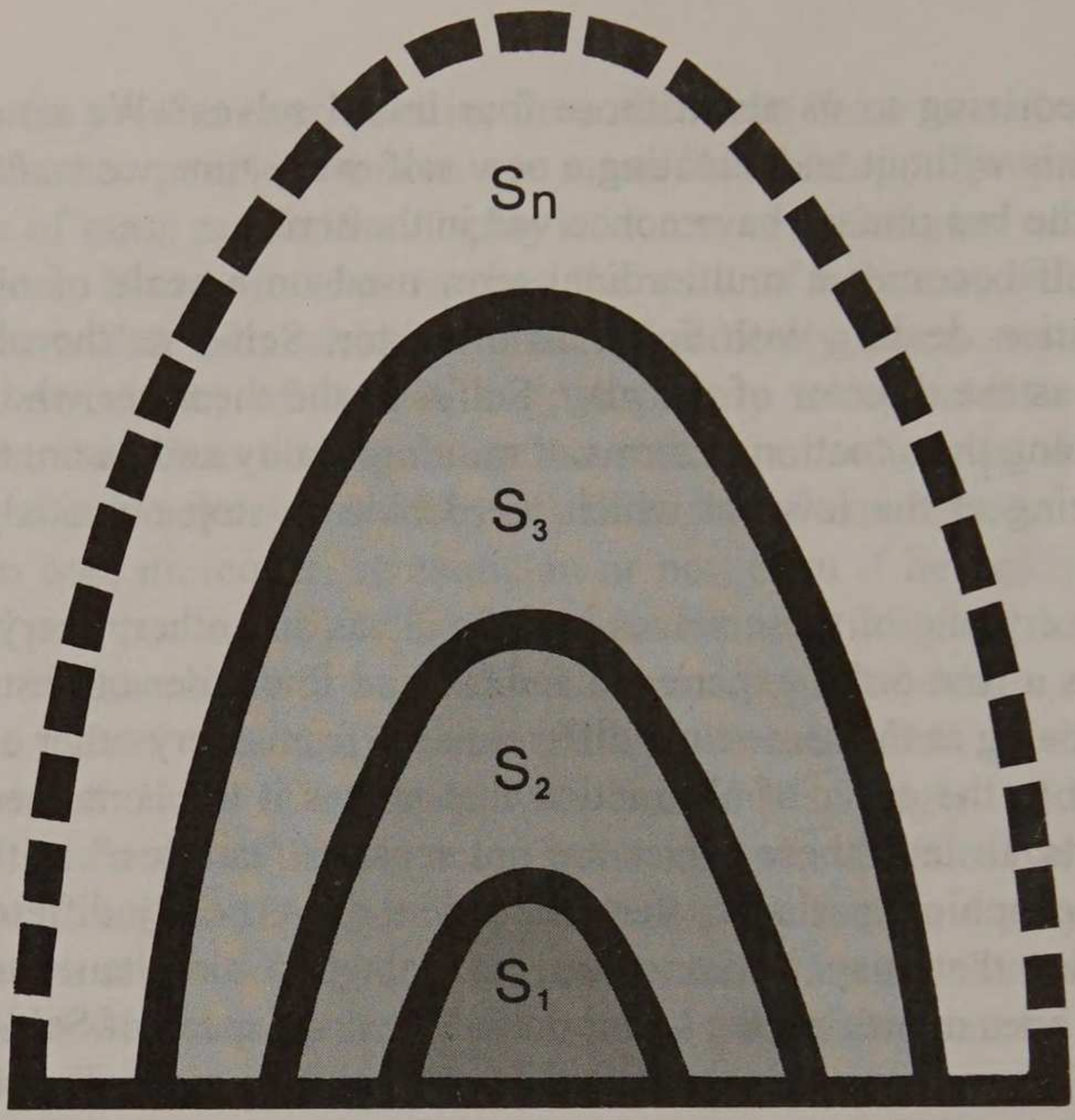

Figure 12. The selves in awareness. Self-1, Self-2, Self-3,...Self-n.

Self-1 may be seen as that pattern of spontaneous activities that does not change much after we have reached a certain age and react to people, things, and situations in a fairly predictable manner. It is sometimes called "personality." It is the "what-I-am," the assumed invariant that psychologists claim to measure with their tests. It is what we refer to when we evaluate Joe's I.Q., degrees of his personality traits, and for his mechanical, verbal, or mathematical intelligence. It covers set attitudes, well-established habits, manners, tastes, and preferences that makes one who knows Joe capable of guessing pretty accurately what Joe will think, say or do in most situations.

We may deal with Self-2 as the observer-director-producer-scriptwriter. This Self-2 is born of awareness and appears when the boundary between the organism and the environment "lights up," as it were. Self-2 acts like a scanning device that takes in what goes on in the organism and what goes on in the environment. It is ourself as the artist of life, finding and making the meanings that we grow by. Our life at this level consists in seizing what is relevant, interesting, and nourishing; in welcoming what is semantically significant; in reject-

ing what is threatening, inassimilable, or potentially poisonous. When we operate creatively, we are like sparks that brighten, warm, and bind together the organism-environment complex (Figure 13). When such an experience occurs, we may use various terms to describe it, depending on what aspect we want to emphasize. We may call it an insight, a discovery, a solution, a decision, an adjustment, an achievement, a relief from tension.

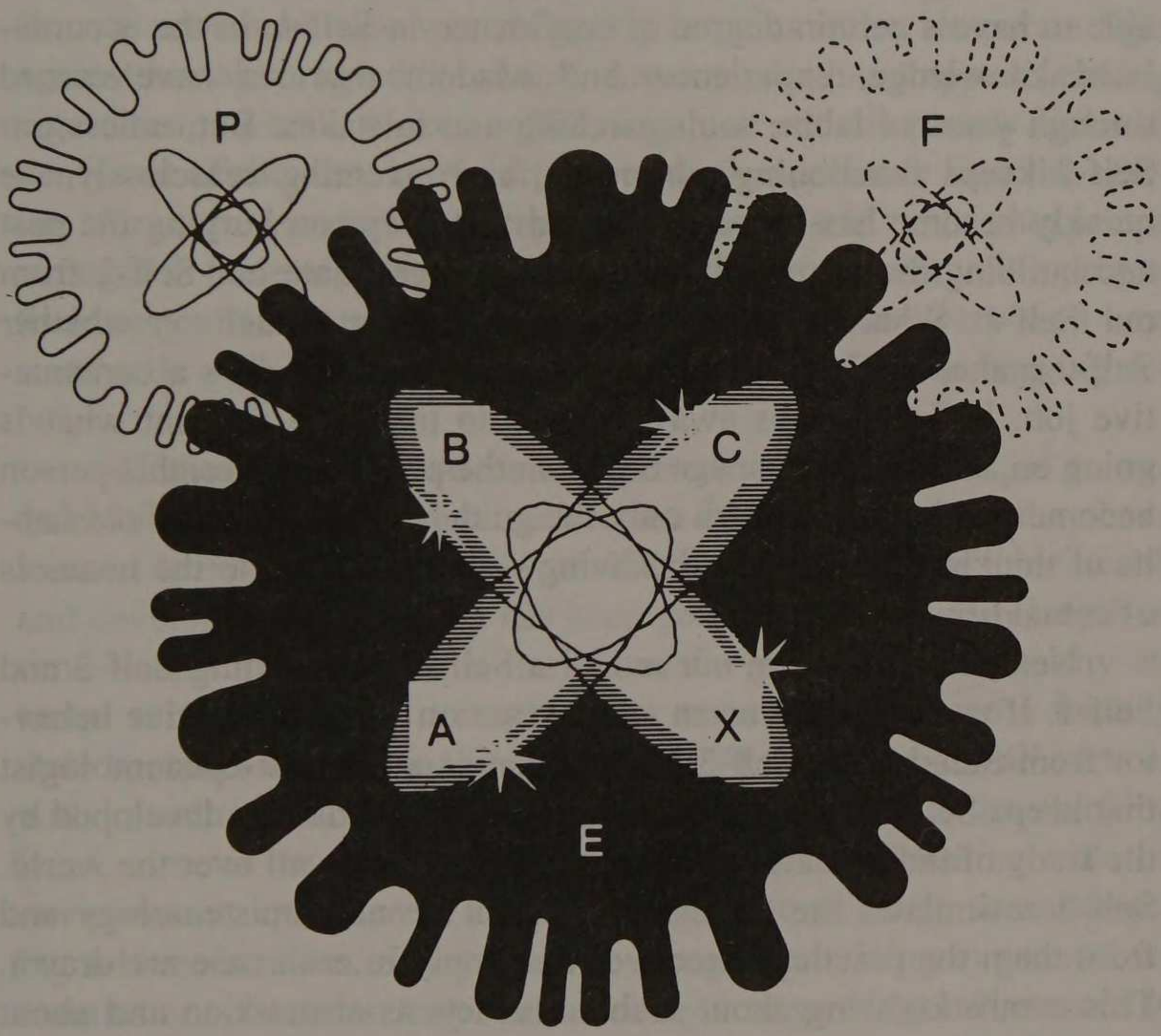

Figure 13. Self-2, or boundary between organism and environment becoming warm and bright in awareness.

Self-2 has to be alert if we are to make the most of the transactions of which the organism and the environment are mere aspects to detect the blockages that stop or slow down the exchanges of energy. It has to reexamine the habits of thinking, feeling and moving that have become obsolete. It has to look inside the organism to evaluate the short-comings of our thinking models, the poisonous character of

negative feelings, the damaging muscular tensions that reveal stress, the bodily indices that warn of metabolic imbalance. It has to deal with situations as they develop and not as Self-1 wishes them to be, make the most of what is available, accept people as they are, and put up with conditions that cannot be changed without undue complications.

Self-2 is the becoming self in action. Self-1 is too often what we refer to when we say "I want to be myself!" Of course, it is reasonable to have a certain degree of confidence in Self-1, in the accumulated knowledge, experience, and wisdom that we have earned through years of labor, soul-searching and mistakes. But, unless our Self-2 keeps functioning, observing, and inventing ceaselessly, we quickly become has-beens in a world that keeps on burying the past and building the future. We had better differentiate our Self-2 from our Self-1. What Self-1 becomes depends very much on whether Self-2 makes sufficiently frequent appearances and does a constructive job. If Self-2 stays away, refuses to take into account what is going on, and fails to manage Self-1 in the proper manner, this person becomes an automaton with only the guidance and power of old habits of thinking, feeling, and behaving—all inadequate to the newness of actual life.

Next, we include in our model a Self-3, overarching Self-2 and Self-1. If we see Self-2 as an artist in action evoking creative behavior from Self-1, then Self-3 can be seen as a scientist-epistemologist that keeps Self-2 up to date in the methods and wisdom developed by the study of individuals and groups within cultures all over the world. Self-3 assimilates the basic theorems of the new epistemology and from them the practical directives that apply in each case are drawn. This means knowing about such constructs as abstraction and about the difference between description and interpretation; taking multiordinality and circularity into account; knowing of motivation and of the nonintellectual aspects of semantic transactions; noting the shortcomings of "physical" mental models; and using the epistemological profile as a guide at all times. Every new experience of Self-1 and Self-2 enlarges Self-3's knowledge by testing the plausibility of its methods. Maturity and wisdom derived from every piece of new information gathered out of reading, listening, meditating, and participating increases the value of Self-3 as a participating guide of Self-2.

Self-3 must also know of a possible situation with the directed activities of Self-2 which may bring about a crisis in dealings with Self-1. This crisis could be compared to *withdrawal symptoms*.

It is well known that a person addicted to any kind of unhealthy behavior, be it drug taking, cigarette smoking, or compulsive eating, will go through a painful and occasionally tragic period of withdrawal when an attempt is made to break the bad habit. I saw recently in a magazine a picture of members of Synanon holding down on the floor a newcomer who was wriggling in pains in her desperate fight against her old drug-addicted self. Anyone who has stopped smoking cigarettes or who has taken coffee, sugar, or salt completely and suddenly out of the diet, knows from personal experience how the craving for the accustomed stimulants comes back with unexpected strength in the early stages of abstention and gnaws without mercy at their very vitals. Any psychological consultant knows very well how a neurotic will cling to a neurosis at the same time as begging for help.

All these cases could be interpreted as disturbances of an acquired semantic pattern that has become a habit with which they have learned to feel comfortable, even if it is detrimental to their health and development. Once that has been going on for a certain length of time—and in some cases it has lasted for years and years—any attempt to correct it and to restore the semantic system to a healthy state becomes a threat to the neurotic Self-1 and provokes all sorts of withdrawal symptoms. Some of these will appear at the thinking level, some at the feeling level, some at the level of dealing with the environment, and even at the physiological level. A person attempting self-reeducation, either alone or in a group training in general semantics or epistemics, may feel suddenly a surge of "good" reasons to give up the whole undertaking; of "sound" reasons to question the wisdom of the whole system; feelings of distrust in the teacher may develop; the person may become easily irritated and even hostile in dealing with the human environment (family, friends, fellow workers, etc.); bodily symptoms like headaches, poor sleep, arthritis, bad digestion, heart troubles, and what not may occur. I even had one recently who reported he felt he was going to die and had a medical friend, with whom he was attending a professional meeting, quickly take his pulse and check on his heart condition.

All these are withdrawal symptoms, and Self-2 must not get panicky with their occurrence. Self-2 must deal with Self-1, who might be squirming in pain, like a drug addict, as the Synanon members deal with newcomers who come to them to be delivered from the slavery of the needle. This means kindness, indeed, but unwavering firmness.

If we accept the views of Trigant Burrow, and of many other scholarly observers of our present human condition, that our whole cultural environment is permeated with semantic neurosis, we will not be surprised at the frequency of such withdrawal symptoms.

Self-Reflexiveness and Feedback

The above presentation of three selves is only an elaboration of the theory of self-reflexiveness. This, in turn, refers to a mode of functioning that is so natural to people who speak a language that includes a middle voice that they are scarcely aware of its importance. The middle voice is described as follows in the *American College Dictionary*.

> [In some languages] it denotes a voice of verb inflection, in which the subject is represented as acting on or for itself, in contrast to the active voice in which the subject acts, and the passive, in which the subject is acted upon.

The mode of functioning implied in the middle voice is not easily accepted in English. We use it for gross physical operations, as in "I wash myself," but it does not cover the subtle psychological activities that involve many roles of the self as actor, observer, director, or commentator. In French, for instance, we can say, *je m' emeus,* from the infinitive *s' emouvoir*. Literally—and using what is considered by some a neologism—it could be translated "I emote myself," but this does not make much sense. When I use the passive voice to translate *je m' emeus*, I have to imply that someone or something is acting upon me, and I fail to give any inkling of the part I am playing in the process. Depending on the context, I may say "I am moved...touched...affected...upset", but I could not change the exclusively passive situation. In French, the middle voice means a complex process, which I might describe as follows:

1. An emotion surges within me, and at this stage I pass no judgment as to its origin.

2. I become aware of that emotion.
3. I acknowledge the experience as mine.
4. I let it, or help it, develop.

As a consequence, the final result is the joint product of two selves, the self that is stirred (Self-1) and the self that consents to be stirred and joins in the stirring (Self-2). I do not simply let the emotion take its course, I help it unfold itself to any "size" I judge proper.

