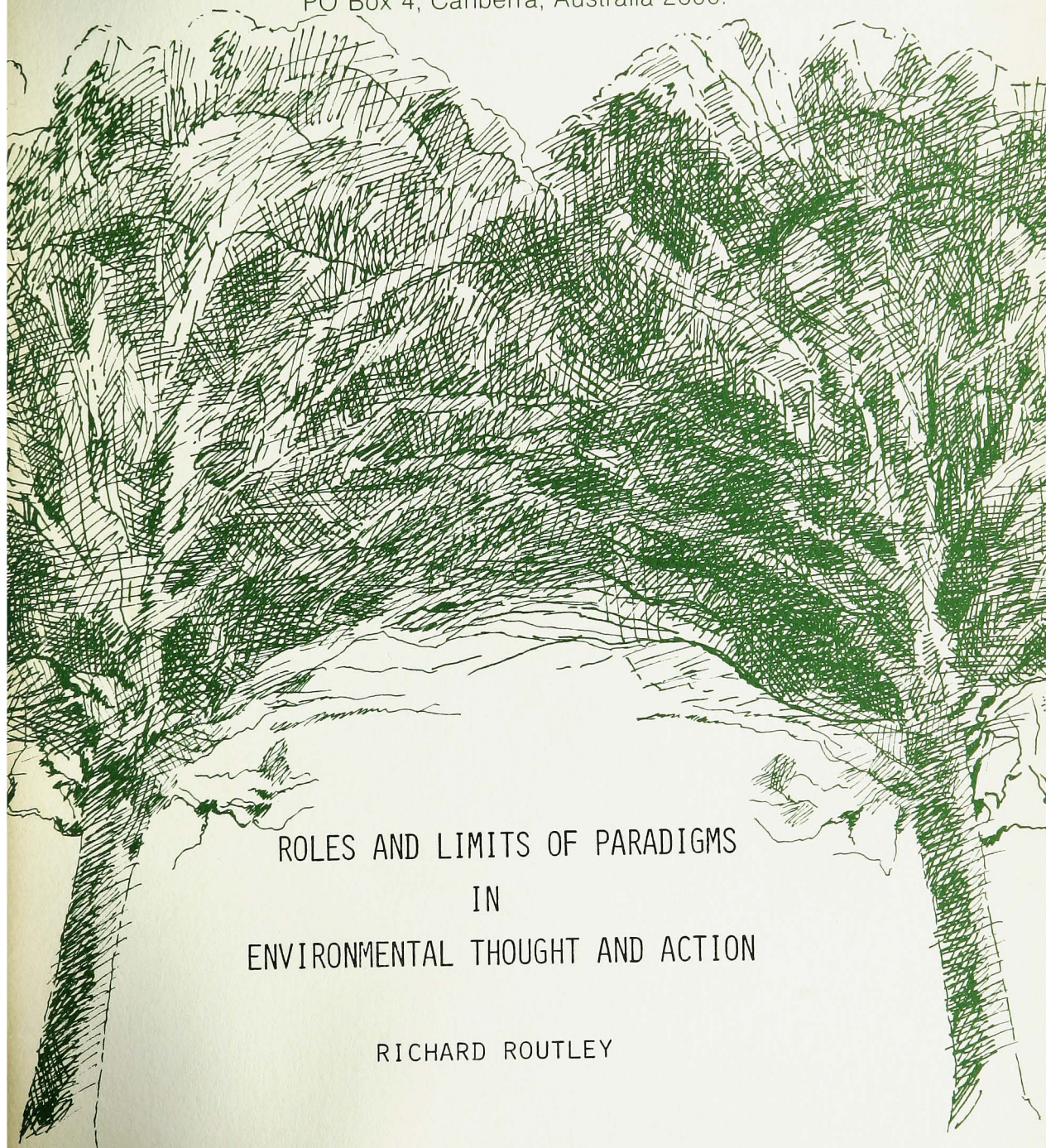


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ROLES AND LIMITS OF PARADIGMS IN ENVIRONMENTAL THOUGHT AND ACTION

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ABSTRACT

Actual practices in environmental debate, especially in the presentation of certain characteristic environmental arguments, lead naturally (as do practices in science considered in the philosophy of science) to theoretical structuring in terms of paradigms; and this in turn facilitates the statement of theses of much interest, e.g. concerning the state and dynamics of environmental thought, and offers the prospect of a framework for environmental philosophy.

There are, however, preliminary troubles with the notion of paradigm, especially the matter of disentangling the requisite sense from the host of senses Kuhn and others have introduced. It is argued that a paradigm is a certain type of model (in the logical sense); and that this one precise sense serves for all requisite work of the notion, and enables a more exact statement of much work in the philosophy of science.

What dominant and alternative socio-environmental paradigms are said to look alike, according to recent literature in the social sciences, is explained and also criticised on several grounds. A more complex picture of contemporary (and also historic) socio-environmental paradigms, which takes some account of the crucial role of organizations, is outlined, and problems with the determination of paradigms indicated and some solutions suggested. Paradigm-shift, value-shift, and other transition theses are assessed, and in this light the limited role of paradigms in environmental action is discussed.

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ROLES AND LIMITS OF PARADIGMS IN ENVIRONMENTAL THOUGHT AND ACTION.

§1. Some roles for paradigms in environmental argument and thought.

Sometimes those who differ over an environmental issue, be it forest destruction, or nuclear development, or species disappearance, or whatever, differ only in a shallow way, for example over calculations of utilities from a destructive strategy, over means to agreed ends, etc. But sometimes, and increasingly often, those who differ over such an issue differ in a deeper way as to fundamental assumptions. Towards the extremes of this, as the distance between those who differ increases, lie, so it is said, paradigm differences, differences as to underlying ideology, or world view, as it might previously have been put. This is one way into the theory of paradigm differences.

Another perhaps better way is this: -

Reflection on the way oneself and others argue concerning live environmental issues reveals that the argument can often be cast into the following forms:

1. From a proper environmental perspective, practice (development, method...) p cannot be justified;
2. But even from a conventional perspective, practice p is not justified (because, for example, when analysed it has an unfavourable cost-benefit analysis). Hence, practice p ought not to be continuing.

The argument is an elaboration of the scheme: $A \rightarrow B$, $\sim A \rightarrow B$, $B \rightarrow C \therefore C$ (where $B \rightarrow C$ represents the premiss that what is not justified ought not to be happening). Examples of live environmental issues that very naturally lend themselves to presentation in this sort of way are arguments concerning forestry practices, e.g. Australian woodchipping projects, arguments concerning nuclear develop-

ment, and arguments over dam construction. This is a way, in short, of trying to render deductively tight (probably a faulty aim) such arguments as that nuclear development isn't justified under environmental assumptions, it isn't really justified under the opposition's (non-environmental) assumptions either; so it isn't justified.