In English, we can form a mental model of that self and of its activities by using the analogy of feedback systems. In recent years there has been a great deal of research in communications, automatic controls, and neurology, and because of this research the notion of feedback has become generally accepted. Feedback mechanisms are devices that watch and control performance. They answer the questions, "How am I doing?" "When shall I stop, start again, change course?" They set off actions and reactions.

In most feedback mechanisms there is a control unit that receives the messages from the operating system and sends out the orders that direct the ensuing performance. The pituitary gland in the body and the thermostat in a living room are examples of what I mean.

To make the art of awareness possible, we have to have a control unit, a second self superposed upon the original in a multiordinal manner, a center of cultivated sensitivity to the phenomena, clues, and indications that we have studied in this textbook. The function of this unit is not to ask "why" questions or to indulge in introspection. It does not ask itself "Why am I this way or that way?" "Why do I feel as I do?" "What is the matter with me?" "Am I neurotic?" All it does is check on what the original self says or does, on how it says or does it, on relaxation and tenseness, and such things. This will provide it with any indicators that reveal how the semantic transactions of the original self are functioning and will give it a choice for appropriate correction when needed. We have already compared ourselves to a pilot with a control panel that shows how the plane is performing. From this continuous information, the pilot knows what to do to keep on the proper course and reach the objective.

As the human sciences keep progressing, more and more indicators of safe or dangerous semantic functioning can be observed by the lay person. They require no laboratory apparatus nor psychological testing devices. They are within the observable range of what we say, what we do, how we say it, and how we do it. They can be meas-

ured on a qualitative scale, from danger to safety, just as we can tell whether our gas tank is empty or full.

Danger and Safety Indicators

Indicators do not necessarily mean that one is in trouble when the danger indicators can be observed, but they mean that we are heading for trouble, whether we are otherwise conscious of it or not. These indicators are like the dashboard gauge that tells us our engine is overheating; it will warn us before our car stalls on the freeway and will give us a chance to attend to the trouble.

They are within the observable range of *what we say, what we do, how we say it*, and *how we do it*. They can be measured roughly on a qualitative scale from *danger signs* to *safety signs*. Here are a few of them. The danger indicators are in roman type; the corresponding safety indicators are in italics:[2]

1. We use absolute terms, generalities, abstractions of a high order, words that imply "allness,"
   or *we use descriptive terms and lower order abstractions, statements as to who, what, where, when and how much.*
2. We use judgment terms, terms loaded with approval or disapproval,
   or *we use neutral terms, terms that are as free as possible from bias or slant.*
3. We use "either-or" arguments, pass from one alternative to its extreme opposite, describe things in terms of black and white without any gray shading in between,
   or *we speak in terms of more-or-less, give consideration to degrees and shades of meaning, avoid talking about opposites.*
4. We speak of the present situation as "just like" another one, of this person as "just like" So-and-so, of this problem as "just like" the one solved previously,
   or *we differentiate carefully between people, situations, and problems.*

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[2]J. Samuel Bois, *Explorations in Awareness* (New York: Harper & Row, 1957), pp. 186-188.

5. We confuse facts that can be verified by anybody, and interpretations, opinions, and judgments that exclusively our own,
   or *we distinguish between what is going on and what we feel or understand is going on.*
6. We ramble from one subject to another,
   or *we keep to the subject under discussion.*
7. We quote authorities to uphold our viewpoint,
   or *we try to evaluate the situation on its own merits.*
8. We quibble on the dictionary meaning of words,
   or *we use words as mere tokens for what we wish to convey.*
9. We talk fast and/or loud,
   or we *talk with deliberation.*
10. We interrupt, start talking before the other person is finished, we contradict with a quick "yes/but",
    or *we listen with genuine attention, wait for our turn to speak; even then we may allow some silence in order to absorb what was said.*
11. We keep muscles tense, move in jerks, fidget, twitch,
    or *we relax, remain calm and quiet, and delay our reactions.*
12. We ask rhetorical and tricky questions,
    or *we ask matter-of-fact questions that invite more information.*
13. We take ourselves very seriously,
    or *we keep our sense of humor.*

Of course, these skills take practice, preferably one at a time. Start by working with one that is easy to recognize and control, and keep practicing until the new behavior functions almost by itself. It becomes more interesting and exciting as one becomes more sensitive to the fine points, and more expert in performance. Here are a few examples selected from the listed indicators.

Number 1: sweeping, and general terms we are using, such as "Doctors are like this-or-that," meaning implicitly that we are speaking of *all* doctors. We should also check on words of a high order of abstraction, "freedom," "democracy," "religion," and know that we are heading for trouble if our talk includes 15 percent or more of these high-order terms. The correction is made by using descriptive terms and abstractions of a lower order. Expressed as a simple rule, our statements should deal with *who, what, where, when* and *how*

much or *how many*. For instance, "I know of one, two, or three doctors who charged more than Medicare allows for the same service."

Number 2: the frequent use of value terms, of adjectives and adverbs that describe much more how we feel than what is actually going on, such expressions as "you should," "you must," "you ought to," "the only thing to do is." 'These words show that we are attempting to impose upon the other person our own set of values, and this does not work as a rule. We should wait until we are asked to give advice, and, even then, make sure that the request is sincere. The corresponding safety indicator is self-evident: descriptive terms—terms that are as neutral and free from bias as we can think of. For instance, "in a similar situation I did this or that, and it worked."

Number 4: the tendency to identify; persons who boast of having experience are occasionally tempted to act this way; what they see now reminds them of something else, or looks like it, and they pronounce judgment without taking time to see the differences between the present situation and the one they identify it with. The safe way to handle this is to look, look, and look again for differences. We should not try to find similarities; they come to mind spontaneously, and what we add may simply confirm our prejudices. Instead, we should look for differences. They may be hard to detect, but they are significant.

Number 5: the confusion of first-order facts with second-order inferences. To observe this danger sign is not always easy because our choice of descriptive terms often involves covert interpretations. Our newspapers are full of such biased statements, presented as objective descriptions of facts. The remedy for this danger is to train ourselves—first in simple matters—to distinguish between what is going on and what we feel or understand is going on.

Number 10: the manner in which we carry on a conversation. Have you ever noticed how much overlapping there is among the statements that come from various members of a conversational group? When this occurs, there is no communication; all radio sets are broadcasting at the same time, but none of them is receiving.

As an antidote, I recommend the practice of the art of listening. Some go farther and suggest what they call role reversal. This consists of repeating in our own words what the other person has just said—and of making sure that our version is accepted before we begin to give our answer. I tried this a few times while moderating

business meetings, but found it a clumsy technique; I usually took it for granted that I understood and left it up to the other person to object and correct me when he felt he was misinterpreted. But I found it useful to let a second or so elapse between the last words I heard and the first ones I spoke.

Number 12: "When did you stop beating your wife?" is more frequent than we realize. Although they may not be so obviously tricky as this one, they may involve an assumption that we want to force upon the other person. We can even make a collection of them, as a very instructive hobby, including "What would you do if you were in my place?" Of course, if another can put himself in our place, if he can see us as we see ourself, what can he do but accept our conclusion? If we translate this question into a declarative statement, we will see its real meaning: "Stop thinking the way you do and think the way I do: then, and only then, shall I agree with you because it will mean agreeing with myself."

Observing our behavior from Self-2 is useful not only in preventing trouble and waste of energy; it has proved to be a powerful means of discovering hidden assumptions and unearthing mechanisms that operate within ourselves in manners we seldom suspect.

When I held training conferences for executives, I would ask them (during the last period) to check one, or no more than two, indicators of safety and danger that they were going to observe in the following weeks. They did this entirely for themselves, without telling anybody of their choice. When I saw them individually a few weeks later, my first question was "Did you choose an indicator to observe?" If the answer was yes, I would ask which one, then asked him to tell me what he had observed as he had checked that item. Some of their observations were revelations for them and very interesting to me.

One, who had decided to check himself on his "yes, but" answers, said.

> The first thing that I found out is that I was using those words much more often than I suspected. In the majority of cases when subordinates came to me with a suggestion, that was my habitual reaction. It was an unpleasant discovery to find out the way I was actually reacting.

I continued my inquiry. "What else did you find?" He answered with some embarrassment:

I tried to cut out the "yes, but's" but I soon discovered that I was using paraphrases, tricky questions, or involved statements that meant really the same thing as my habitual "yes, but's." I was changing the wording, but my basic attitude was not budging easily. I had to work on that, too.

"Did you find anything else?" I asked.

> Yes, I observed that this yes-but practice is more general than I realized in this company. I yes-but my subordinates and my boss yes-buts me in his turn. The consequence is that nobody wants to stick out his neck and decisions are pushed upstairs. The boss has to decide so many details that he has no time to do his own job properly. And everything suffers from it.

These indicators are so closely related that if we pay attention to one we are actually working on the others. The organism works as a whole, and the careful observation of what appears to be a simple speech mannerism, as in the case just related, will soon bring us to a serious examination of our basic attitudes. This is where many people give up practicing general semantics. Those who thought it was just a matter of being more clever in the choice of words and of playing with a few devices, like the index, the quotes, or the like, leave it for some other passing fad. Those who are looking for an easy way to master the art of communication and to win arguments had better look elsewhere. The old saying, "There is no royal road to knowledge," remains true—even in our day when royalty is almost an anachronism. The translation could be: "There is no gadget yet invented to take the place of learning by persevering practice."

Between the organism and the environment, we may imagine a contact zone that envelops the whole organism (Figure 13, p. 295). Within this space, patterns of interaction are already established, like programs that are preset in a computer. When a stimulus from the environment comes to the organism, it is processed through these patterns. When the organism directs its energies to the environment, they have to go through the same patterns. As a consequence, we see as we have learned to see, we hear as we have learned to hear, we walk, we speak, we write in the manner we have acquired in earlier years and that has become a personal, unchanging characteristic of each of us. The sum total of this network of patterns is our "personality," our recognizable individual self, our structured unconscious (p. 153).

Some integration patterns are inborn: if I run, I start breathing faster. Some are due to early conditioning: if I think of lemon juice, my mouth waters. Some are due to conscious training: when I see a red light, my foot presses on the brake. Some are buried way down in my body tissues, at the electrochemical level. Some are emotional habits, some are intellectual habits; they provide me with preestablished sets of ready reactions that have proved useful or gratifying over the years.

These interaction patterns would be all I need if the situations I have to face were simple repetitions of those I faced before. But they are not; occasionally I have to face unrehearsed situations. In fact it is false to say that history repeats itself. It cannot. My life is an irreversible process, and every day I advance into the unknown, becoming slightly different from myself with each step I take. The art of awareness may be seen as the art of living.

To summarize what has been said so far on the self-reflexiveness of Self-1, Self-2, Self-3, we first postulated self-1 as the actor, or "personality" with its well-established ways of functioning, its habit patterns and acquired wants and needs. Self-2 was proposed as an observer-director of Self-1. Self-2 is born of awareness and becomes an artist of living who participates by evaluating, managing, and guiding the semantic transactions of Self-1; but even more importantly, by creating a vision that allows Self-2 to see in Self-1 potential talents, beauty, and resiliency, and to disengage that jewel from the slag of banality that surrounds it. A release of Viewpoints Institute deals with this topic under the title, *On Obeying One's Vision*.

> As an artist working on human material, I can work on my own self as well, bringing out the potential beauty that I see in my inner self, the available resiliency of my soul, the dynamic balance of my skills and values. To do so, I have to be capable of vision, and to disengage from the chaotic inconsistency of my behavior the hidden image of my latent excellence. I must obey that vision as it unfolds itself under my eyes...
>
> The act of creation is not the plodding achievement of a worker who follows slavishly a detailed plan prepared in accordance with preestablished rules; it is the unrehearsed activity of the artist who follows faithfully the expanding process of a form that grows under his eyes as he shapes it with his hands.[3]

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[3]J. Samuel Bois, *On Obeying One's Vision* (Los Angeles: Viewpoints Institute).

Self-2 has to stay on the job to keep Self-1's attention in the ever-present, becoming activity of life.

Finally, we spoke of Self-3 as a scientist-epistemologist who provides Self-2 with up-to-date methods of thinking-feeling-acting that emerge from first-order experience, or from the lives of creative, time-binding individuals of all cultures. Self-3's participation helps to keep the other selves in an appropriate rhythm and flow with each other. All of these selves function as one and are not separate, as our description might lead you to believe.

The Art of Listening

When we speak of communication, the first picture that comes to mind is that of the communicator, the sender of messages. The art of communicating is often understood to be, mainly if not exclusively, the art of making oneself listened to with attention and understood without confusion. Teachers, preachers, executives, and group leaders take courses in public speaking, even in dramatic arts, for the purpose of communicating more effectively.

All this is good, of course, provided the emphasis on the role of the sender does not make us disregard the role of the receiver. Communication is a two-way affair, and the receiver's function is no less important than that of the sender. In fact, we could say of listening what Emerson said of reading: "T'is the good reader that makes the good book."

Experiments have shown it is the good listener that makes the good speech. The same lecture presented to a group of students by an excellent speaker and to a similar group by a poor speaker (with motivation constant) produced almost the same understanding in both groups. To use an analogy from radio: a good receiving set, accurately tuned, is just as important as a good broadcasting station. The message, as a transmission of information, is the joint product of two sources of activity, one at each end of the transmission process.

Receiving messages also has particular importance because listening constitutes the major part of our communicating activities. A survey of a group of persons in various occupations revealed that, on the average, 45 percent of their communicating time was spent listening, 39 percent in talking, 16 percent in reading, and 9 percent in writing. If this is true, and we have no evidence to the contrary,

nearly half of the compensation an executive or professional receives is payment for his performance in effective listening. If they are poor listeners, their knowledge and wisdom may be of little value because it may be applied where it is not needed.

We touched upon the topic of listening when we studied the functioning of the nervous system, and we learned that it takes time to internalize the messages we receive through the eye or the ear. We have also been reminded of the importance of effective listening as in the case of the executive who observed himself "yes-butting" his subordinates and being "yes-butted" by his superiors. In order to function efficiently at the Self-2 level, it is useful for us to think a bit more about the benefits of good listening and to describe in greater detail what an effective listener does.

The benefits of effective listening are many.

1. We get more from a conversation or a conference than the indifferent listener.
2. By avoiding snap objections that tangle the communication in knots, we save the time it would take to unravel these knots by laborious explanations.
3. We increase our chances of making more realistic decisions and giving more pertinent answers because we are better informed about facts, attitudes, and opinions.
4. By showing interest and asking nonthreatening questions, we may help the speaker fill in gaps in the presentation.
5. We discover what level of language the other person will best understand when our turn comes to speak.
6. We are better prepared to make our message fit with the knowledge, views, and feelings of those with whom we are communicating.
7. We learn to speak more effectively by observing how people convey, or fail to convey, their messages to us.

Now here is what an effective listener does.