Evidently the form of the argument needs filling out, to explain what these "perspectives" are, and to show that they have the right properties, e.g. that the competing perspectives are suitably exhaustive to carry the argument. Moreover, the argument really needs elaborating to explain why the practices commonly persist despite such arguments (of a decisive sort). But such elaboration can be given: there are, at least in outline, sociological explanations of why even sound arguments with true premises often fail to prevail.

An account in terms of paradigms appears, at first sight anyway, to be able to accomplish all the requisite explanatory work. The different perspectives involved are competing paradigms, the Alternative Environmental Paradigm as against the Dominant Social Paradigm, both discerned, with lesser or greater clarity, in much recent literature. These paradigms are suitably exhaustive. Moreover, this competing paradigm picture can, with but little adjustment, explain why public projects, like forestry and electricity schemes and dams, proceed even if at a serious public loss and with a negative cost-benefit assessment as worked out within the prevailing paradigm. It is because - at a more superficial level - some private group somewhere with political influence stands to make a return, and because - less superficially - of a development and management Commitment (to put it mildly: 'mania' would sometimes be a more

appropriate term) within the prevailing paradigm which overrides economic criteria the paradigm yields.¹ Observe however the seeds of destruction of the picture within such explanations: for the realistic admission that elements of a paradigm may compete, and conflict be resolved by a ranking, already makes room for the hypothesis that two different if overlapping paradigms are operating, and thereby also raises the awkward question of identity conditions for paradigms. (As we all now know : no entity without identity).

Such an attempt to set arguments and issues within the picture of competing paradigms appears to have much to recommend it. Firstly, it reflects the way environmentalists often see the issues themselves, and the way they find themselves shifting grounds drastically according to the different parties they are talking with or against. Often, for instance, they regard themselves as pitted against (filthy) capitalists who stand to make (immense) profits out of offensive environmental despoliation or, more recently, against bureaucracies committed to narrowly economic and environmentally destructive developments. They then discover that the despoliation, as well as infringing environmental values, fails to pass conventional economic criteria; the despoliation can be condemned, not only on deeper

¹ For example, the wood production ideology of foresters, discussed in Routley² 75. Compare too Rodman's suggestion (80, p. 62) that the

dam-building mode of "water resource development" has taken on the character of a ritual elimination of nature that is unintelligible in terms of conventional economic rationality. Dams are, after all, massive monuments to man's technological ability to tame the wild flow of ["waste"] natural energy and to substitute it into socially useful functions (irrigation, hydropower, flood control, and the tamer forms of recreation)...

Of course in the full real-life picture there are other dynamic factors as well, e.g. projects may have acquired momentum while having appeared to be economically satisfactory, or while exponents of the projects have managed to project the illusion of satisfactoriness.

environmental grounds, but even upon a resource conservation model. The picture also reflects the way those who adhere to the dominant paradigm sometimes see the environmental debate, or rather confrontation, as going: there are those environmentalists who cannot be argued with because they refuse to admit rational assessment methods (i.e. those supplied by the dominant paradigm) or, a little differently, who adopt crazy and politically unrealistic values. The rift exhibits, in short, whichever way it is looked at, expected features of paradigmatic estrangement. Secondly, the paradigmatic picture offers the prospect of a general framework for environmental philosophy, in terms of which many apparently diverse problems and issues involved can be assembled and organized and a unified account of them, as all manifestations of the one deeper phenomenon, given.¹ For many environmental and social problems (e.g. those concerning indigenous peoples) have a common underlying structure.² Indeed the paradigm picture holds out the prospect of unification in much the way that earlier pictures, such as those in terms of forms of understanding, forms of consciousness, forms of life, and conceptual schemes appear to offer syntheses.

So it is a pity that the paradigm theory doesn't work at all well³ without many repairs, as efforts to present the picture in

¹ It would also help thereby in legitimating environmental philosophy. The competing paradigm picture has been latched onto by social scientists as a way of organizing discussion of an alternative interdisciplinary paradigm they want to promote: thus, e.g., Daly in support of a steady state economy (73, pp. 1-6) and Ophuls in introducing what is said to be an alternative political science. These organizational efforts likewise fail, as will appear.

² This Rodman has also pointed out in his work on forms of ecological consciousness (references to which are in Rodman as cited).

³ This is an understatement: in popular parlance, the paradigm stuff is, as it stands, a can of worms.

detail soon show. We encounter two main trouble spots. It is far from clear what the paradigms, or perspectives, look like in proper detail; and it is unclear that the different sorts of usually very incomplete objects that have been passed off as paradigms count, or ought to count, as paradigms (e.g. Kuhn even says that textbooks can be scientific paradigms, and Daly tries to present the book he edited in 73 as 'part of an emerging paradigm shift in political economy', p.1; but mostly the paradigms offered are very impressionistic objects with only a few features). It is worth some effort to try to remove these troubles and effect repairs, and not merely in order to reinstate the initial picture. For the question of what these paradigms, or perspectives, look like is in any case of much independent interest; for example in determining whether a given problem can indeed be solved under a different paradigm¹, in trying to get to the bottom of the (ideological) differences separating environmentalists from developers and economists; in trying to discern the new paradigm to which a change of consciousness is supposed to transport us and what was in the old paradigm we left behind, and in trying to evaluate respective positions; in trying to reveal the range of the possible and the feasible to those locked into one of the paradigms, especially the dominant one; and in trying to assess such theses as the factual transition thesis, that 'our culture is undergoing ... a major paradigm shift, a major transition to a post-industrial culture' and the normative transition thesis that 'our culture ... is in need of a major paradigm shift' or ought to be undergoing such a transition (the quotations are from Drengson 80, p. 225 and p. 223). It is important furthermore to

¹ Typically this will depend both on how the paradigm is defined and how the problem specified (cf. Rodman 80, p. 50): but it should not be too sensitive to specification.

look at paradigms, if we can, not only to set down how things ideological are, and are changing, but also in order to change things, in order to see in an organized way how and where to try to alter practices. For, like Marx, many environmental thinkers are not concerned merely with how the world is, or how to interpret it, but how to change it. Paradigms, as world views, can play a central (intellectual) role in such assessments.

But while it is no doubt interesting and important to determine certain paradigms, it is not easy to capture them in detail. In fact determining cultural paradigms (i.e. the paradigms pertaining to whole cultures and not merely to, or within, a discipline) is a difficult and demanding exercise in the history of ideas. There is moreover a preliminary trouble: being sure what paradigms are. Otherwise, since what is being sought is obscure, the search for paradigms will be that much the harder, and it will likewise be harder to know whether the search has been successful. The matter of what paradigms are, and are like, is similarly of independent interest, e.g. in the philosophy of science in the aftermath of the Kuhnian "revolution".

§2. Troubles with the notion of paradigm: disentangling the requisite sense. As already hinted, 'paradigm' has become something of a vogue term in the social sciences and associated reaches of philosophy. The term seems here to stay for the time being, though it will likely fade in the longer term in the way that one of its immediate predecessors, 'conceptual scheme', did. For the present, 'paradigm' has no real rivals, and wins by default as it were. None of the other terms in the general area will serve as well. Terms that would do, more or less, for the sweeping cases of cultural paradigms, such as 'worldview' and

'ideology' will not do for narrower applications¹, e.g. within special sciences such as political science. None of the other likely candidates, 'theory', 'system', 'position', 'viewpoint', 'perspective', 'archtype', 'myth', can really substitute or even fill all the places where 'paradigm' now makes sense.

So it is singularly unfortunate that the term is on the road to ruination. It now signifies a multitude of different things, and it has picked up some bad philosophical associations (with erroneous fallibilism and rival-ways-of-seeing doctrines).² The multiple ambiguity and associations are due largely to Kuhn, who partly severed the term from its original sense of example or pattern, and while putting the term to new useful work, has overworked it and given it too many diverse roles - with the result, among others, that some of the fabric woven with it falls to dust as soon as it is seriously touched.

As to excessive roles first, Masterman claims to distinguish at least 21 different senses of the term in Kuhn's small book. While not all these are that distinct and some reduction might be effected, still (too) many differences would remain. An idea of the diversity can be obtained from the three main groups Masterman arranges the 21 senses into (p. 65):-

1. A metaparadigm³ or metaphysical paradigm is, variously, a set of beliefs, a myth, a structure, a new way of seeing, an

1 In addition, 'worldview' tends to have the wrong senses, when it means 'view of life' or 'contemplation of the world', the meanings given in OED; and 'ideology', which has been corrupted by Marxists, literally means 'the science, or study, of ideas' and only by extension means - what is closer to, but still not at, what is often intended by 'paradigm' - system of ideas.

2 More popular uses can be bizarre, with e.g. a 'region on the brink of a new paradigm', and 'paradigm' said to mean 'a new set of circumstances': Evolution, Canada 1 (1) (1981), p.3.

3 The abbreviation is unfortunate, suggesting e.g. a paradigm at the metalevel.

organizing principle governing perception itself, a map, a determinant of a large area of reality, a successful metaphysical speculation.

2. A sociological paradigm is a universally recognized, or differently a concrete, scientific achievement; it is also likened to a set of political institutions, or differently an accepted judicial decision.

3. An artefact or construct paradigm is an actual textbook or classic work, some instrumentation or a supplying of tools: it is also a grammatical paradigm, an analogy, a gestalt figure.

Quite a tangle. Nor are the groupings very satisfactory; for instance, a successful metaphysical speculation grouped under head 1 is an achievement - which is given as falling under 2 - as is a classic work, grouped under head 3; a map, put under 1, is not (except in an extended sense) a metaphysical object, but more like a construct and would be better located under 3 than 1; and so on.

Subsequent critics, including Masterman herself, have increased the size of the thicket. Although 'Kuhn ... never ... equates "paradigm" in any of its main senses, with "scientific theory"', so Masterman claims (p. 67), part of the point of paradigms being that they are pre-theoretical, critics of Kuhn associated with the London School of Economics have equated a paradigm with a basic theory or a dominant theory, and differently with a research programme. Others have equated paradigms with what were, with little doubt, their (terminological) antecedents, conceptual schemes¹, and models and

¹ Smith, p.19 ff, connects Kuhn with Conant (Kuhn was instructor for some of Conant's classes). Conant made heavy use of the notion of conceptual scheme in his account of science.

The history of the recent use of 'paradigm' in philosophical theory remains obscure. It has been suggested that Kuhn derived the term from Wittgenstein, who seems occasionally to have used it (or one of its German equivalents) in the relevant sense. For example, he says in Philosophical Remarks (p.346), 'What people are really after is something quite different. A certain paradigm hovers before their mind's eye, and they want to bring the calculus into line with this paradigm'. The different more historical use of 'paradigm' that features in the paradigm case argument also apparently derives from Wittgenstein and Moore.

The notion of conceptual scheme has of course several precessors in European philosophy; forms of understanding (e.g. Kant), forms of consciousness (e.g. Marx); forms of life (in one sense, e.g. Wittgenstein).

metaphors (Drengson, p. 223; cf. also Masterman, p. 79, recalling the title of Black's work). A glance at what is done by those who, like Drengson, claim to be employing 'the Kuhnian notion of paradigm' (p. 223) or also, like Masterman, to be clarifying 'the nature of a paradigm', will indicate how slippery the ground is in the paradigm thicket. Having identified a sociological paradigm as a (scientific) achievement (p. 65), Masterman soon goes on to say that 'seen sociologically ... a paradigm is a set of scientific habits' (p. 66) or just 'a set of habits' (p. 67). But to equate an achievement with a set of habits is just a category mistake; e.g. one of these has habits as members, but an achievement cannot significantly do so, a textbook can (almost) be an achievement, but not significantly a set of habits, etc.¹. This category error originates with Kuhn, whose only implicit definition of a paradigm is as an achievement (Kuhn, p. 10, Masterman, p. 66), an achievement with these two features: it is first 'sufficiently unprecedented to attract an enduring group away from competing modes of scientific activity', and secondly, 'sufficiently open-ended to leave all sorts of problems for the redefined group of practioners to resolve' (p. 10). This lax account lets through many examples that should be excluded, e.g. kidnapping of batches of scientists, conversions at, for instance, Billy Graham crusades of groups of scientists, etc.² Furthermore it too narrowly excludes paradigms that do not emerge from scientific activity but, for example, out of philosophy or myth. In short, Kuhn's definition affords neither sufficient nor necessary conditions. What Kuhn goes on to say, he 'means to suggest' is nearer the mark than his definition,

¹ Removing the error also removes Masterman's circularity argument given on p.69.

² Similar objections destroy familiar attempts to define paradigms in terms of features of the two features, for instance (as in Davell) in terms of premisses shared by a community of scientists. Also, paradigms are then ascribed to communities generally.

namely,

that some accepted examples of actual scientific practices – examples which include law, theory, application and instrumentation together – provide models from which spring particular coherent traditions of scientific research (p. 10).¹

The key term here is models. Paradigms are, or provide, models of certain types which carry research programmes as directives.

Then we can luxuriate, for a little while, in all the rich ambiguity of the term 'model' (see OED, and for the very diverse uses of the term in the sciences Apostel 61). Then, too – partly for the preceding reason – many of the uses to which paradigm is put, uses which on other accounts are nonsignificant or unintelligible, become meaningful and intelligible, e.g. talk of the 'breakdown of a paradigm by the emergence of an anomaly within it deepening into crisis' (Masterman, p. 82) and of 'new paradigms of human-environmental relationships' (Drengson, p. 222). Such talk does not make too much sense in terms of most of the equations Drengson offers – of paradigms with symbols, ideals, metaphors – or any of the philosophical accounts Masterman proposes, through achievements, artefacts, literal pictures, etc.² But it can all be made good, in one way or another, in terms of models in pretty much the modern logical sense, and one can be more specific about the structure of the models.³

1 The account indicated only applies to moderately well-developed cases; for in earlier stages there may be no laws, and little theory.