1. The listener listens to understand what is meant, not to become ready to reply, contradict, or refute. *This is extremely important as a general attitude.*
2. The listener knows what is meant involves more than the dictionary meaning of the words that are used. It involves,

among other things, the tone of the voice, the facial expression, and the overall behavior of the speaker.

3. As the listener observes all this, he is careful not to interpret too quickly. He looks for clues to what the other person is trying to say, putting himself (as best he can) in the speaker's shoes, looking at the world as the speaker sees it, accepting the speaker's feelings as facts that have to be taken into account—whether he, the listener, shares them or not.
4. The listener puts aside her own views and opinions for the time being. She realizes that she cannot listen to herself inwardly at the same time as she listens outwardly to the speaker. She is careful not to "jam" her receiving set.
5. The listener controls his impatience because he knows that listening is faster than talking. The average person speaks about 125 words per minute, but can listen to about 400 words a minute. The effective listener does not jump ahead of the speaker; he gives him time to tell his story. What the speaker will say next may not be what the listener expects him to say.
6. The listener does not prepare her answer while she listens. She wants to get the whole message before deciding what to say in her turn. The last sentence of the speaker may give a new slant to what she had said before.
7. The listener shows interest and alertness. This stimulates the speaker and improves performance.
8. The listener does not interrupt. When he asks a question it is to secure more information, not to trap the speaker or force him into a corner.
9. The listener expects the speaker's language to differ from the way she would say the "same thing" herself. She does not quibble about words but tries to get at what is meant.
10. The listener's purpose is the opposite of a debater's. He looks for areas of agreement, not for weak spots that he plans to attack and blast with the artillery of counterarguments.
11. In a conference, he listens to all participants, not only to those who are on his side.
12. In a particularly difficult discussion he may, before giving his answer, sum up his understanding of what was said. If his in-

terpretation is not accepted, he clears up the contested points before attempting to proceed with his own views.

Like all skills, listening requires self-observation, time, patience, and practice. It is not enough merely to read the above and assent to it "intellectually." In fact, we may assume that, if we agree with what was said, we behave in the manner described; and this is one of the worst traps we can set for ourselves.

In a group that has the advantage of having an appointed moderator, the function of observing may be left to her or him at the beginning, and he or she should be free to interrupt whenever it is felt that a correction is appropriate. But, in the end, no participant can make real progress unless he checks on his own way of acting and keeps on checking until the skill of listening becomes a habit.

To check on one's performance while in action is very difficult for the beginner. It seems better to wait until a conversation or a conference is over, and the make a leisurely evaluation of oneself as a listener. But having a "listening partner" is even better, a friend who is also a participant and who is willing to give you an evaluation of how you participated in the exchange.

As I stated before, in this training, as in most cases, it is good to limit one's observation to a limited number of items, perhaps only two—or, better still, only one at a time. Aspects are so closely knitted together that improving one of them will mean an improvement in all. But trying to observe ourself all across the line at the same time is more than we can do at the beginning; it may lead to discouragement, to giving up the whole undertaking and connecting ourself with "good", but ineffective, intentions.

Reading and Meditating

To his friend Lucien Price, who wondered how he had gathered so much information on so many subjects, Whitehead said: "I do not read many books, but I think about what I read, and it sticks." It is safe to assume that Whitehead was speaking of serious reading, but all reading need not be of this kind. It is good to enjoy humor, fiction and mystery stories, but even then, we may come across passages that invite us to stop, daydream, or think.

To read is to come into contact with someone. A writer often "talks" to us about something to which he has given a good deal of

thought. We may stop him when we want, make him repeat a statement as many times as we wish, or keep him silent while we ponder what he has just said. The only thing that makes reading less satisfactory than a two-way conversation is that we cannot ask questions on points that are not clear; but, if we are patient, we may find the explanation we are looking for on the next page or in the next chapter.

Reading is not exclusively a matter of cortical activity. Of course, we have to think while we read, but fruitful reading is very much a matter of attitudes, feelings, motivation and purposes. Our *B* activities exert a great influence on our *C* functions.

If we start reading with negative feelings, we may not get much out of it. Nor is it good to be critical too early; it is better to wait till the writer has completed the full structure of the message she attempts to convey and look for the meaning that lies behind the design of words, sentences, analogies, and metaphors. It may not be the way we would have drawn the picture, but it may imply more than appears at first sight. It may evoke thoughts that we have never clearly formulated before.

If a statement clashes or appears to clash with our cherished views, why take this as a threat to our mental security? Let us look at it with a steady mind and take time to examine it without being disturbed. We don't have to accept it in the end, but we may miss something valuable if we let our emotions becloud the scene.

Any statement that gives us a shock may be taken as an invitation to original thinking. Why not ask ourself: "What if this threw a new light on my hidden assumptions, on ideas that I am taking for granted, on areas of my inner world that I have not visited for years?" Even if we do not accept what is said or the way it is said, it may trigger a chain of feeling-thinking reactions and eventually burst into an insight that could not have come otherwise.

We should not let ourself be unduly impressed, for good or for ill, by the name, the reputation, or the political, scientific, or religious allegiance of a writer. If we do not like Jesuits, we may find certain pages of Teilhard de Chardin a hodgepodge of questionable science and obsolete theology; if we are in deadly fear of international communism, we may not appreciate Trotsky's literary style; if we expect a pearl of great price in every cryptic statement written by Korzybski,

we may take as a revelation from on high what is just a passing thought of his.

So much for our *B* activities, our attitudes, feelings, and purposes; we can now pass to our *C* activities, to thinking proper. Should we maintain a passive role and simply file away what comes to us in linear sequence? Or shall we engage in active reactions to the thought structures that take shape before our eyes? Shall we act as spectators, or shall we get into the game? Of course, we shall get into the game. If we want our reading to be creative—and it should be—we have to become participants in a joint enterprise, ours and the author's.

For instance, we may stop at the end of what appears to be a key statement and translate it into different words. This is like turning a cut diamond under the light to examine its many facets. Here is an italicized statement in a previous book of mine, which I evidently meant to emphasize: "*Altruism is not a matter of choice; it belongs to the nature of man.*"[1] Here are two possible translations. "To care for the welfare of others is just as necessary for man as to breathe, to eat, to sleep, or to perform any survival function." Or "As I did not choose to have eyes, ears, arms, and hands, I did not choose to depend on others or to have them depend on me; that's the way things are, though, and I cannot change them to suit my fancy."

We could develop the idea a bit further as we translate it. "There are things that I can choose, like living in the city or the country, smoking or not smoking, voting Republican or Democrat. And there are things about which I have no choice: my parents being white or black, not growing older. If I pretend otherwise, I am just fooling myself and heading for an unpleasant experience if I choose not to care about other people's welfare."

We may relate the statement to other statements that we are familiar with. In the present case, many thoughts come to mind. From Cain's question, "Am I my brother's keeper?" we may pass to Cassius Jackson Keyser's cryptic sentence, "To be is to be related," to the lines of John Donne, "No man is an island...," or to Hemingway's title, *For Whom the Bell Tolls*—which comes from Donne's essay.

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[1]J. Samuel Bois, *Explorations in Awareness* (New York: Harper & Row, 1957), p. 195.

We may look for analogies that illustrate the statement. The first that comes to my mind at the moment is a team of baseball players. Each one has to depend on the others and each has to support his teammates. The catcher may have a personal grudge against the first-baseman, but he can't let this interfere with the success of the whole team. If it loses, he loses.

We may analyze, on the epistemological profile, our transaction with one of the key terms in the statement. For instance, our notion of "human nature" may still linger at stage two, where it corresponds to the standard definition of a person as a *rational animal*, as an individual complete by himself. In that case, the statement about altruism will not be so easy to accept; we may think in terms of the survival of the fittest. A stage-three reaction is what the poet had in mind when he wrote, "No man is an island..."; he was conscious of the fact that we are interdependent, that each of us is only a node of interrelated-ness.

A stage-four reaction will go beyond the interdependence of individuals. It will take individuality and groupness as two complementary notions, apparently opposite to each other because each is inadequate for the complexity of the human process. When such a stage-four reaction dominates a profile, the statement becomes obvious.

Finally, we may have known the ineffable unifying experience, where our oneness with other humans is a sort of first-order contact, beyond sensation and theory. Here the statement sounds like a melodic tune that reduces to a simple design the overwhelming power of a full orchestration of transdiscursive feelings echoing in our souls. It is a reminder that evokes an experience beyond words.

We may let the statement, as it were, sink into the recesses of our innermost self. This may be facilitated by a repetition of the statement as it stands or by one of its translations. If this repetition is directed to ourself by using the first person as the subject of the sentence, its suggestive power will increase noticeably. For instance, "I am not fully human unless I willingly care for the other person." Use this personalized statement as a flashlight and direct it into the dark corners of your inner self. It may reveal remnants of old rancors that you have stored in a hidden crevice.

Anyone who is familiar with the practices of religious life, yoga, or mind-training will recognize that what I am proposing here has a

great deal in common with these practices. I don't deny it and I don't apologize for it. Why should we ignore techniques that have proved effective? We can use them without necessarily embracing the whole philosophy of life of which they are a part. I don't have to believe in reincarnation to avail myself of some Buddhist practices; I don't have to become a Jesuit to profit by the powerful techniques of the Spiritual Exercises of Ignatius of Loyola; I do not have to adopt the code of a desert hermit to appreciate the values of inner quiet and meditation on fundamentals.

Meditation, under some form or other, can be seen everywhere in human history. Creative people withdrew from the commotion and noise of daily life to restore their personal balance with the cosmos and to set their sights above and beyond the movements of the crowd. Such great leaders as Buddha, Jesus, Mohammed, and Gandhi lived for hours and days in silence and meditation, accumulating reserves of semantic energies that they communicated to millions of minds and hearts for generations and generations. If we look at humankind as an organism born with the appearance of *Homo sapiens* and spread over the planet as part of the biosphere, we see the fruits of meditation and contemplation as hormones secreted at definite points of time and space by people who played an active part in the survival and growth of that organism. These hormones are transported here and there as packets of semantic energy that bring about advances in science, upheavals in politics, and the emergence of new ideologies.

We may see each individual as a miniature of humankind, of which each of us is a part. Each of us, too, is an organism developing in space and time. We have semantic centers that require occasional withdrawal from immediate preoccupations to function effectively. We all need periods of quiet, of time to clean up the psychological waste accumulated from unassimilated experiences and take an inventory of our stock of ideas, time to discard thinking and feeling methods that have become obsolete. It is good to nourish ourself with the wisdom that others have condensed in books and articles. This means reading and meditating, as described in the previous paragraphs.

It may be profitable to read the same book or article over and over again if it proved to be thought-provoking in our first contact with it. There are books and "books". Some are full of detailed information which they keep available for us on our shelves or in the

stacks of libraries: reference books, such as the *Encyclopedia Britannica*, a world atlas, the *Story of Civilization*. We read them when we need their information for a particular purpose.

There are books of a different kind, that are not catalogs of facts and data but the fruits of days, months, or perhaps years of meditation by an individual who has given special attention to a certain field of human endeavor and experience. They invite us to live that person's experience.

Some were published years ago, but are not completely outdated, such as James's *Principles of Psychology*, Montaigne's Essays, or Plato's Dialogues. Some are of present vintage and keep us conversant with the creative efforts of the thinkers of today, such as the reading references at the end of each part of this book. Some are not necessarily scientific or philosophical treatises: the poetry of Walt Whitman, the plays of Bernard Shaw, the fables of James Thurber. They start growth activities within our thinking-feeling self, and their stimulating power is not easily exhausted. Coming back to them, we often get a new experience from a page or a passage that we thought we had already squeezed dry.

Crisscross Reading

Another reading practice has also proved pleasant and helpful, which I call "crisscross reading." It has something in common with the *Syntopicon* of the Great Books, with the difference that it is a very personal and spontaneous form of cross-indexing. For example, I may be reading: "Science as it is thought of popularly is a stereotype that bears but little resemblance to science as it is known intimately by those who live it from day to day."[2] This makes me think of what I read in Schrodinger's *Science Theory and Man*, and I go back to his chapter entitled "Is Science a Fashion of the Times?" From there I may go to certain passages of Poincare's *La Science et l'Hypothese*, to L. A. Du Bridge's "Exploring the Unknown" in *Frontiers of Science* (Basic Books, 1958), to Korzybski's definition of science as the "generalized results of semantic reactions acceptable to the majority

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[2]Harold K. Schilling, "A Human Enterprise," *Science 127* (June 1958); 1324.

of informed and not heavily pathological individuals."[3] By doing this I bring together, in a common discussion, many people who have already told me their views on science. It gives me an opportunity to compare various viewpoints and to integrate them into a richer structure of my own.

This is what we do all the time, more or less consciously. If we compare our memory to a filing cabinet, we can say that we have a certain number of folders in which we store whatever information and experience we gather on a few general subjects. There would be a folder on love, on justice, on sex, on freedom, on science, on mathematics. Some would be bulging with notes and clippings, some would be flat and seldom opened. The filing is done sporadically and unsystematically, and there is little or no cross-indexing—except what we might do by association.

What I suggest is occasionally taking stock of our memory files, putting them in better order, subdividing folders that are full of heterogeneous material, discarding information that is out of date, comparing notes, clippings, and experiences, cross-indexing when we discover relationships between topics that we had not noticed before. For instance, I recently cross-indexed the Hopi notions of "eventing" and "preparing" with the "intellectual passions" described by Michael Polanyi, the "centrencephalic system" of Penfield, the thalamocortical integration of Korzybski, and the *B* aspect of our semantic transactions. Obviously, this makes for a syntopicon that is extremely personal, that defies all the rules of classification by verbal labels, but each of us has a similar system whether aware of it or not. Why not take the fact into account and make the most of it?

Self-training in Silencing Oneself

Korzybski occasionally called his system an *empirical* science. Some have objected to this appellation and have made much ado about it. If we listened to them, however, we should start a stage-two discussion about what is science, what is an empirical science, what do general semanticists do that can be classed as genuine research—as is done in other sciences?

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[3]Alfred Korzybski, *Science and Sanity* (Lakeville, Conn.: International Non-Aristotelian Library, 1933, 1941, 1948, 1958), p. 26.

This apparent difficulty can be solved quite easily if we forget academic distinctions and take a fresh look at life as we live it. We can start with a postulate, already accepted by some workers in the human sciences, that "stems from an attempt to consolidate the viewpoints of the clinician, the historian, the scientists, and the philosopher"—according to Dr. George A. Kelly, one of its foremost proponents.