2 Masterman says, surely mistakenly, that 'philosophically speaking, a paradigm is an artefact which can be used as a puzzle-solving device ...'. The account she suggests of a crude paradigm as, for example, literally a picture, differs from Kuhn's main suggestions, and seems to lead away from what is required for an account of scientific practice. Her comparison of paradigms with Black's archetypes, introduced in explaining models and metaphors, is nearer the target.

3. (for footnote 3, see p. 10.1)

3 The point appears to be valid for almost all of the paradigm jargon in the social sciences, once preliminary rectification has been done. Often this preliminary work will be quite extensive, as Ritzer 75 illustrates. According to Ritzer the following definition is the basis of his 'entire book' on sociology:

A paradigm is a fundamental image of the subject matter within a science. It serves to define what should be studied, what questions should be asked, how they should be asked, and what rules should be followed in interpreting the answers obtained. The paradigm is the broadest unit of consensus within a science and serves to differentiate one scientific community (or sub-community) from another. It subsumes, defines, and interrelates the exemplars, theories, and attitudes and instruments that exist within it (p. 7).

Yet two pages earlier he says of the first sentence, which carries the definition, that 'this definition, simple and manageable' as it is, is of such a general nature that it would prove useless were we to apply it in any depth. 'Therefore we must look for a more precise definition of this pivotal concept' (p. 4). Evidently some consistencizing is required before the merry business of characterising such an "image" in terms of a discipline-wide model is undertaken.

To my disgust, it looked, for a time, as if this claim would have to be withdrawn, even before a beginning has been made on assessing its adequacy. For instead of being able, as at first naively hoped, to consult books on model theory and there locate a suitable definition of model, investigations came to a rapid dead-end. In a sample impressionistic survey I went through all the books specifically on model theory in the University of Victoria library (a small finite number) and encountered not one general definition. For the most part, what was offered was at best an account of models for first-order extensional languages, a far from adequate class for current purposes.¹ Fortunately, I then recalled some work of Routley (e.g. 75) which purports to give a universal model theory, good for any language. What the universal theory does is, in essence, to add to the sort of models adequate for second- and higher-order extensional languages a class of worlds, i.e. it combines type-theoretic models, reconstrued as operating for free λ -categorical languages, with intensional (modal or relevant logic) models.² The general idea is, however, the same as in the more familiar first-order case, namely the model M consists of both a relational structure or system S - which includes a class of

¹ Finding a suitably general definition of model is rather like trying to find a satisfactory definition of market (or often any definition at all) in mainstream economic texts uniformly advocating "market economies" - a possible needle in a haystack.

² A universal model is representable as a structure $M = \langle T, K, D, \nabla, I \rangle$ where T , the base world, is in K , the set of worlds, D and ∇ are domain and subdomain functions from structure labels whose values are nonnull sets, and I is an interpretation or valuation function. For full details see Routley 75.

worlds possible and not - and an interpretation or valuation I on S, which at least verifies, i.e. makes true, or forces, a given - generally any given - class of statements of the language. In fact, a model can distinguish much more than a class of truths; it can also, when suitably characterised, yield the class of non-significant assertions, the class of assertions neither true nor false, the class of those that are both true and false, the class of rules endorsed, and so on. It can, in short, provide a full semantical theory, and when contextually enriched the pragmatics as well.¹

In terms of the general theory of models, recent philosophies of science presented in terms of paradigms - more importantly, what seems right in them - can be re-expressed more exactly (or with the usual, commonly justified, logical illusion of precision). Of course so re-expressed, the recent philosophies cease to look quite so new or original, since model-theoretic accounts are a tiny bit older: but then originality and newness tend to be much exaggerated in philosophy, much of philosophy (that not adapted to advances in science) consisting of not substantially more than terminological upgrading of older positions.

In the refined sense, a paradigm just is a model of a certain type - which type has yet to be clarified - just as certain American dictionaries say it is, but without the refinement, or clarification. So the account does have natural language roots.²

¹ This claim has, like most large claims, been challenged, but not refuted.

² As Vendler and Austin have taught us, a careful perusal of dictionaries can take us a long way in philosophical production. In this case the process was reversed. But for Smith's claim (which on the strength of some Webster's dictionaries such as the New Collegiate, I doubted) that 'paradigm' meant 'model' 'according to the dictionary', I should not have persisted with further dictionaries: Webster's New World confirms Smith's claim.

Given the account, much - not all- of the new talk about paradigms can be straightened out or made good, with of course some terminological bridges inserted, e.g. a textbook or classic work is not a paradigm, but supplies a paradigm; an achievement is not usually a model, but what is achieved can likewise, if suitably propositional, supply a paradigm; etc.¹ In rather converse fashion, a paradigm can give a set of (scientific) practices - Masterman's "set of (scientific) habits" - through the class of methodological rules the model endorses. One of the distinguishing features of any model that serves as a (scientific) paradigm appears to be that it endorses a set of (methodological) rules and, thereby, delivers a set of (scientific) practices. It can simply be made a necessary condition that a model be a paradigm that it endorse a nonnull class of (methodological) rules.

But note that the adequacy of the ambiguous OED account of 'model' to bring out all the required features of paradigms does not establish the adequacy of the refined sense for the same purposes, without further ado. To show the adequacy of the refined sense it really needs to be established that all relevant uses of 'paradigm' can be explained in this way. Only a promise that this can be done has strictly been given (since it is a considerable diversion from the main objectives). Note further, however, that the refined sense solves certain problems that the OED account leaves open, e.g. the small matter of identity conditions. Paradigms are identical iff their models are. Then too, in terms of underlying models, it is straightforward to define other needed actions; e.g. there is a paradigm-shift where one model is no longer adopted and a (significantly) different model is adopted (adoption being defined below).

¹ Forms of understanding, consciousness, ecological consciousness, etc., can also be accounted for as assimilated (or internalised) models of the same order of generality as cultural paradigms. By so bringing together forms, conceptual schemes, paradigms, presuppositions, and so on, the general theory of models goes some way to unifying important underlying models of much modern philosophy.

In this sort of (almost superficial) way not only much of what Masterman has to say about paradigms in the philosophy of science, but also a goodly amount of what Lakatos 70 says about research programmes can be absorbed.¹ For, according to Lakatos's story (p. 132), a research programme consists of methodological rules, some of which tell us which paths of research to avoid (negative heuristic), and others which paths to pursue (positive heuristic). Then a research programme with respect to a given paradigm $\mathcal{P}$ is a (sub)set MR of the rules $\mathcal{P}$ endorses; while $+H$ and $-H$ are subsets of MR such that $+H \cap -H = \Lambda$ and the rules of $+H$ and $-H$ specify respectively research to be pursued and avoided.² The latter characterisation may seem rather nebulous - it is pretty nebulous - but it is all that Lakatos offers by way of characterisation, though it is accompanied by a couple of examples. However, both $-H$ and $+H$ have further important roles (some of which suggest, what will have soon to be introduced, (temporal) sequences of models). For example, $-H$ determines a hard core, HC, among the statements not false on the model, namely those $-H$ forces to nonfalsity. A (sub) class of statements outside HC constitutes the protective belt, of auxiliary hypotheses which are not shielded from falsification. Of course, as in Lakatos, this is mostly suggestive terminology: tighter conditions on all these objects are really required.

To include other things Lakatos introduces, and leading features of Kuhn's theory including his account of normal and abnormal science, it is necessary to consider sequences $\{\mathcal{P}_i : i \in I\}$ of paradigms. According to Kuhn's theory the progress of science is represented by sequences of operational paradigms, i.e. paradigms which are accepted,

¹ The same applies to what Laudan said much earlier about 'research traditions', the body of knowledge taken to be evolved according to its problem solving capacity.

² This can be sharpened through the formal notions of acceptance ($\vdash$) and rejection ($\dashv$).

i.e. have a sufficient support basis. Kuhn's other requirement on when 'achievements' are paradigmatic, that they carry a research programme, is already satisfied by virtue of the definition of 'paradigm'. But pursuing this way leads out through the theory of development, a way followed elsewhere, but not our present route.

To include the social or cultural paradigms of interest in the social sciences and in environmental philosophy, some alteration and also broadening of the class of models indicated by Kuhn and Lakatos and suggested primarily by single discipline paradigms in the physical sciences, is essential. In particular, cultural paradigms do not carry research programmes nor do they give rise to 'particular coherent traditions of scientific research': such characteristic features of Kuhnian paradigms as carrying detailed research programmes are mostly entirely neglected by social scientists, who take over what they claim to be the Kuhnian notion of paradigm. However, more generously construed, paradigms may be said to carry elaboration procedures, which include defence strategies, etc.; and these can be taken to be given, once again, by methodological rules. Furthermore, what social scientists and philosophers usually want to include among paradigms are objects much more like what are sometimes accounted world views or whole-subject views,¹ ideologies or (general) conceptual schemes - pretty sweeping perspectives or outlooks, involving values and value assumptions, beliefs and practices, and influencing ways of perceiving issues.² Perusal of what social scientists have to say about

¹ Thus, e.g., talk of economic paradigms, political science paradigms, sociological paradigms, where these are intended to apply in each case to the whole subject. There are also competing paradigms within these subjects.

² 'Perceiving', as 'seeing', in the senses linked to 'understanding'. This carries no commitment to different ways of hearing, smelling, or seeing everyday medium-sized material objects.

paradigms, and the senses of 'paradigm', helps to confirm this. Not uncommonly they distinguish, among senses, a 'broad sense of "paradigm"', for example, along the lines Rodman characterises a "cultural paradigm" or "dominant social paradigm", as consisting of the 'basic beliefs, values, political ideals and institutional practices of a cultural epoch' (p. 75). Often paradigm, in this broad sense, is equated with world view (e.g. Ophuls, pp. 222-3; Catton and Dunlap, p. 16). What distinguishes models (or interpreted systems) of this type is certain of the propositions or assumptions involved which concern the way the world is or is viewed and/or the way it should be - what can be called world propositions. Thus, for example, the first assumption of what Catton and Dunlap refer to as 'the Dominant Western Worldview', in contrast with the 'New Ecological Paradigm', is the following world proposition concerning humans: that people are fundamentally different from all other creatures in the world, and have (and rightly) dominion over them (see table 4 below).

The refined sense of paradigm introduced, as a type of model in the technical sense, can accommodate all this, with some elaboration. To indicate how:- the class of rules the model endorses will include both elaboration procedures (which will lead to new models) and rules giving practices. Among the domain of objects the model has will be a subdomain of values, concerning which the model will determine value assumptions, in particular values held, through the interpretation function. A world paradigm will validate some world propositions. A creature *z* adheres to a paradigm if *z* accepts its values (i.e. assumptions as to values held) and believes its assumptions; in brief, if *x*'s revealed beliefs include its assumptions. And so on. Airy-Fairy stuff, but with the ring of science and logic.

§3. What the dominant and alternative world paradigms are said to look like : and problems with their determination. There is now an abundance of literature about or alluding to paradigms or paradigm changes, which scarcely addresses the question of what change is being suggested, what goes into the prevailing or the new paradigms (e.g. Ophuls, p. 233 ff., Samuelson, pp.786ff., Easlea, to take just three examples). Even where some details are set down¹- invariably in shorthand and often virtually in note form - there is much gesturing as to how things are to be filled out, if they are at all. This makes testing of the claims made, assessment of theses about paradigm transition, for example, difficult or impossible. To know whether and what paradigms are adhered to, and whether they are shifting, it is generally necessary to know what these paradigms involve in some detail, how they are shifting, etc. Otherwise it is like asking about the foundations of a social science (or even a natural science): one is on shifting sand; there is the shifting bit.

Fortunately for the present derivative enterprise the occasional philosopher has tried to articulate dominant and alternative paradigms, notably Drengson, and the supposed contrast has been tabulated by certain sociologists (who are less bothered about looking crude or silly than philosophers). Those sociologists who have felt obliged to test hypotheses, have been - have been forced to be - more specific and precise (and thereby sometimes more simple-minded) about these things than philosophers and political scientists; and we can begin at the more exact end of recent work with some of their tables, which usually are presented together with a small but very incomplete commentary. It is widely assumed, though the evidence tells against this, that there are just two rather monolithic world paradigms, the old or dominant and the new or alternate (sometimes both are said to be (co)dominant). The intended contrast is shown in synoptic form in the following figure:-

¹ As, for example, in the case of social psychology by Rosnow.

TABLE 1. ATTEMPT 1 (Cotgrove and Duff 80, p. 341¹).

<u>Competing Social Paradigms</u>		
	<u>Dominant Social Paradigm</u>	<u>Alternative Environmental Paradigm</u>
CORE VALUES	Material (economic growth) Natural environment valued as a resource Domination over nature	Non-material (self-actualization) Natural environment intrinsically valued Harmony with nature
ECONOMY	Market forces Risk and reward Rewards for achievement Differentials Individual self-help	Public interest Safety Incomes related to need Egalitarian Collective/social provision
POLITY	Authoritative structures (experts influential) Hierarchical Law and order	Participative structures (citizen/worker involvement) Non-hierarchical Liberation
SOCIETY	Centralized Large-scale Associational Ordered	Decentralized Small-scale Communal Flexible
NATURE	Ample reserves Nature hostile/neutral Environment controllable	Earth's resources limited Nature benign Nature delicately balanced
KNOWLEDGE	Confidence in Science and technology Rationality of means Separation of fact/value, thought/feeling	Limits to science Rationality of ends Integration of fact/value, thought/feeling

¹ This modest table is the most comprehensive I have encountered in the literature.