> Let us look at *man-the-scientist*...When we speak of *man-the-scientist* we are speaking of all mankind and not merely a particular class of men who have publicly attained the stature of "scientists." We are speaking of all mankind in its scientist-like aspect, rather than all mankind in its biological aspects or mankind in its appetitive aspects. Moreover, we are speaking of aspects of mankind rather than collections of men...
>
> Such an abstraction of the nature of man is not altogether new. The Reformation called attention to the priesthood of all men in contrast to the concretistic classification of certain men only as priests. The democratic political inventions of the eighteenth and nineteenth centuries hinged on the notion of the inherent rulership of all men in contrast to the older notion of a concrete class of rulers. In a similar fashion we may replace the concretistic notion of scientists being set apart from non-scientists and, like the reformers who insisted that every man is his own priest, propose that every man is, in his own particular way, a scientist.[4]

What do scientists do? They have hunches, translate these hunches into hypotheses, and carry out experiments to test these hypotheses. This is exactly what every one of us does all along. Every step we take on the road of life is an experiment; every decision we take when the road branches out in many directions is an experiment; every plan we make for the immediate or the distant future is an experiment. We start with a hunch that we rationalize in the light of what we already know; we figure out where it is likely to take us; and then we make an experiment with ourselves as the subject. This experiment is more often than not a bold jump into the unknown. Each of these jumps is an irreversible process; it restricts or expands the range of possibilities that we will find available for the next jump. So, in a sense, the life of the lay person is similar to the life of the professional scientist, but it is more serious: the lay person does not ex-

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[4]George A. Kelley, *The Psychology of Personal Constructs* (New York: Norton, 1955), p. 4.

periment with chemicals or with rats, but with himself, and the outcome may mean personal success or failure.

Each new life experiment is unique; no two of them are identical in their totality. You cannot repeat the experiments that I had to make in my life—I cannot repeat them myself. The best we can do is compare our *methods* of experimenting and profit from each other's experience. General semantics and epistemics incorporates the methods that the lay person, in the capacity as "man-the-scientist," has learned to depend on when we experiment with ourself, with those near us, and with our possessions; and this is the sense in which it may be called an empirical science.

Being a scientist could be compared to being a medical doctor. When we pass forty, we have to be our own doctor to some extent; we have to know what is good for us and what is not. Does this mean that we disregard medicine as a profession? Of course not; it simply means that we must acquire what the nonprofessional should know of medicine to take care of ourselves under ordinary circumstances. When we are faced with a health problem that goes beyond enlightened common sense, we go to a person who has made medicine their profession.

I am a nonprofessional scientist, I assume that you are too, and, outside our specialties, we both are nonprofessional scientists whether we are willing to admit it or not. We all have to experiment with our own life, and this calls for a special skill. Why not profit from the experience of those who have made it their profession to experiment, doing our best to transfer the special skills of a special branch of science into the general skill of experimenting with our own life? Why not study the philosophers of science, those practitioners who have made it their job to observe and rationalize what is common to all creative experimenting?

Of the basic skills that seem valuable in all experimental scientific work, there is one I would like to describe in this chapter. It is the skill of functioning at what Korzybski calls *the silent level* of perceiving, feeling, touching, and hearing without talking to ourselves while we are sensing. This is one avenue that leads into an experience that will be described later as a stage five experience. It is not easy, and it is not a psychological trick that works automatically; it is a skill that requires patient, consistent, and long practice.

The general purpose is to liberate ourselves from the preconceived ideas, hidden assumptions, and rigid ways of thinking. It is intended to correct the bad effects of uncontrolled circularity. Remember what we said of this before? "We see only what we are used to seeing; we hear only what we are used to hearing, we understand only what we are ready to understand." We live in a vicious circle, and the problem is to break out of the circle. Reaching for a silent-level experience is a way of breaking out of the circle. It involves two steps of increasing difficulty.

The first step is a simple exercise that I call *sensory deconcentration*. It is a way of loosening the concentration involved in whatever we do in earnest. Much of this concentration is a sheer waste of energy, just a bad habit, uncontrolled and effective.

As I am writing this, I may concentrate on what I have to say and pay little attention to what surrounds me. So far, there is nothing wrong in this; the trouble arises if I make a virtue of that concentration and think that the more I concentrate (and at the same time tense up unconsciously) the better. This is not true at all; instead I allow myself to "deconcentrate", giving my system a release from tension without impairing my efficiency. I do this by looking cursively at a few objects in my study. On the end table in front of me I see a reproduction of Paul Klee's "Blue Head," with its two black eyes that stare at me. Then I look at the red flowers on the cushion at one end of the settee, at the attaché case at the other end, at the dater on my desk, at a pinhole in the shade of the lamp, at the green copy of a Clarkson letter showing under a scribbled sheet, and so on. I don't give much thought to any of these; I just glance at them and pass to something else, aware of what I am doing and registering my sensations as I go. This does not interfere with what I am doing: I am not "distracted" in the usual sense. I remain in control, both at the focus of my activity, which consists in writing, and at the periphery, which consists in looking around.

Once my day of work is over, when I come out of my studio, which is built on a slope in my orchard, to climb the stairs in the dark of night, I may direct my flashlight to a distant tree, or to the roses that hang on the archway, or the barrel cactus close to the barbecue. On entering the living room I may observe the design of the rug, or the way Baron, our boxer, stretches in front of the fireplace. None of this is important or is directly related to a particular purpose, or will

hold my attention for more than a fleeting moment, but it prevents me from being too wrapped up in what I am busy with. Without such a technique, I may act like a sleepwalker who goes along unaware of what surrounds him, and not participating in the cosmic ongoing of which he, himself, is one aspect.

The second step, an exercise in sensory awareness, is different in the sense that, instead of stretching our perception to the periphery of our focus of attention, we make the exercise itself the center of our attention.

We can begin by listening to sounds that we seldom pay attention to; for instance, the chirping of birds that actually fills the air at times and that we take as background noise of no significance. Or we can look at things in ways that are new and different from our stereotyped way of looking at them.

I remember an experience of this kind that I had two years ago when I dropped in at an art workshop at a youth's summer camp. The instructor told us to look closely and at length at anything within our reach, and I picked a leaf from a branch that was hanging by my head. I still remember that leaf: its finely veined structure, like a mosaic, where no two pieces had exactly the same shape or the same shade; its well-engineered ribs, the texture stretched between them and supplied with moisture through built-in channels; the shine of the upper surface and the pastel underneath, and the scalloped hem all around.

This type of experience is still a classifying experience (it involves some talking to oneself, I know) but its value is in its newness; it shakes asunder our stereotypes: "a leaf is a leaf," or "green is green." It is a preparation for the more advanced stage of silent practice, where one feels, perceives, hears, tastes, and touches without—or practically without—any interfering word or mental category between oneself and what one is in contact with.

An outstanding surgeon told me how this practice made it possible for him, eventually, to master the technique of an extremely delicate operation that had proved too difficult for him up to that time. By observing himself carefully, he discovered that he had been talking to himself as he proceeded with his work. This talk, subtle and inaudible though it was, was like a screen that separated him from his work. He started practicing the silent level by training his ear to listen to sounds that he, like most of us, was burying in the background

noise. He would practice when he was going to bed at night—and, in a big city, it is amazing how many different sounds fill the air, even at night. He told me that, eventually, he could differentiate twenty-eight sounds; some relatively faint, like the crumpling of the bedsheet as he breathed. He trained his other senses as well; and also practiced his operation technique on cadavers, feeling his way, as it were, instead of talking to himself to describe what he was finding. The results were beyond his expectations: he not only mastered the technique but he shortened the average time required for that operation from four hours to one hour and forty minutes.

So, these techniques work, and that is the beauty of it. I have used them with clients who were extremely worried, unable to think of anything else but their troubles, and I would give them a prescription that ran somewhat like this.

As you come out of the building, notice as many things as you can that you would not notice otherwise: the width of the sidewalk, the finish of its surface, the material of the wall—brick, stone, or concrete—the number of persons who are waiting for the green light at the corner, the colors of the cars that are lined up along the curb, etc. Or register the sounds and noises that you seldom really hear because you take them for granted: the rumble of engines, the hubbub of a crowd, the whistle or drone of the plane overhead.

It is simply amazing how this simple prescription relieved their anxiety. One does not yield to a feeling of discouragement if the results do not become evident in the earlier stages. It takes time and persevering practice, but success is assured if one keeps at it.

The second step, in my experience, is a rather difficult achievement. It is an attempt to reach what Korzybski calls the silent level, the level of first-order experience without naming at all, conscious or unconscious; and Wendell Johnson calls it nonverbal abstracting.

Hold an object (ashtray, pencil, or anything else that may be handy) in both hands and look at it steadily, examining it. As soon as you begin to verbalize about it, put it down. Take it and try again. See how long you can stay "on the silent level" of abstracting. This should be practiced for a short time each day for at least a week or two, using different objects. You can also do it while watching a person, viewing a painting, listening to music, or watching a game of some sort. In such cases, of course you cannot hold in your hands what you are observing, and so you need to use a slightly different technique: before you begin to observe, cross your arms, and

> when you begin to verbalize uncross them. This is an unusually effective exercise for demonstrating the degree to which your observations are influenced by your verbalizations about whatever you are observing.[5]

It is not easy to attain the silent state or to maintain it for long; but the closer you come to it by practicing the simpler skills of "deconcentration" and sensory awareness, the better you will be able to control your "worries," stop thinking in circles, uncover your hidden assumptions, and overcome such common bad habits.

From Abstraction to Abduction and Creative Innovation

Until now when I described my own version of the process of abstracting, I have suggested that we see ourselves picking out of WIGO (What Is Going On) a certain number of point-events and gathering them in a set of perceived relations, which I called a first-order experience (Figure 5, p. 100).

This first-order experience I see as a felt relationship with a fraction of WIGO, this fraction being surrounded by an ETC. of limitless size.

We say, repeating Korzybski's premise, "The map is not the territory," meaning that this first-order experience has not the same extension as WIGO and belongs to a different order of existence. We add the second Korzybskian premise, "The map does not represent all the territory," meaning that, even as a representation imprinted in our nervous system, this first-order experience does not cover all that is going on at that instant, but only a fraction of it.

This is good as far as it goes, as a first approximation of the happening that we are studying. But it may be advisable to stop at this point and reflect on the various assumptions that our procedure involves. They are at least three:

1. There is a WIGO there facing me;
2. I stand outside that WIGO as a detached observer;
3. The map, being self-reflexive, according to Korzybski's third premise, inserts itself into WIGO as perceived and makes it at least slightly different from what it was initially.

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[5]Wendell Johnson, *People in Quandaries* (New York: Harper & Row, 1946), p. 493.

Instead of WIGO, Korzybski calls the phenomenon represented by the parabola the 'event' or the 'scientific object,' meaning a localized WIGO described in scientific language. His view is roughly equivalent to mine, the differences between us are that I take as 'background' the whole cosmic event at a moment, and I use common-sense language, which could vary in sophistication from individual to individual, as a workable description. Depending on the knowledge of the person I observe, his world is less or more complex, its size and its depth and the cluster of relationships that holds its elements together are determined by the mental span and grasping capacity of the individual. If he is a physicist, his world is likely to be the scientific world of physicists; if he is a Christian Scientist, it is probably the world as described by Mrs. Eddy; if he is French or English, his world is one that can be described in either one of these languages and none else; if he is a child, his world is that of a child; if an oldster, the world of an oldster; and so on. In fact, the WIGO from which we abstract our first-order experience is our own unique world, structured according to our culture and personal experience. We live and operate within a space-time plenum out of which we cannot come entirely free.

Abstraction, by itself, does not take us out of the deduction-induction loop that closes upon itself within that cultural plenum. To come out of it, we have to undergo the emergence of a new self and of a new WIGO consistent with it. This demands an act that we label creating, or bringing into existence what was not before. I speak of it as *innovating*, and I call the process *abduction*. It means drawing out of the totality of my space-time self and establishing in the historical stream of happenings a new energetic existent, active, reactive, and bent on continuing itself as an expanding system.

The process of abduction may be triggered off by various forms of awakening to a new degree of awareness. We could see these awakenings as interruptions of our ongoing sequence of living (Self-1) where one's formerly held unconscious assumptions (i.e., what we took as spontaneous, "natural," and rock-bottom "reality") are shaken. The initial response to such disturbances can be anything from mild surprise to radical shock, depending on one's preparedness for the unexpected. It may be hearing or reading a statement that goes beyond or challenges what I am ready to say by myself; by meeting with conditions I am not prepared to face; by undergoing an experi-

ence that disturbs the smooth running of my habits of thinking-feeling; by any shock or sudden change in my functioning at any level. In such cases, it is not sufficient to abstract, "as is," the first-order experience to insert into my activities of the next instant; I have to assume the role of self-creator, or achiever of self-emergence.

If we take the structural more into account, we see that even a slight change means a self-restructuring, in fact a self-renewal. We have to postulate life as a never-ending succession of deaths and re-births, of disintegrations and emergences.

We may study these structural transformations of the self by meditating on the chart *The Worlds in Which We Live* (Figure 8, p. 127). Each of its four concentric circles may be considered in turn.

1. *Senses*. A new sensation, particularly if it is intense and takes place when the system is in the mood of welcoming imprinting, will cause organismic changes that are extremely difficult to annul. Enslaving additions can be created, as in the case of drugs, alcohol, cigarettes. This is also the case of habituation for certain foods—'the pies as my mother used to make them,'—the need for a background of music while working, the pleasure of skiing, surfing, swimming, the enjoyment of exercising, the thrill of caressing and being caressed, the tyranny of compulsive eating. It is easy to realize that a change in these similar habits introduces a disturbance in the total semantic organism and calls for a careful restructuring of a 'self' patterned after a new design.

2. *Instruments*. We abstract elements from the world of happenings as they are presented to us by the instruments, tools, and appliances we are familiar with: the glasses we wear, the false teeth or the fillings in our mouth, the razor we use to shave, the typewriter we write with, the car we drive, the utensils we use to prepare our meals, and the practically endless variety of physical facilities our technology has put at our service: telephones, newspapers, radios, television sets; public conveyances such as buses, taxis, trains, airplanes, elevators; regulation of traffic by painted directions on the roadway, signposts and traffic lights, bridges, gates, revolving doors, and such. Pencils, pens, Xerox duplicators, tapes and recorders, washing machines and clothes dryers, automatic selling machines and coin-operated telephones, garage door opening devices, television control at a distance. Any change in these means of contact, control, and use of our surrounds, especially if it covers a complex of well-established

activity patterns, as when we move from a place of residence to another, from a work environment to a different one, does demand more semantic resiliency than we are likely to anticipate.

3. *Methods of thinking-feeling-behaving.* Here we are at the very center of our semantic makeup, of what Sylvan Tomkins had in mind when he discoursed about the "cultural assembly," and what I describe as the *episteme* that pervades all our activities, 'physical,' 'mental,' 'physiological,' 'affective,' and what not. Here, every operating factor in our organism—body and soul, to use the old terminology—is dynamically in active energetic relation with every other factor. Its workings are a vital contribution to the harmony or disharmony of the total orchestration of what we are and what we do. Here, words and sequences of words affect actions and sequences of actions; underlying activities, not easy to detect, which we call unconscious thoughts, feelings, drives and needs, express themselves in speech, in bodily movements, tears, yells of pain or shouts of joy, brightening the whole countenance in happiness or showing a mask of gloom in frustration or despair. The reciprocating action of these activities is one of the peculiar features of human functioning; expressing anxiety is anxiety-amplifying, expressing distress is distressing, expressing fear is frightening, expressing anger is angering, expressing trust is inducing trusting behavior, speaking with calm and deliberation gives clarity and constructive consistency to communicating, listening without prejudgment facilitates exchanges of feelings in tense situations, muscular relaxation pacifies emotional disturbances. This is precisely the field in which we exercise ourselves when we study and practice the disciplines of general semantics and epistemics. This is the center where we train ourselves in the most comprehensive of arts, the art of living as a self-actualizer dedicated to altruism as the ruling human passion. We all know from experience that is very demanding undertaking, but we also know that it becomes more and more rewarding as we progress in experience and skill.