As you can readily see, this highly abbreviated presentation¹ makes many questionable assumptions, some of which will be brought out in what follows. To begin, the table, which Cotgrove and Duff present in this bald form, leaves much unexplained, e.g. the last two pairs of contrasts are not explained at all, though their import is not completely evident. Thus it is quite unclear that the integrations suggested in the final item are a necessary part of an alternative environmental paradigm at all.

The competing paradigms are in fact far from exhaustive of contemporary paradigms, in several respects. One, which is of crucial importance for the arguments sketched at the outset, is that main present-day economic alternatives to the neoclassical economic position the items listed under Economy crudely represent,² are not included among the two alternatives. But it would hardly suffice to argue that because large-scale nuclear development is justified neither under environmental alternatives nor under neo-classical assumptions, that it is no way or nowhere justified, without at least considering other major ideological positions under which such development is often claimed to be justified, namely state socialism with its "command" not "market" economy and democratic socialism with its mixed market-nationalised economy. Upon setting out these economic variants upon the Neoclassical, or American, Social Paradigm (the Mainstream Paradigm in Samuelson's terms no doubt, since it reflects "mainstream economics"), "the" dominant social paradigm splits into three impure social paradigms, the other two being the (official) State Socialist, or Eastern

¹ Consider, for example, public interest and safety entries. The first presumably means that the economy is operated - somehow - in the public interest.

² Even on a contemporary socialist view, the market forces, for example, would be regulated; and so on.

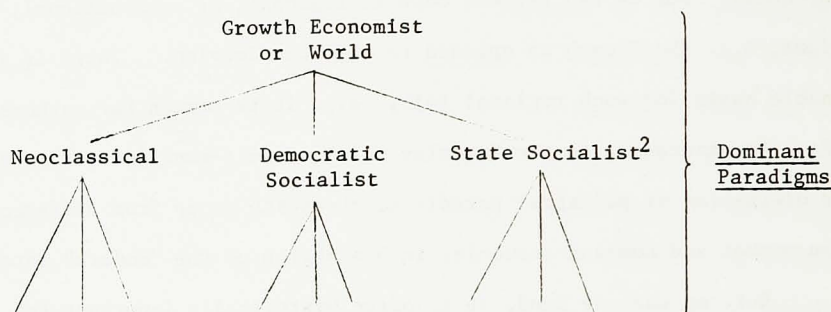
European, Paradigm and the Social Democratic, or Western European, Paradigm, these latter paradigms differing primarily as regards items listed under ECONOMY (e.g. profit is replaced by surplus value). While the listings 'rewards for achievement' and 'differentials' stay put (as they would not under communism), other items listed do not.

It is by now evident that we can readily reach a quite embarrassing position for those who suppose that paradigms exist but like to keep their ontologies clean. For not only can we go up, to an over-arching dominant world paradigm, which drops out continental economic differences, but retains the large area of overlap (under headings other than ECONOMY); but we can proceed down to regional, or even national, paradigms, e.g. the French as opposed to the Scandinavian. There is a reasonable basis for such regional talk; e.g. it is common for authors to refer, for instance, to the Yugoslav model of self-management. Rodman, in his discussion of political paradigms, chooses to go up from differences between market and command economies in his sketch of the "modern" paradigm.

But, on the one hand, it is often historically important (as Rodman is aware) to include factors of economic significance—for instance property and interest as well as (certain) markets are crucial elements under the Enlightenment paradigm of the 18th Century (i.e., in effect, classical economic theory furnished the economic assumptions of that paradigm)—if the paradigm is to have an appropriate explanatory role (in a history of ideas setting). What Rodman manages to reflect (see table 2) is not "the" modern paradigm, which has evolved in a sequence from Renaissance through Enlightenment to Colonial Capitalism to its contemporary successors, but an amalgam consisting primarily of a common denominator of the modern sequence, i.e. certain common elements of these evolving paradigms, with, however, lapses to elements which are not common (e.g. under heads 2 and 3 in table 2 below).

On the other hand, for some arguments, e.g. as regards New Zealand forestry, it is important to consider quite local markets. So which are the paradigms: the Dominant World Paradigm, or the three continental¹ paradigms, or the models that fall under them, or ...? The answer, at least from the point of view of object-theory, is easy: All are, so long as they satisfy the characterisation of paradigm. But the lower models will not count as world paradigms if the propositions they verify are regionally restricted.

Paradigms have, to an interesting extent, a tree structure, as the dominant case reveals:-

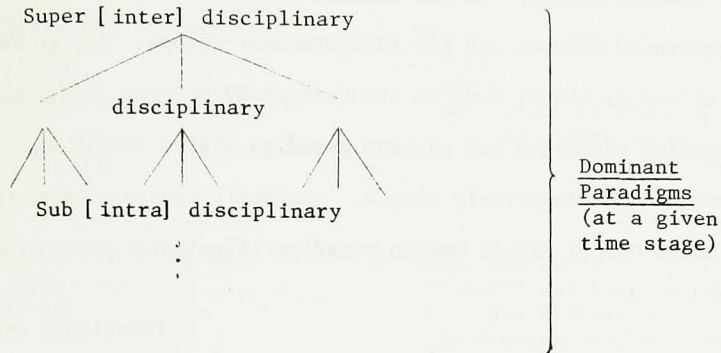


Discipline or subject paradigms (of the sort on which Kuhn focusses) also

¹ These are entirely northern continental paradigms. There are no comparable southern (continental) paradigms, for the southern continents are dominated (economically and militarily and not independently thereof) ideologically by the north. Needed southern challenges to and overthrow of characteristically damaging northern paradigms (of political economy, and all so determined thereby at least) will be considered elsewhere.

² Strictly, at this level there is a gradation of positions, with pure market and pure command economies at the extremes. Similarly at lower levels, there are often gradations, as the data compiled in table 3 helps to reveal. With paradigm contrasts, frequently a black or white, or few-colour, picture has been imposed on a full-colour situation.

fit in, at each time, to a tree structure, of the following form:



Such paradigm trees will of course graft onto the cultural paradigm tree. The structure of paradigm interrelations is still more complex, because at many nodes in dominant paradigm trees there are rival paradigms to the dominant paradigms, and because sometimes there are various competing paradigms with none dominant. The latter appears to be the situation in sociology and political science, where various "paradigms" (structural-functional, etc.) vie for dominance (see Ritzer 75 and 81). The more complex picture can be envisaged as that of a paradigm forest with comparable tree nodes interlinked with vines; and in the forest will occur some dominant trees (with the structure diagrammed above, but upside down).