4. *Theories and doctrines.* Formulations—theories and doctrines—are not to be taken as mere breezes that play lightly over the surface of happenings. They are integral parts of our world of striving, reacting, transacting, toiling, enjoying, and relating ourselves to one another. The old dictum, "*Mens sana in corpore sano*," "A healthy mind in a sound body," applies here to the full and with a

much broader meaning: "Sound and Flexible Theories in shuttling interaction with Forward-moving Practices." This involves both new knowledge (circle 4) and new methods (circle 3). There is the growing fringe of each individual WIGO, and, as we expand our view to the milling crowd of humans all over the planet, the growing edge of the general WIGO, which our common-sense language calls the WORLD or the UNIVERSE. We abstract from the WIGO what we have already achieved, and we cause to emerge by a process of abduction from our time-accumulated transactions, past and present, the 'new heavens and the new earth' that the apostle Peter was dreaming about in a moment of 'inspiration,' or a stage-five experience, which he had to express in the language of his day. Thanks to our scientifically guided awareness, we now dissect this complex happening—without fractionating it in the least—in terms of abstraction, abduction, and creative innovation.

In a book entitled *Epistemics*, I play freely with the notion of 'reality' proposing as reality-4 the highest abstractions of our time. I make of the trilogy abstraction-abduction-innovation the art supreme of our generation. In this art they blend methods, theories, and values in a new consciousness of their cosmic role.

> When I look at mathematics in the light of my experience with other arts, I am not awed any more by its techniques. Mathematizing becomes for me a human experience that has a great deal in common with other experiences that are not given equal credit for their share in human advancement. This abstract art of mathematics has brought about in quick succession the atomic age and the space age. By what transfer of skill can we pass from the art of mathematizing to an equally effective art of living? We may do so by reversing the orders of reality with which we deal. In the world of prehistoric people, stones, plants, and animals were the realities that had to be taken into account to survive. These realities-1 were raised to the level of realities-2 when humans invented abstract classifications they thought revealed to them the 'real' nature of things. Later, they encircled the reality-2 of classifications by adding to it the reality of the 'laws of nature,' or reality-3. But, during all that time, poets, artists, mystics, and dreamers were fascinated by a reality-4, a realm of existence preternatural, beyond nature as known at that age. We are fashioning the key of the door that opens for us that world of wonders. We discover that from that world flows a form of human energy: the energy of values we hold supreme and the energy of scientific knowledge that gave us the control of the very heart of matter..

What if we took this reality-4 as a more immediate reality than the realities-1,-2, and -3 to which our predecessors were limited? [6]

Summary

In this chapter, we have looked at the practice of awareness or self-participation. I presented a mental model that serves as a context for self-observation or self-management—or the guiding of oneself by a better informed and wiser self. This involves the recognition that we can function simultaneously at different levels of psycho-logical activity. The model is the Self-1, Self-2, Self-3...Self-n multiordinal diagram, which includes the notions of feedback and self-renewal, taking cognizance of the indicators of safety and danger in what we say and do, and in the manner we say it and do it.

To this we added the definite directives on how to listen, how to read, and how to meditate or live at the 'silent level.' Finally, we spoke of the transformation of the self by means of creative innovation, which more or less summed up the purpose of the whole chapter.

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[6]J. Samuel Bois, *Epistemics: The Science-Art of Innovating* (San Francisco: International Society for General Semantics, 1972), pp. 88-89.

Part III
PARTICIPATING

In chapter 9, Dr. Bois described his version of Bachelard's Epistemological Profile as a model of stages of cultural development. He described stages one through four in detail, and gave some examples of semantic analysis using the values and assumptions of those stages to create a profile. He ended the chapter with a brief description of stage five as the Participating stage. Now in Part III he offers a rough survey of that stage with the qualification that what he writes is suggestive rather than a prediction or a characterization of a way of life.

In the first and second editions of *The Art of Awareness*, Dr. Bois called stage five the *Unifying* stage. then in 1969 he came out with a book based on the Epistemological Profile called *Breeds of Men*. In it he renamed stage five the *Participating* stage. He made that revision in the third edition of *The Art of Awareness* (1978).

> At this stage, episteme ceases to be a "general system of knowing"; it has a broader scope and becomes the learned art of living in ever-growing awareness. A new life objective emerges: it is not so much to know what is and why it is what it is, but to be at one with all processes—persons, things and situations—that we discern as our traveling companions in the ongoing cosmos. Not guided by theories, participants feel their way under the guidance of the binding force that holds the universe together.

Chapter 15 is a general introduction to participating, and introduces a distinction between participating or unifying experiences and participating as a way of life.

Chapter 16 begins with the unifying experience. It starts with a section on "Duality and Oneness," then proceeds to "Thinking Beyond Models," and ends with "Some Qualifications Regarding Unifying Experiences."

Chapter 17 is a description of Participating as a way of life. The first section emphasizes the science-art aspects of participating, the next section has "oneness" as its theme, and the last section is called "The Cosmic Process."

I suggest that a feeling for participating is best developed in relation to others, one-to-one or in groups. In either case, Dr. Bois' little pamphlet titled *Communication as a Creative Experience* can be a helpful map. It is a highly recommended supplement to Part III. While we cannot "make" ourselves participate through programs or directives or practices, we can prepare the semantic soil, plant ourselves, and learn as we grow.

—The Editor

CHAPTER 15

introduction to participating

So far, we have studied the first four stages of the epistemological profile, and used them in epistemic analysis. Stages two, three and four, while different in structure, are discursive stages. Stage-1 is prediscursive. Discourse involves abstracting, measuring, comparing, preferring, rejecting, choosing an alternative among many, adopting an idea or a theory, sharing perceptions, exchanging opinions, weighing pros and cons, making plans with friends or fellow workers. It is mostly a matter of observing, of understanding, of agreeing or disagreeing, of putting our brains together for achieving what may be expedient, useful, practical, and practicable.

All this is good, indeed. It is part of our functioning in the world. But it falls short of what is meant by the experience of being feelingly and consciously at-one with things, people, and situations. Seen under this aspect of felt at-oneness, our experiences are not so much a matter of understanding, of seeing things as the other person does, of adopting an idea because it sounds reasonable, of joining in an enterprise because it looks practical and practicable. They are a matter of living consciously, at least for a time, in a symbiotic exchange of energy with some other dynamic process—a thing, a person, a group, a situation—that we let free to affect us to the very depths of our innermost values, attitudes, and preferences.

At stage-4 we are aware of the fact that discursive reason has its limitations, and that in all of us, as Korzybski wrote, "Some affective pressure comes first, but because in humans the effect of higher nerve centers cannot be entirely abolished, this affective pressure is ration-

alized somehow into some sort of 'premises'."[7] At stage-4 we conclude that the next step in human evolution has to display itself primarily at the affective rather than at the discursive level. Stage-5, then, is *transdiscursive*. I see it as a full participation that blends thinking, feeling and all other aspects of a semantic transaction at a transcendent level of experience.

In expanding my own theory of stage-5, I now call it the *participating* stage. Rather than emphasizing unifying experiences, which unify what is fragmented by culture, participating refers to a well-established way of functioning. It evolves into the art of participating consciously with WIGO (what is going on).

Instead of viewing the world as a flat territory in which unexplained phenomena are like gaping holes that demand to be filled by rationalizations of some kind, we may form a different mental model of our world and see it as a process-like cluster of ongoing events that hold together by a binding force of a mysterious kind. This binding force may exist beyond the perceptive power of our individual sense organs taken one by one, but it can be perceived as a first-order experience of our total semantic self. That awareness involves the perception of that binding force, of that felt relatedness that pervades things, persons, and situations. It is from that felt relatedness that various generations derived their theories about humankind's being-in-the-world. To be at-one in a felt symbiosis with things, people, and situations may be viewed as the initial phase of a new art, the art of participating in the creative thrust of cosmic energy.

Distinction Between Stages of Development and Experience

The experience of human participation in the ongoing cosmic process is an existential experience common to all generations, but it has been observed and described differently at different stages of human development.

Participating as I wish to bring it into awareness, has been going on all along. We are part and parcel of the ongoing world, whether we are conscious of it or not. Conscious participating has been the way of dissolving the self-made distance between ourselves and what is going on. Our ancestors did it by magic, by esoteric practices, and

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[7] *Science and Sanity*, p.308

by religious rituals. We can do away with this human-made distance and learn the art of participating in consciously guided awareness.

In the first and second editions of this book, we had not yet reached the formulation of a distinction that we now consider very helpful in pursuing our overall objective. It is the distinction between stages of *experience* and stages of *development*, either personal or cultural. If we turn to the Structural Differential (Figure 5, p. 100), we remember that we spoke of a first-order experience, the circle in the diagram, prior to whatever can be said about it in a description, interpretation, or conclusion we may derive from it. It is on that prior-to-be-spoken-about "raw" experience that we are now focusing our attention.

We could define stages of experience as transitory happenings-meanings, and stages of development as well-established ways of functioning. This lack of distinction between experience and development has led to a great deal of confusion. We may have a high grade of experience in a low stage of development, as for instance when Bachelard comments on Nietzsche's notion of energy and says that "On the basis of a false notion, it is possible to build a towering doctrine."[1]

In revising Bachelard's original scheme of thinking about the stages of human development, I labeled stage five the *unifying* stage because I wanted to emphasize the fact that creativity involves a certain degree of cosmic consciousness, of felt participation in the energy process that sustains the existence of the whole universe. I called it *unifying* to set it in sharp contrast to the divisive experience of strict objectivity, which we consider to be so desirable at the lay person's level, and to the scientific detachment that we take as the only proper attitude for the sophisticated research worker. I have now placed this view of the creative process at stage-4.

Stage-5 is introduced in many cases by some kind of unifying experience, but a unifying experience is an experience only—it is a transitory happening. The Participating *stage* is somewhat permanent and apt to be developed by our own initiative and skill.

We are now making a fresh start, attempting to be most conscious of a certain character of our experience that is most difficult to

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[1]Gaston Bachelard, *La Philosophie du non* (Paris: Presses Universitaries de France, 1940), p. 47.

describe. It could be spoken of as a bold attempt to break out of experiencing according to a carefully formulated dynamic structure of words, diagrams, gestures, or any form of expression. We now limit the use of the term *unifying* to a stage or level five experience. As a label for a level five stage of development I suggest the term *participating*, meaning by this many level five experiences that have become a permanent condition of which we are conscious. A stage-5 type experience (unifying) may take place at any stage of development; it is only when they have become phases of our awareness and become part of our overall functioning that we really speak of a stage-5 development—semantic maturation (participating).

CHAPTER 16

the unifying experience

Duality and Oneness

The world in which I live appears to me as a phenomenal duality. At the center there is me, and all around there are the not-me's, persons and things that I observe, and to which I relate in my own unique way. Even when I look at myself, the objective me that I observe and deal with appears somewhat detached from a me that is more central, felt, but not seen. This feeling of immanent duality is the price I pay for what we call "objective" knowledge of what is going on about me, and within me. It is a condition I must accept to enjoy my awareness of being in the world and the flow of my own awareness. This knowledge is embedded in the language I have learned to speak. It is patterned after what my culture has taught me to see as the "real" structure of the world in which I live.

As a human being, I cannot be ingenuously at one with a Nature untouched by human hands. I find myself in contact with a human-shaped Nature, as artificial as a totem pole compared to the tree out of which it was carved.

Other existents who have not yet reached a self-conscious level are at one in total immediacy with their own selves and with their environment. The flower is at one with its color; the water is at one with its wetness; the sun is at one with its radiation; the mountain is at one with its mass; the cloud is at one with its floating lightness; the rooster is at one with its crowing; the hen is at one with the eggs she is laying.

They are at one also with their space-time environment. The flower blooms or withers according to the time of the season; the rooster crows when the dawn begins to light in the horizon; the hen

cackles when the eggs are laid; the river flows down as the slope directs it; the sun appears in the east, and disappears in the west; the mountain grows out of the plain.

For these to exist is to be at one with characteristics and activities from which they cannot dissociate themselves. It is also to be at one with the place they occupy at the moment they appear in the world of ongoings. They cannot come out of their unique being in the world. They are locked within the evolutionary process at a definite space-time location.

We are not locked up in this manner. As a reflexive existent, I live a life of abstraction, of detachment from the surround that I observe close to me or far from me; and I can abstract a self that I see as distinct from me, the observer, different from other existents that I know.

I can determine, to some extent, what my participating oneness with the world and with myself will be. I do so by relating myself to whatever is not-me, and even to me as an object according to my outlook on life, and according to a set of personal values. The relating that I thus establish between myself and what is going on becomes a human-made oneness out of which emerges the world in which I live. This oneness and the personal world that grows out of it is a mass of joinings that I weave as I choose, made tighter or looser as I wish.

Of all the existents that I know, I am the only one who has to develop the art of conscious relatedness to what is not-me and to create a new form of oneness that Nature, left to itself, has not provided for. It is a oneness that transcends the phenomenal duality of me and not-me.

I can practice the art of conscious at-oneness in a variety of activities. I can be at one with whatever I do. With this page that I am writing; with the painting that I spread on a canvas; with a sculpture that I mold with my hands and carve with my chisel; with the piece of furniture that I shape with my tools; with the house that I design as an architect; with a client that I lead out of a neurosis into the peace of self-understanding.

Arts are human inventions that have reached, beyond their initial worth, the beauties and the enjoyments that Nature unaided offers to the organisms that are capable of reacting to them. They transform and bring to a higher level of existence the potentiality inserted in our biological makeup. They bring about mutations of a new kind, exclu-

sive to the domain of cultural evolution where humans participate in the act of creation, making of their own nature, blended with their environment, something that never existed before.

We have amplified the sounds of birds to the size and complexity of symphonic orchestras. We have turned the uneducated yells of joy and the sobbing of sorrow into the passionate arias of the overwhelming choruses of operatic composition. We brought out of the seven colors of the rainbow the thousand shades of synthetic pigments. We have made of primitive shelters the architectural marvels of residences, office buildings, temples, and stately edifices that we now take for granted. We made of simple tribal customs the elaborate system of our laws and our political institutions.

Can we make of the art of at-oneness a distinct and human creation, and a definite enrichment of what nature offers to us, as a challenging possibility? Can we establish a so far unknown form of oneness with the universe and with our fellow humans that will outrival the highest achievements of our other arts? Can we devise and practice a oneness with the whole cosmic process and with its human constituents that will transform our world of strife and violence into one of harmony that we are not afraid to lose because its existence is of our own making? Can we free ourselves of the gravitational pull of separate individualism and attain the weightlessness of free-ranging trust and mutual exchange of unrestricted kindness?