Do rival or alternative paradigms also decompose into constellations with tree structures? They certainly decompose, but into many intertwined trees. For there is not, it certainly seems, a single alternative environmental paradigm, but, to be a little more accurate, various different suggestions for alternatives to the dominant paradigms. The modelling of culture or ideologies in terms of paradigms tends to give a misleading impression of monolithic and uniform positions, like the two paradigms that appear in several presentations of the contemporary

ecological predicament, or the one paradigm that covers each past period of historical interest, e.g. the (dominant) paradigms lightly sketched (by Rodman, Routley² 80 and others) for Classical Antiquity, for Renaissance Europe, and for Enlightenment Europe. But at least for turbulent intellectual times, such as 4th Century BP Greece, there appear to have been competing paradigms and perhaps paradigm shifts occurring; so the picture presented is deceptively simple. Rodman's contrast of a single Classical paradigm with a single Modern paradigm illustrates this point (and others):

(continued overleaf)

TABLE 2. ATTEMPT 2 (after Rodman 80).

	(Dominant) <u>Classical Paradigm</u>	(Dominant) <u>Modern Paradigm</u>
IDEALS	1. Virtue and its aspects: { Wisdom { Justice { Temperance but NOT: { wealth { power { sensual pleasures 2. Self-sufficiency for: { Individual { Polis 3. Emphasis on relatively "spiritual" lifestyle	1. Mercantile virtues: { Wealth { Power { Possession of property { (of declining import) 2. Scope for individual: { Liberty and freedom (with qualifications) { Toleration (within limits) 3. Human (self) realization, in part through domination and transformation of nature
EXEMPLAR	Sage and monk	Entrepreneur and technocrat
FURTHER THEMES	1. Limits on { City size { Wealth { Poverty { Individual freedom 2. Old Differential Imperative (i.e. maximization of species-specific differences), achieved by humans transcending their animal and vegetative nature, and by the domestication of wilderness 3. Cosmic control of universe: teleological explanations often required 4. Doctrine of mean: virtues as the mean between extremes Justice as: { Keeping one's place { and performing one's function { Giving everything its due	1. No limits: freedom as progressive liberation of Man from traditional and natural limits¹ 2. New Differential Imperative, achieved by human domination of nature, and monocultural reduction 3. Mechanistic explanations only 4. Economic-technocratic rationality 5. Nature a natural resource with no intrinsic value 6. (Other) Animals as machines

¹ The no-limits theme has to be handled with some caution (more than Ohpuls, e.g. observes). For neoclassical economic theory is based upon a scarcity assumption. While scarcity and limits can, to a sufficient extent, be avoided by substitution (which Ophulsscarcelly considers), scarcity can never be removed because (so it is mistakenly assumed) human "demands" are unlimited.

There were, however, rival paradigms with some support base in classical times as in contemporary times. For example, there appears to have been a Greek counter-culture, in the form of the Cynic movement, with very different values, assumptions and practices from those of the dominant position now portrayed to us primarily through Plato and Aristotle. The problem this makes for Rodman is, however, easily avoided, either by adding the qualification dominant (bracketed in the heading above) or else doing what often appears to be done (Kuhn included), equating paradigm with dominant paradigm. (Then other "paradigms" become, say, paradigmatic models).

The contemporary "Alternative Environmental Paradigm" fragments to such an extent under examination that there is room for genuine doubt as to whether there are alternative models with requisite support to count as operative paradigms. Of course there are alternative positions and models. Reaction to the contemporary environmental predicament has led to a wide range of proposals and positions, ranging from far-left-leaning anarchist positions (e.g. Bookchin), to far-right-leaning state-authoritarian positions (e.g. Hardin, Heilbroner), to positions (like Rothbard's market- and property-based anarchism) which profess to be neither right-leaning nor left-leaning and which may contain a genuine mixture of leftist and rightist elements, to of course inconsistent positions (such as Ophuls' appears to be) which try to combine, for instance, centralist governmental control with decentralist nongovernmental freedom. Because of the variety of models and positions indicated in the literature, the so-called "Alternative Environmental Paradigm", compiled (as the sociologists' table appears to be) by listing opposites - of a sort - for each element of the Neoclassical Paradigm, falls apart. Alternative Paradigms are far from uniquely determined: there is a variety of alternatives most of which are not operative, but some of

which may be. Consider, for example, the Resource Conservation position (considered e.g. in Rodman and Routley² 80) based on long-term human interests. While outside the dominant paradigms and sharing some features with Cotgrove and Duff's Alternative, the position diverges fundamentally from it, for instance as to whether the natural environment is intrinsically valued. The particular steady state economy Daly has presented in several places (e.g. 80, which contains references to other work) as 'an emerging paradigm', and which has some support, especially among scientists, could serve as illustrative, since it is left unclear what else but steady state conditions go into this incomplete "emerging paradigm". In principle, Daly's "paradigm" need differ from the Neoclassical Paradigm only as to growth and reserves assumptions¹, and so would afford only a rather shallow alternative. Likewise, diverging from "the" Alternative, and sometimes committed only to a shallow alternative, are many right-leaning environmentalists who (persuaded by the "tragedy-of-the-commons" or similar arguments of a prisoner's dilemma cast) believe that solutions lie through powerful central governments with tight controls incompatible with

¹ Daly defines a steady-state economy by four (unsatisfactory) features:

<u>Constancy</u>	{	(1) a constant human population
<u>Requirements</u>		(2) a constant stock of artefacts
<u>Value</u>	{	(3) the levels at which (1) and (2) are to be constant
<u>Assumption</u>		are sustainable for a long future and sufficient for a good life.
<u>Minimization</u>	{	(4) the rate of throughput of matter-energy is reduced
<u>Principle</u>		to lowest feasible level.

These requirements would presumably bring much else in their train. In fact, requirement (3) appears difficult to satisfy without major political changes. But if only (1) and (2) were imposed, without (3), then severe distributional issues could arise along with probable political instability.

participative structures and egalitarian practices. The Alternative proposed comprises then a special package which would not be accepted in toto by many critical environmentalists. (It would appeal to some of those favouring a form of small-scale communism).