I think we can, and I feel we must now that the whole planet has shrunk to the size of a small village, where distrust among villagers is still institutionalized as mutual deterrents. The time is come when we have to learn the secrets and to practice the skills of the yet unknown art of being fully at one with our physical and biological environment by respecting its ecological requirements. Above all, the time has come to be at-one with all of the members of the family of humankind above and beyond differences of race culture, religion, and form of government.

Thinking Beyond Models

From the primitiveness of prehistoric humanity to the most worthy specimens of humanness that we have had in recent centuries, Western culture has shown stages of semantic development that we distributed along a scale in Chapter 9. We called the first period the *sensing* stage of unquestioned feeling. The second period was the

classifying stage of common-sense metaphysics. The third period was the *relating* stage of classical science. The fourth period is the *innovating, postulating* stage of relativity.

After we had described each stage, we discussed various types of mental models that can be used at stages two, three, and four. We divided these models into two main classes, the mechanical and the biological, and concluded that mental models of the biological type are better adapted to the study of human situations. We do not plan our life as we plan a house, and we cannot speed up our cultural development as we can speed up the construction of a highway. We do not put together an organization of people as we arrange machines for production. Human cooperation is much more a matter of symbiosis, of grafting together live elements that are capable of sharing common values.

Realistic thinking means that we choose a mental model that is as similar as possible to the object or the situation with which we are dealing. For a human-contrived system, a mechanical model may suffice; for a situation that involves factors that are beyond human control, models of greater flexibility are required. From the rigorous causality of stage-2, we pass to the probabilistic models of stage-4.

Is realistic thinking possible without mental models? Is there a way of knowing that transcends structural knowledge? Yes, there is; and this transcendent form of experiential knowledge is what we are attempting to describe as an important aspect of may be described as *unifying* experiences.

If we look for a description of this type of knowledge in the writings of observers of human experience who lived centuries ago, we will see it often interpreted as something mysterious, magical, or mystical. It went beyond the powers of description and analysis developed in those days, but today we look at it with the unperturbed curiosity we have when we study any natural phenomenon, whether we can explain it or not. We don't believe in miracles anymore, if by this we mean supernatural interventions that cannot be accounted for by present theories. We are both more humble and more daring; we freely admit the limitations of our theories, but we are ready to expand them until they cover what has previously been called miraculous and supernatural.

A unifying experience at stages 1 through 4 means that, while this type of experience synergetically reunites the individual with the

cosmic ongoing, it is then valued and formulated according to a particular stage of development. Experiences of oneness with WIGO have taken place during the whole course of history, and they were interpreted according to the episteme of the time. It was magic at stage-1, a miracle at stage-2, an exception to a law of nature—or a challenge to discover a new law of nature that was still hiding in the unknown—at stage-3. At stage-4 we become self-reflexive with awareness, and we accept an infinite plurality of categories, structures, and interpretations. At stage-4, a unifying experience can be described as a culminating experience of self-reflexiveness; the simple self-union of postulators who acknowledge that the world in which they live is structured by their semantic states-in-process. The experience is not construed as a revelation or a discovery of something "out there," but one that involves both subject and object in a transaction in which "truth" is no longer the equivalence of the subject's picture of what is going on. The subject recognizes the experience as one that unifies in himself or herself what had been culturally and discursively separated.

Here is how a contemporary epistemologist deals with what we call a unifying experience. He speaks of *contemplation* as an exercise that takes us beyond the world of definite mental models.

> The conceptual framework by which we observe and manipulate things being present as a screen between ourselves and these things, their sights and sounds, and the smell and touch of them, transpire but tenuously through this screen, which keeps us aloof from them. Contemplation dissolves the screen, and pours us straight into experience; we cease to handle things and we become immersed in them. . . . As we lose ourselves in contemplation, we take on an impersonal life in the objects of our contemplation; while these objects themselves are suffused by a visionary gleam which lends them a new and vivid and yet dreamlike quality.[1]

After comparing this experience with religious ecstasy as described in the writings of various faiths, Polanyi says that

> Music, poetry, painting: the arts—whether abstract or representative—are a dwelling in and a breaking out which lies somewhere between science and worship. Mathematics has been compared with poetry: "The true spirit of delight, the exaltation, the sense of being more than Man, which is

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[1]Michael Polanyi, *Personal Knowledge* (Chicago: University of Chicago Press, 1958), p. 197.

> the touchstone of the highest excellence," writes Bertrand Russell, "is to be found in mathematics as surely as in poetry." Yet, there is a great difference in the range of these delights. Owing to its sensuous content, a work of art can affect us far more comprehensively than a mathematical theorem. Moreover, artistic creation and enjoyment are contemplative experiences more akin than mathematics to religious communion. Art, like mysticism, breaks through the screen of objectivity and draws on our pre-conceptual capacities of contemplative vision. "Poetry," wrote Shelley, "purges from our inward sight the film of familiarity which obscures from us the wonders of our being"; it breaks into "a world to which the familiar world is chaos."[2]

You will have noticed that this long excerpt from Polanyi, a scientist-philosopher, contained quotations from Russell, a mathematician, and from Shelley, a poet. These two men are highly regarded human beings, who possess a keen sensitivity to the finest differences in human experience. How much each of us has in common with individuals like these is a matter that deserves a searching study. It may reveal potentialities in the so-called average person that were neglected because they were unknown. The latent riches of humanness have not begun to be tapped.

Now let us listen to a neurologist, Ralph W. Gerard, doctor of medicine, philosophy, and science. In a conference held under the auspices of the New York Academy of Medicine and attended by forty-eight scientists engaged in human studies, he called holistic the stage of human experience that we call a unifying experience.

> The stage in which we try to identify the variables of interest . . .is like that of identifying the nouns of the language and the entities under consideration. The static stage is getting the simple static relations between them.[3]

Translated into the terms that we have used here, this contains stage-2 and a glimpse at stage-3 of Bachelard's epistemological profile, or Boulding's framework model. Dr. Gerard continues:

> The dynamic stage is the one where some of the verbs of existence come in. In it we enrich the language and we see how the variables interact in

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[2]Michael Polanyi, *Personal Knowledge,* p. 197.

[3]Ralph W. Gerard, *Integrating the Approaches to Mental Disease*, ed. H. D. Kruse (New York: Harper & Row, 1957), p. 281, With permission of publisher and author.

> time and with changes. Finally, there is the holistic stage, the putting it all together with a certain amount of *Eingejühl*. In fact, I think at the very end we come back to the kind of amorphous feeling which is a deep understanding of the situation, which goes beyond the analytic, beyond the verbal, and beyond the definition. Then we really know it.[4]

This quotation from Dr. Gerard brings forth two characteristics of a unifying experience. (1) It is beyond the analytic, the verbal, the sharp definition. In other words, it cannot be glibly described; it is an experience too rich for a systematic logical presentation; and we may need to resort to poetry or some other form of art to transmit the message, (2) It gives the person who experiences it a strong feeling of assurance—as Dr. Gerard said,"Then we *really know it."* As I said before, this feeling of assurance often becomes a trap for the person who goes through such an experience, and even more so for those who take literally what he may say about it, as if the formulation given is the ultimate revelation of "reality." When the knowing proper to a stage of development is taken as final and unchanging, such an experience thus becomes a confirmation of the finality of an earlier stage, instead of an opportunity to break through to a more advanced stage of development.

Dr. Abraham Maslow, well known for his *Motivation and Personality*[5], has devoted a great deal of time to the study of the psychological aspects of the experience. He speaks of "peak" experiences, or moments of highest fulfillment. In these experiences, according to Maslow, our knowing assumes a peculiar form, a form that is different from the structural knowing of discursive stages 2, 3, and 4. He calls it *B*-cognition, or being-cognition, to emphasize that it is not only an abstracting phenomenon of the ordinary kind but a contact of the whole person with whatever he is attentive to—fusion of the two in a kind of symbiosis.

In ordinary perception things are seen as parts of a world, already cut into pieces, and each having a name attached to it. We see things through the pattern of the name they possess: a house, a tree, a person, a face. In *B*-cognition, the object is seen as unique, not as belonging to a class to which it conforms. The pepper tree that I see

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[4] Ralph W. Gerard, *Integrating the Approaches to Mental Disease*, p. 281.

[5] New York: Harper & Row, 1954

in front of my window is not a tree, it is this individual, unique tree; it is the irreplaceable part of the total cosmic process that it expresses in its own untranslatable way.

B-cognition is different from abstraction: it does not select certain aspects to the exclusion of others; it does not classify an object with others of the same kind. It is childlike in that the object is seen with freshness, as though for the first time. As the object takes its unique place in the unclassified flow of processes, the observer ceases to objectify his own self; he becomes aware that he is also part of the processlike cosmos that pulsates through him as it does through the tree. The peak experience in *B*-cognition thus becomes ego-transcending. It is unifying in sheer existence—not in purpose, motivation, or personal needs.

Do I advocate turning loose our wildest imaginations, or letting ourselves be run by free-roaming fantasies? Not at all. At an interdisciplinary symposium on Creativity held at Michigan State University in 1957, Maslow gave an answer that expresses what I have in mind.

> The great work needs not only the flash, the inspiration, the peak experience, it also needs hard work, long training, unrelenting criticism, perfectionist standards. In other words, succeeding upon total acceptance comes criticism; succeeding upon intuition comes rigorous thought; succeeding upon daring comes caution; succeeding upon fantasy and imagination comes reality testing.[6]

These experiences are not limited to poets, mystics, and creative scientists; they are the common heritage of all human beings.

The dominant characteristic of a unifying experience is that it is free from definite mental categories. Our mental categories are residues of transactions that took place in the past; they are dried up and stored in our memory. Instead of tasting the flavor of a fresh fruit, we live on desiccated prunes and syrupy preserves. To see the world anew every morning, to discover the aspects of our life that we miss because we are in the habit of neglecting them, to stop for the pause that *really* refreshes is possible anywhere, anytime.

A unifying experience takes us out of any established order; it places us in the center of a world where the accustomed signposts of

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[6]A. Maslow, "Creativity in Self-Actualizing People," *General Semantics Bulletin*, No. 24-25, p.49.

systematic rationality are missing. At the same time, it fills us with an assurance that this is the most genuine experience a human being can have; it is the fountainhead of the greatest achievements and discoveries in all fields of human endeavor: science, religion, philosophy, technology, ethics, law, the fine arts, economics, and politics.

There are an almost limitless variety of terms for describing that experience or accounting for its existence. Some speak of creative intuition, of genius, of inspiration, of the supraconscious of the oversoul that takes control of the individual, of the state of *satori*, of divine madness, of enlightenment, of insight, of ecstasy, of transformation, intelligent agape, existential commitment, or some other term that is beyond sharp definition, depending on what aspect is emphasized and in what context—artistic, psychological, or religious—it is observed.

It is widely different from the sensing contact of stage-1, which is uncritical and uncontrolled. It is accepted in full awareness of its dangers and is managed by all the resources of stages 2, 3, and 4 that are available to the main participant. It is becoming alert to living as circumstances demand it.

My own conviction is that the mechanisms that operate in creative thinking are at stage-4. At stage-4, we begin to learn creatively by developing freedom from established dogmas and theories. At stage-5, we are ready to accept the nonverbal experience of oneness with a situation and with its undefinable implications; we are ready to take the risk of putting our whole self, our knowledge and our values, at stake in the gamble of life.

At stages 4 and 5 we are aware that a unifying experience, or being at one with the cosmic process, does not unify what was by nature separated; it unifies what was by culture seen as separated. It is when we renew our fundamental oneness with everything that is, as we discover that we are both autonomous from and subject to an order that we recognize as most congenial to our innermost self. Our dichotomous culture, which stresses subject versus object, has thrown a veil of mystery over this vital oneness. In a unifying experience, the veil is rent asunder, and the wonderful unity in which we live is revealed through a felt participation in the energy process that sustains the existence of the whole universe. This experience has a "taste" of its own. It is a whole semantic response that gives a feeling of re-

newed youth, dispels fear and anxiety, and brings from our deeper self a desire to be loving and understanding.

What follows is a detailed description of such an experience by the mathematician-philosopher Bertrand Russell. Russell, who was working with Alfred North Whitehead at the time, arrived at Whitehead's home one evening.

> When we came home, we found Mrs. Whitehead undergoing an unusually severe bout of pain. She seemed cut off from everyone and everything by walls of agony, and the sense of the solitude of each human soul suddenly overwhelmed me. Ever since my marriage, my emotional life had been calm and superficial. I had forgotten all the deeper issues, and had been content with flippant cleverness. Suddenly the ground seemed to give way beneath me, and I found myself in quite another region. Within five minutes I went through such reflections as the following: the loneliness of the human soul is unendurable; nothing can penetrate it except the highest intensity of the sort of love that religious teachers have preached; whatever does not spring from this motive is harmful, or at best useless; it follows that war is wrong, that a public school education is abominable, that the use of force is to be deprecated, and that in human relations one should penetrate to the core of loneliness in each person and speak to that.
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> At the end of those five minutes, I had become a completely different person. For a time, a sort of mystic illumination possessed me. I felt that I knew the inmost thoughts of everybody that I met on the street, and though this was, no doubt, a delusion, I did in actual fact find myself in far closer touch than previously with all my friends, and many of my acquaintances. Having been an Imperialist, I became during those five minutes a pro-Boer and a Pacifist. Having for years cared only for exactness and analysis, I found myself filled with semi-mystical feelings about beauty, with an intense interest in children, and with a desire almost as profound as that of Buddha to find some philosophy which should make human life endurable. A strange excitement possessed me containing intense pain but also with some element of triumph through the fact that I could dominate pain, and make it, as I thought, a gateway to wisdom.
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> The mystic insight which I then imagined myself to possess has largely faded, and the habit of analysis has reasserted itself. But something of what I thought I saw in that moment has remained always with me, causing my attitude during the first world war, my interest in children, my indifference to minor misfortunes, and a certain emotional tone in all my human relations.[7]

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[7] *The Autobigraphy of Bertrand Russell 1872-1914*, Little Brown & Co., Boston and Toronto, 1967, 2nd edition, pp. 193-194.

This description by Russell beautifully illustrates the power of a unifying experience and its potential for conversion from deep seated values and habits. It also illustrates the power of the prevailing *episteme* in reasserting the old way of life ("...the habit of analysis has reasserted itself.")

Living to the full, whether in scientific research or in the practice of the most humble trade, is a matter of preference and choice in valuing, of commitment, of being in love with something, with somebody, with oneself, and with the whole universe in an entrancing embrace—outside of which there is nothing but emptiness.

It is from such an experience that scientists derive their new formulations, heroes receive their courage, artists secure their illumination, and saints take their victorious feeling of integration within the while cosmic process.

> Creative scientists know very well, from observations of themselves, that all creative work starts as a "feeling," "inclination," "suspicion," "intuition," "hunch," or some other unspeakable affective state, which later, after a sort of nursing, takes the shape of a verbal expression, worked out later in a rationalized coherent, linguistic scheme called a theory. In mathematics we see some astonishing examples of intuitively proclaimed theorems which, at a later date, have been proved to be true, although the original proof was false.[8]

This affective-intuitive element runs throughout the chain of activities that make life a consistent whole, and it can be detected throughout the traditions that animate the development of our culture.

Some Qualifications Regarding Unifying Experiences

For individuals living within the discursive stages of human development, which means the overwhelming majority of people, there is a danger in the use of terms to describe and classify or categorize the kinds of experiences discussed in the previous section. We choose a term as best we can, not always being aware that our choice of terms in the old language is limited and biased. Unless we are aware of that, we are unaware that we are dealing with a new type of experience. I suggest that we be loath to attach a label unless we know in advance most of its connotations.

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[8]Korzybski, *Science and Sanity*, p. 22.

I think that there are many of us who have had unifying experiences, but who have translated them in terms that deny their very possibility by speaking of them as unusual. Because of the circular reflexiveness of our language, using these terms to describe these experiences makes them difficult to maintain. When we insist on calling a unifying or "peak" experience unusual or exceptional, we keep it out of a program of living. As long as we keep it outside, it is outside, because we make the world in which we live. If, on the other hand, we can understand that this is an experiment in deeper living, and that we should do our best to keep it free from any mental categories or theories even while using them when the situation calls for it, a new kind of existence emerges that makes possible what previously could not even be imagined.

I have seen people who clearly had unifying experiences of the "highest" kind who were living at stage-2 of black and white, right and wrong, you and me, who later became rabid doctrinaires. Many yell the classical statement recorded in many books on these topics: "I am God!" But because they were at stage-2, they interpreted it literally: "Therefore, if I am God, I cannot make a mistake." See the deduction? Whatever I think is the Truth. Whatever you think that deposes my thoughts is wrong.

When for the first time physicists discovered that certain chemical elements emitted radiation, it was considered exceptional at first—the "peak" experience of chemistry. Those chemicals had no business radiating! That was left to the sun or to fire, but not to a dead, dull chemical element. But it did! Eventually, physical sciences came to the conclusion that what was exceptional and unusual was simply the revelation of a deeper reality. From this was born the science of nuclear physics, which revolutionized our technology and view of the cosmos. You cannot deal with that science using the rules of Galilean or Newtonian physics. Particle physics is not amenable to mechanical physics.

So it is with "peak" experiences that we have all undergone, which we sometimes undergo without recognizing them, due to the limited views we hold regarding ourselves as human beings. At times when we can perceive that inmost self, and it is not miraculous or "far out," we can begin to develop our skills in becoming habitually aware

in that way. A new kind of human being emerges who no longer possesses the negative qualities attributed to us at earlier stages of development, such as our being inherently aggressive creatures of war and conflict.

CHAPTER 17

participating as a way of life

The Science-Art of Participating

Of the two activities of human life, observing and participating, the second is the one that stresses transaction. We can observe things and people that stand by themselves outside us, and all that we have in common with them is coexistence. Participating involves a togetherness in functioning that gives our experience a quality perceived as at-one-ness, as the sharing of activities with an autonomous otherness that joins our world and enriches it with its living presence. We become aspects of a common process and we bring about the emergence of a new world that absorbs and transforms us both.

The science and art of participating demands first that each participant let go of all defensiveness. Not only the defensiveness that protects the self from threats, actual or possible, *but the defensiveness that strives to avoid the impairment of selfhood*, the feeling of self-destruction that we assume is involved in total surrender.

To rid oneself of defensiveness is only the preparatory condition for the next step in participation. The next and principal step is the actual gift of oneself to the other, a giving that is pure giving and not an anticipated exchange or "something for something."

When the other one gives in return, the receiver does not grab the gift as a treasure to possess, but receives it as a pure gift bestowed by the higher degree of life that manifests itself in the joint experience.

Then comes that act of mutual fusion into a transcending oneness; the symbiotic communion that creates the Super-Self, warm with renascent life energy, soft but strong, radiant and glorious.

Seen in this way, our experiences become more than just a matter of understanding, of having the same viewpoint as another, of joining together for practical purposes, or of trying to fill the "gaps" of knowledge left by unexplained phenomena with new rationales and theories. For me, it becomes a matter of developing the skilled sense of value through which we consciously live at-one within the energetic clustering of the ongoing—whether of events, situations, individuals, or groups—and allowing ourselves to be affected to the deepest core of values, purposes, and preferences.

It means to consciously participate with the mysterious binding force that holds all living processes in dynamic integrity. While we may not detect this binding force with our individual senses or with ordinary introspection and intuition, it can be a first-order experience of our total semantic self, which becomes our participating "organ of perception."

Oneness as a new order of existence

Oneness as participation is a "fact" that we accept; unity is a condition that we create and recreate whenever circumstances provide the opportunity. Each act of unity becomes a stage-5 experience that leaves in the overall system, which comprises the organism and its space-time environment, a reverberatory trace that compounds and increases the oneness. To practice participating as unity is to make oneness more tolerable, fruitful, joyous, and increasingly compelling. Oneness is structurally more than union; participating is structurally more than unifying.

In human affairs oneness is a matter of commitment. Once established, it transcends the fluctuations of mood and the contingency of circumstances. To love in oneness means to establish a union that changes the semantic state of both parties and brings them to a higher level of shared existence. To practice participating means to train oneself in the attitudes and habits that are consistent with the rhythms of oneness thus established. To make semantic jumps required by the structural more introduced willingly into one's life.

If I call participating a <u>full</u> experience—full meaning that at a certain moment I'm not simply aware of the things that surround me sensorily; I'm not simply aware of the theories, the thinking, the attitudes that are common in my culture. I have the full experience of being at-one with the cosmos—all that exists. It is as if my inward

vision had torn the veil that has separated me from this plenum of energy of which I am a part. I stop seeing "things"; I do not see the galaxies, the stars; I do not see people; I do not see history as the concatenation of some event or of some battling governments that succeed one another. I see the whole of WIGO, of what is going on . . . another form of energy.

In *Breeds of Men*, I put it this way:

> Finally there is the full reciprocity of participation in the total union of two persons who have become accomplished performers in the art of being at one with each other at all levels of functioning. Such an experience gives birth to a form of psychic energy that belongs to an order of existence different from whatever an individual can sense by himself. It is achieved when two persons have abandoned their individual defenses for good in complete trust of each other; have accepted unreservedly what they are without measuring their respective qualities, shortcomings, or weaknesses; and have entered willingly the unrestricted fusion of their activities of thinking, purposing, remembering, and holding on to each other. This is oneness supreme, participation total and transforming. It makes of plain human beings the new sort of existents that Julian Huxley and Pierre Teilhard saw emerging at the present time from the common crowd of self-seeking members of the human species, and *Homo sapiens* emerged centuries ago from the herd of hominids bent on foraging for mere biological survival.
>
> The experience of being at one in a felt symbiosis with things, people, and situations may be viewed as the initial phase of a new art, the art of participating with expanding awareness in the creative thrust of cosmic energy.[1]

The Cosmic Process

I relate myself consciously to become aware of the cosmic process by using capacities and skills consistent with my stage of development. My mental categories, basic undefined terms, my prehension of the structure of the world, all are constructs that are born of my transaction. The cosmic process, including me, has no time or space dimension, no measurable distance, no continuous (or discontinuous) duration. It simply exists. Cutting out categories and organizing them into a structure is due to my own activity, and this activity is patterned after the episteme I was born and raised in.

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[1]New York : Harper & Row, 1970, pp. 48-56

Experiences of oneness with WIGO have taken place during the whole course of history, and they were interpreted according to the episteme of the time. It was magic at stage one, a miracle at stage two, an exception to a law of nature—or a challenge to discover a new law of nature that was still hiding in the unknown—at stage three. At stage four we become self-reflexive with awareness, and we accept an infinite plurality of categories, structures, and interpretations. At stage five we accept experience that is trans-symbolic, and we train ourselves to function in a trans-symbolic awareness. This is participating.

At stage one, I become aware of my bodily identity and the world is there for to enjoy or explore.

At stage two, I become aware of my semantic identity and the world is there for me to understand.

At stage three, I become aware of my power identity and the world is out there for me to structure and manipulate according to my purposes.

At stage four, I become aware of my identity as a constituent of the noosphere, and the world is out there for me to symbolically synergize its ongoingness with whatever exists.

At stage five, I become aware of WIGO and myself being at-one with each other, and we are in the omnipresent here-there, now-ever, beyond symbols, beyond any particular episteme or world structuring.

Humans have the transacting capacity to be at one with WIGO and, at the same time, to be conscious of a personal identity, at least in the present stage of their life.

As participants, we have a permanent place of abode in stage 5, and we come out of it with the instrumental extensions built at the lower stages, using them to communicate with one another, to participate with nature and ask it to serve whatever purpose we find consistent with the ongoing evolutionary process.

POSTSCRIPT

transcending the limitations of non-aristotelianism

General semantics appeared in only one of the eight large cultural families that compose humankind. Korzybski called it non-Aristotelian and attempted to avoid the pitfalls that have developed within the structure of our Indo-European, subject-predicate language. This I find a most worth aim, and I am thankful to Korzybski for having made me aware of these pitfalls that render dangerous every field of human activity.

Living within our present condition demands that we take further steps. For me, non-Aristotelianism does not go far enough if we are to encompass conditions rather than have conditions absorb us as they now seem to do, both on the level of our personal lives and on a worldwide scale. Put in another way, as humans we must learn that "conditions" are mostly self-created abstractions, held together by our values and purposes, and appear to us to be "out there" threatening our very existence.

To encompass conditions means to grow a structurally new self that includes within its very life movement an intimacy with itself as a creative process that invents and develops the very conditions for its further evolution.

This new self must not only be a scientist, but also an artist that can tune whatever it invents, including itself, to the evolutionary thrust that envelops our planet.

In my capacity as a Westerner, I see myself as a member of the total human family in this day and age, when our step-by-step transformations of primitive women and men into mature individuals re-

sponsible for our own fate, demand the skill to evaluate what each of us is making of ourselves, and what others, singly or grouped in organized institutions, are making of our common heritage.

We are just a fraction of the human family, and none of our inventions, technological, political, economic, religious, or philosophical, will be accepted by the rest of the population of the planet unless it proves to be a real contribution to a better understanding of what it means to be human and to the genuine welfare of the species. The time is past when we could exploit our fellow humans and impose on them our way of life under the pretext of enlightening them or helping them out of their "ignorance." I deeply feel that the maturity of a new self includes the responsibility to make our contribution to the common weal one that reaches far and deep.

We have done so in the technological field: our satellites make instant intercontinental communication possible; we have done it in health measures: we have practically eliminated malaria and other scourges; we are on the vanguard in proclaiming human rights; we dream realistically of a world federation under some form or other.

Epistemics is in line with all these initiatives. It suggests a view of humankind that transcends the individuality of cultures. It looks for a code of values and a measurement of human growth that is not linked with any particular philosophy of life, Eastern or Western, Christian, Taoist, Buddhist, or what not.

Could we single out a common characteristic of all humans, somewhat similar to their belonging to a common genetic pool, which would give us a lead to a new philosophy of living that could incorporate and transcend the various cultures, philosophies, and religions?

I think there is one already emerging slowly out of the apparently chaotic condition of humankind. I see it consistent with the evolutionary thrust that animates the whole cosmos, including its human element. It is the development of each human individual, of each human institute, and of the whole human psycho-social living mass, or *noösphere*, as Pierre Teilhard calls it, that we are just beginning to measure, in a rough qualitative manner for the time being, along a brand new scale that covers the totality of what is significant to us in human history. It goes well with a notion that has become more and more acceptable, in the last hundred years or so, of seeing the human race, not as an abstract humanity with a nature that does

not change, but as a living organism that grows slowly but irrepressibly toward self-aware adulthood.

To use a different analogy, we could compare the continued existence of *Homo sapiens* on the planet to a stream that started as a rivulet and gradually became a mighty river watering on its banks a variety of institutions planted and nurtured by succeeding generations. In its course the river has gone through sharp discontinuities like waterfalls that caused its waters to churn, boil, spume, and roar. In recent years we have called these discontinuities "conceptual revolutions." In our Western world we count three major ones: one that took place about 500 years before the Christian era, one in the period that extends from A.D. 1500 to 1700, and one that is now taking place in our very much perturbed generation. All of this is the subject of the first chapter of this book. Between those major disturbances or rapid changes in the speed of the flow, such as the advent of Christianity, the birth of democratic governments following the Age of Enlightenment, the atomic age in the forties, the new industrial revolution brought about by cybernetics and automation.

According to certain widely-read authors, such as Peter F. Drucker, Lewis Mumford, Theodore Roszak, and others, we are now going through a period of total discontinuity, of an unexpected and all-pervading break in the flow of human energies to an altogether different level, to what may well be a new order of dimensionality, or, to use Korzybski's expression, a "new kind of man." Some cultural groups have reached that stage of turmoil and transformation, some are not yet caught in it. Some institutions are still enjoying with complacency the placid waters of some long-standing eddy that has been turning slowly upon itself for years and centuries as is the case in some century-old religions; some individuals are right in the tumbling confusion of the precipitous waterfall itself, as in the case of the generation around twenty years of age.

As the world becomes smaller and smaller, the various cultural groups become more and more tightly tangled with one another, and the time is coming when this conceptual revolution, which appeared first in our own Western world, spreads to world affairs in politics, economics, ecological planning, and intercommunication.

This brings about a centration and homogenization of the whole human race, which render possible measurements that apply to practically all those whom we used to see as partakers of an assumed

"human nature." The general idea is to figure our where humankind as a whole or any segment of it happens to be in its evolutionary growth. It is to assess its stage of development from the primitiveness of the early humans to the sophistication of the astronaut who walks on the moon, from the medicine man and his incantations to the heart surgeon with transplants achieved through the techniques of many advanced sciences. It is to derive from the limited history of human history and from the careful observation of the life of nations, institutions, and individual humans, some scheme of thinking, some simple mental model of what we are heading for and how we are transforming ourselves to get there.

In my judgment, there is something we can do about it, and this is what I propose tentatively in the science-art of epistemics. At the present time, I see all cultures having something in common. Westerners and Easterners, sophisticated theorists and aborigines still content with their myths, we are all under the impression that our local view of the world and of our place in it is *the* true picture of the universe and of ourselves. Professional scientists call it the achievement of rigorous objective thinking; religious fundamentalists call it a revelation from God; naïve believers in the voice of nature expressing itself in their spontaneous gut feelings do not even suspect that it could be otherwise. Each culture accepts its own brand of objectivity as the only and true "real" one. It is ready to argue and demonstrate its validity, and, in some cases, to fight to the death to bear witness to it.

The time is past to decide who possesses objective truth and who is in error. The time is also past to attempt to combine in some sort of cultural "stew" elements that we know from experience are incompatible. Let the whole garden of human creative achievements spread itself in its glorious diversity and variegated beauty. The seeking for TRUTH has divided humankind long enough, and at a cost that we do not have to withstand any longer. Let us all join in a common attempt, guided by our most advanced sciences and skills, to innovate, to create a so far nonexistent set of formulations and values that befits the present vast movement of centration that packs all nations and institutions together on our small planet floating lonely at a speed of 65,000 miles per hour in the chilling vastness of a space filled with waves of energies we are just beginning to perceive.

APPENDIX

developments of the system

The Korzybskian System and Cosmogenesis

The Korzybskian system is more easily accepted when viewed against the background of cosmogenesis. This background view is not easy to describe, but unless it is shared to some extent, many chapters of this book will be puzzling to the reader. They may seem to place too much emphasis on what is usually taken as of little importance—such as "quibbling" about the choice of words and proper mental models—and they may seem to ignore issues that are considered paramount and deserving of major concern—such as the conflicts among cultures, the control of our lives by automated machines, or the many ecological problems all over the world.

The view that we refer to is a parade of events, things, animals, and people that was outlined by Darwin over more than a century ago and that has been detailed by workers in many scientific fields, from geology and paleontology to political economy and developmental psychology. It is a constantly richer image of the world as a multidimensional process in evolution. A contemporary proponent of this view, Teilhard de Chardin, speaks of the cosmos as a phenomenon unfolding itself in space and in time, as a growing, expanding, and self-complexifying whole to which belong every object and living thing of which we can observe or think. Cosmogenesis (from *cosmos* meaning universe, and *genesis* meaning origin, production, creation) is his term for this all-embracing going-on. His postulates, which remind us of *Creative Evolution* and the èlan vital of Henri Bergson,

are tacitly accepted or expressed, in different terms, in most scientific books and articles of our generation.

In this world that is continually evolving, no single element ever appears identical to a former self; every individual event is necessarily unique in space-time. This is true of every human being as well, whether "insignificant" or whether leaving a distinct mark in world history. This is true of every personal undertaking, of every human activity; each is unique and never repeats itself. Every morning we wake up a slightly different individual; every day we perform a slightly different job; every year we become a slightly different member of many overlapping communities, some small, some large, which have also become slightly different environments. We have learned to accept the fact that at the atomic and molecular level nothing stays put; solid matter is made of relentless activity that carries on with no substratum other than itself. To this notion we must add the notion of growth; and we have genesis, change-creation and complexity increasing by self-determination in an irreversible manner.

Once we accept this view of the world, in which we see ourselves as a constituent, active, and relatively autonomous part, we have to discard any philosophy of life that fails to attune itself to cosmogenesis. Otherwise, we insert within the recesses of our deepest self a treacherous growth that tends to split us apart and lets us have no interior peace. Our semantic transactions have to be integrated in harmony with our world-wide environment, as we see it, or we shall suffer the pains of self-alienation, the tragedy of being a stranger in our own individual world.

In my estimation, a philosophy that fits well with the evolutionist view of the world is Bachelard's *Philosophy of No*, the philosophy that says "no" to its own conclusions and remains open in all directions that further thinking might take. It is a philosophy in motion, relentlessly creating not only a quantumlike series of static structures of knowledge-at-a-time but an uninterrupted restructuring process that gives ever new formulations to experience as it keeps unfolding itself in space-time.

With such a philosophy it becomes impossible to let general semantics gel into a final shape at any time and under any conditions. If the Korzybskian system is going to emerge as the typical methodology of the third conceptual revolution, it has to keep expanding, cor-

recting itself, and inventing new formulations as months and years tick away the passage of time.

Developments and Applications (1978)

The first edition of this textbook presented an unavoidable static picture of the system of general semantics as we were then practicing it at Viewpoints Institute, Los Angeles, California. It was already different from what was taught elsewhere under the same name, including the traditional seminars organized by the original Institute founded by Korzybski and located in Lakeville, Connecticut. It had already kept expanding and differentiating itself, as expected from a growing system (*see* Boulding's mental model No.5, p. 237 preceding). In fact, it had in the academic world, in keeping with mental model No. 6, gone into fields other than word usage and communication, which the term *semantics* has led many people to see as its proper location, although the qualitative *general* had been attached to it by Korzybski and his correspondent Arthur F. Bentley, for the clearly stated purpose of indicating a broader scope.

Finally it underwent a complete transformation, which was announced implicitly by Korzybski's constant usage of the term *epistemological* on his institute letterhead and by my own definition of general semantics as *up-to-date epistemology* (Chapter 2). This radical change was duly registered in the organ of the International Society for General Semantics, ETC, *A Review of General Semantics*, issue of June 1971, in an article entitled "Epistemics: A Time-binding Emergent from General Semantics."

This emergence had been prepared by a practice I followed consistently and still recommend. It is the policy of encouraging students not to limit themselves to the slavish repetition and application of the theorems offered in the textbook, but to assimilate them until they become internalized spontaneous methods, and then venture into developments of their own.

It happened occasionally in the workshops we conducted at Viewpoints Institure, and it happens also, I am sure, whenever people absorb the structure of the system and play with some of its constructs. Here are a few samples that came to my attention.

An elementary school teacher, Lee Bernstein, had barely been in contact with the notion of semantic transaction when she felt it could be represented by a different diagram, and, to her credit, "let herself"

invent a different one. Personally, I like it very much, but it would have required too many changes in my text and in my illustrations to adopt it in this book. I give it here, as Figure 14 , p. 358 in the hope that someone else will assess its value and try it as an alternate version.

Instead of surrorganism with an environment, to which are appended two receding small frames, one for the past and one for the anticipated future, she first drew four elongated ellipses to represent (as in the original diagram) the four main clusters of our activities. She then set the ellipses on top of three concentric circles, one representing the past, one the present, and one the anticipated future, meaning that our activities spread, as it were, on these three space-time aspects of our total life, taken in its full dimensionality. This gives a pregnant unity to the whole construct, and blends space and time in a manner that powerfully suggests the space-time formulation.

Another invention is the work of an engineer, Herbert Libow, and it reflects his tendency to think in mathematicams. We were discussing Teilhard's concept of the *noösphere*, where he bids us see the earth transformed into a different planet by the presence of humans and by their activities. This can be seen as a case of the structural more, of a transformation of what belonged anteriorly to a lower order of existence and is now, by the advent of humans, raised to a higher order of dimensionality. A very simple equation condenses the whole message:

$$\text{Earth}^{\text{Humans}} \neq \text{Earth} + \text{Humans}$$

In words, the earth elevated to a new power (Human Power) is different from the earth on which humans are simply added to other living forms.

In a paper published in the *General Semantics Bulletin*, David Bourland, Jr. tells how he happened to propose the change in English usage that he now calls "Writing in E-Prime."

The writer cannot claim credit for having made the suggestion which led to this formulation of the language E-Prime. Unfortunately, he cannot name the man who did. While on a fellowship at the Institute of General Semantics in 1949, the writer saw a letter written by a man from some

small town in Connecticut (Tollins?), which advanced an audacious suggestion. He recommended that we stop using the verb "to be" in any form.[1]

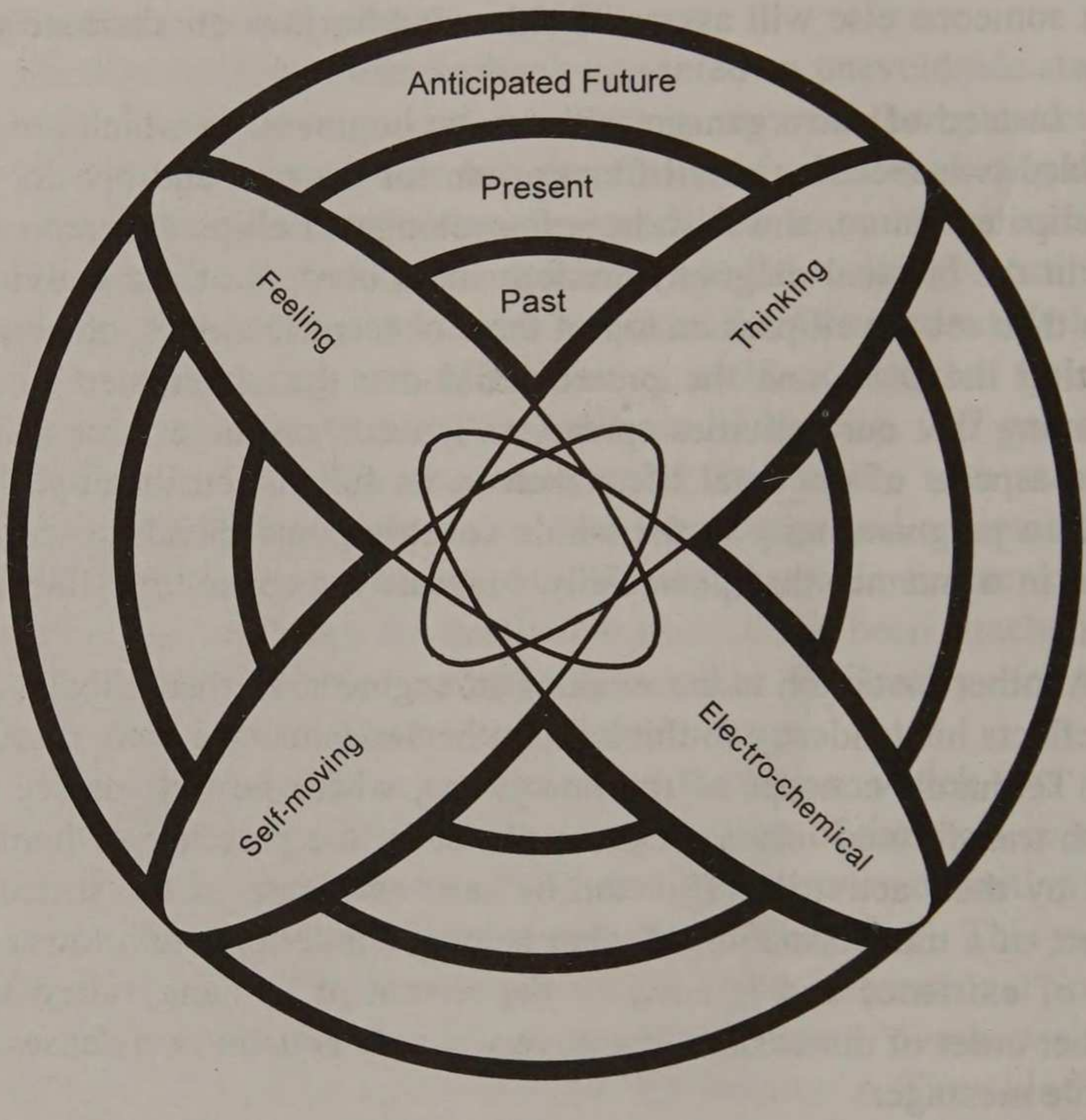

Figure 14. A new version of the semantic transaction diagram. It spreads the four types of activities over the three segments of time, past, present, and future, which involve their respective environments.

By E-Prime, Bourland means the usual English language minus the verb "to be" in any of its possible inflections. Grammatically speaking, this means giving up the use of the passive voice, much of the subjunctive mood, and some participal usages. The term E-Prime comes from mathematics. If we represent the whole of the English

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[1]David Bourland, Jr., "A Linguistic Note: Writing in E-Prime," in *General Semantics Bulletin*, Nos. 32 & 33, Institute of General Semantics, Lakeville, Conn., p. 113.

language by the letter *E*, and the verb "to be" and all its inflections ("am,""was,""are,""were," etc.) by the letter *e*, we can write the simple equation:

$$E'=E-e.$$

Thus the new restricted language, E-Prime, includes any noun, verb, adjective, adverb, of the regular English language, but excludes all forms of the verb "to be."

Using that language forces us to express ourselves in actional, functional, straight forward statements. It makes it practically impossible to remain in the clouds of verbalism.

For instance, instead of saying "He *is* aggressive," we will say something like this: "If I compare him to other people of similar background in similar situations, I find that he tries to impose his views more frequently than most of them do." The second statement requires more words, and we may feel that it lacks punch, but it puts the speaker back into the picture and it forces us to give the operational basis of our opinion.

With time and practice we will learn to make shorter statements in E-Prime, but we will also come to realize that we must take the responsibility for what we say and do. Bourland is even willing to rewrite The Declaration of Independence in the interest of semantic clarity. In the standard text, the first sentence reads: "We hold these truths to be self-evident, that all men are created equal, that they are endowed by their Creator with certain inalienable rights, that among these are Life, Liberty, and the pursuit of Happiness." A somewhat more prosaic version in E-Prime would read: "We make the following assumptions: All citizens have equal political rights. All citizens simply by virtue of their existence have certain inalienable rights, including life, liberty, and the pursit of happiness."[2]

Personally, I find Bourland's suggestion too sweeping. I retain two uses of the verb "to be," the "to be" of existence (the lamp is on the table) and the "to be" as an auxiliary (he is speaking).

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[2]Reprinted by permission from *Time*, The Weekly Newsmagazine; Copyright Time ins., 1969.

Epistemics: A Time-binding Emergent from General Semantics

At Viewpoints Institute in Los Angeles, founded by Ethel Longstreet and myself, we worked on two fronts: (1) improving the methods of teaching the Korzybskian system and of applying it to personal growth; and (2) expanding and clarifying the formulations of the system itself to the point where it became a new one, broader and deeper, and including the old one as a subsystem.

The improvement of the methods of teaching the expanding system and of applying it to the process of personal growth would demand a whole treatise beyond the scope of the present textbook. It is my hope that some day their creative initiators, Ethel Longstreet, Gary David, Ada Beth Lee, Annie Muller, and Verlin Heuton will find time to put them down in writing, so as to help teachers who cannot come and learn the new skills in a first-order experience.

The development of new formulations has already made considerable advances. In 1968, the ever-recurring theme of communication was taken up and treated in a more holistic manner than usual in a minibook published by Viewpoints Institute under the title *Communication as Creative Experience.* Its Chapter 10, "Communion as an Art," which the author felt was so esoteric that he hesitated to insert it, is now often taken as the topic most suitable for a first lesson. This is taken as an indication that the cultural climate is changing: many people are looking for something beyond clever communication gimmicks.

The first doctoral degree was granted in the field of Epistemics in 1975 through the Union Institute of Cincinnati. It was conferred upon Dr. Gary David who worked with me for many years. His thesis was a new development of what we called *participating*, and the participating stage of development, or stage five.

For the teachers who will be using *The Art of Awareness* as a textbook, there is an independent and yet closely related treatment of what we described earlier as psycho-logics (p. 40) that I do recommend strongly. They will find it in an article by Professor Melville Thistle, Carleton University, Ottawa, Canada, under the title *The Biochron.*

In the course of a full year of inquiry guided by the notions already acquired in a long study of general semantics, we gradually built, my advanced students and myself, a wide-ranging theoretical construct that eventually came out in a book, published by Harper &

Row in 1971 under the rather enigmatic title of *Breeds of Men.* The publishers added two subtitles to indicate the implications of the message. "Toward the Adulthood of Humankind," and "Post-Korzybskian General Semantics." It is a longitudinal study, along the time line of succeeding generations, of the stages of development of our Western culture fron our predecessors of 400 generations ago to ourselves in this closing fraction of the twentieth century. It describes the successive appearance of four cultural breeds and the unfolding of what Julian Huxley called the psycho-social evolution.

From such broad space-time considerations, it passes on to concrete suggestions on how to use this historical scale as a measuring device to evaluate our own semantic self, that of other people, the cultural age of educational and religious institutions, the obsolescence or the up-to-dateness of statements, theories, and plans of action.

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J. Samuel Bois

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