It may begin to look, then, as if there is but a flimsy case for discernment of the Alternative Paradigm. Certainly there appear to be interesting theoretically coherent positions of one sort or another, one presumably corresponding to the Alternative. There are paradigms, some of which need working out, but do any of them command a sufficient support base to be operative? Evidence that they do has not so far been assembled, it seems. The data that has been assembled shows attitudinal variations, along several dimensions, from themes of dominant paradigms, as indicated in the following table, which reflects Cotgrove and Duff's evidential base much more accurately than table 1 does:-

TABLE 3 (from Cotgrove & Duff 81, p. 99).¹

A. WEALTH CREATION				LIMITS TO GROWTH
1.Economic growth	o+*	Δ		No economic growth
2.Unselective production		o	*+Δ	Selective production
3.No limits to growth		o	*+	Limits to growth
B. AUTHORITY				PARTICIPATION
6.Management		o	* Δ +	More say at work
7.Needs of industry			o* +Δ	Satisfying work
13.Government		o	*+Δ	Participation
14.Experts		o	* +Δ	Participation
C. MARKET				NON-MARKET
5.More law and order	o	*	+Δ	Less law and order
9.Achievement	o	*	Δ +	Other criteria
10.Market		o	*Δ +	Non-market
15.Differentials	o	*+	Δ	Egalitarian
D. INDIVIDUAL				COLLECTIVE
4.Individual		o	* Δ +	Community
11.Individual welfare	o		*Δ +	Social welfare
12.Individualism		o	*Δ +	Community

Key: Public (at large) * Industrialists o Trade Unionists +
Environmentalists Δ

Had an operative alternative paradigm been empirically discerned, testing would have revealed requisite clustering at least by some sufficiently prominent group about the distinguishing features of the paradigm. In the case of an environmental paradigm, it would be not unreasonable to suppose that environmentalists, or an independently isolated subgroup of them, coincided as regards features of the paradigm. Cotgrove and Duff's table shows, as would be expected, that at least for environmentalists as a group, that is not so: the environmentalists they sampled are biased towards more law and order and are achievement-oriented, for example. The required clustered divergence from dominant paradigm themes remains to be shown, especially as several of the issues concerned are - at least superficially and unless unified through a deeper and underlying viewpoint - independent of one another, and can vary independently

Of course some convergence - by a small group like "small-scale-communistic" environmentalists - would be expected, though it has not been confirmed. But unanimity from such a subclass of environmentalists (themselves commonly comprising less than 5% of a population) would hardly support the triumphal emergence of an Alternative Paradigm, i.e. emergence in the sense that there is a substantial operational base. Such empirical questions are not without philosophical interest, since operational environmental paradigms help remove the familiar "straw people" charge from environmental philosophy and assist in legitimizing it as a subject in administrative eyes.

Another decidedly awkward aspect of claims about the dominant social paradigm is that (like those about the alternative) every author who bothers to set down many of its features provides a different bundle

Footnote from Table 3, p. 27:

¹ The table is somewhat confused and confusing: e.g. it is unclear how individuals and individualism, both contrasted with community, are supposed to be distinguished; under MARKET is included not only market but broader economic matters as well as questions of polity; etc.

of features. Compare the attempts to articulate the paradigm already tabulated with the following further attempts:-

TABLE 4. ATTEMPT 3 (Catton and Dunlap 80, p. 34).

A Comparison of Major Assumptions in the Dominant Western
Worldview, Sociology's Human Exemptionalism Paradigm,
and the Proposed New Ecological Paradigm

		<u>Dominant Western Worldview (DWW)</u>	<u>Human Exemptional- ism Paradigm (HEP)</u>	<u>New Ecological Paradigm (NEP)</u>
Assumptions about the nature of human beings:	DWW ₁	People are fundamentally different from all other creatures on Earth, over which they have dominion.	HEP ₁ Humans have a cultural heritage in addition to (and distinct from) their genetic inheritance, and thus are quite unlike all other animal species.	NEP ₁ While humans have exceptional characteristics (culture, technology, etc.), they remain one among many species that are inter-dependently involved in the global ecosystem.
Assumptions about social causation:	DWW ₂	People are masters of their destiny: they can choose their goals and learn to do whatever is necessary to achieve them.	HEP ₂ Social and cultural factors (including technology) are the major determinants of human affairs.	NEP ₂ Human affairs are influenced not only by social and cultural factors, but also by intricate linkages of cause, effect and feedback in the web of nature; thus purposive human actions have many unintended consequences.
Assumptions about the context of human society:	DWW ₃	The world is vast, and thus provides unlimited opportunities for humans.	HEP ₃ Social and cultural environments are the crucial context for human affairs, and the biophysical environment is largely irrelevant.	NEP ₃ Humans live in and are dependent upon a finite biophysical environment which imposes potent physical and biological restraints on human affairs.
Assumptions about con- straints on human society:	DWW ₄	The history of humanity is one of progress; for every problem there is a solution, and thus progress need never cease.	HEP ₄ Culture is cumulative; thus technological and social progress can continue indefinitely, making all social problems ultimately soluble.	NEP ₄ Although the inventiveness of humans and the powers derived therefrom may seem for a while to extend carrying capacity limits, ecological laws cannot be repealed.

TABLE 5. ATTEMPT 4 (after Drengson 80).¹

(Cartesian) <u>Technocratic Paradigm</u>	(Organic) <u>Person Planetary Paradigm</u>
Atomistic analysis; discrete elements	Organisms as wholes; fields and processes
Mechanistic reduction	Symbiosis, mutual interrelations; conscious irreducible
Separation of subject-object, science vs. spiritual	Integration and reciprocity of subject-object science and spiritual
Material growth (favouring high technologies)	Homeostasis and balanced development
World as artefact: nature only a resource, to be mastered	World as living organism (Gaia hypothesis)
Anthropocentrism: value in nature instrumental	Biospheric egalitarianism: intrinsic value in being itself
Efficiency and productivity; design as technique	Ecological design of human activities; design as art
Modern technology: repetitiveness, uniformity, predictability, interchangeable parts, specialised skills: technological knowledge as power	Appropriate technology: diversity, open possibilities, spontaneity with order, balanced education: no power play but understanding and spiritual dimensions
Government by expert-underpinned elite; corporate control	Collective responsibility; community based
Structure monolithic, centralised, manipulative, capital-intensive, labour-poor, competitive; individualistic	Decentralised, non-manipulative, egalitarian, co-operative; social
Science value-free and objective	Human experience value-laden; personal knowing
Formalisation and quantification methods (linear, one dimensional emphasis)	Dialectic and quantitative procedures (multidimensional emphasis)
Every problem soluble, through technique, and specialisation	Limits; cultivation of whole person
Determinism: law and principles of order	Freedom in community
Persons evaluated in terms of their role	Unique value of individuals
Persons as mechanical, closed, in need of control, isolated	Persons creative, open, developing; intersubjective experience and diverse consciousness
Personal ideals: wealth, power, influence	Personal ideals: wisdom, understanding self-mastery, openness
Operative personal stance: <u>having</u>	Operative stance: <u>being</u> (and <u>doing</u> ?)

¹ The revised compilation of this table takes advantage also of a schematic comparison of the two paradigms (a philosophy class handout) supplied by Drengson. Some liberties have been taken in revision, e.g. neglected contrast brought out, others improved.

Still again there is much to criticise in this value-loaded table. Some of the more serious weaknesses, often shared with other tables, are suggested in the text. More generally, too much of the paradigmatic contrast reduces to that between Cartesianism and dialectical non-materialism, both of which are too specialised.

It is evident, from inspection, that the attempts presented, and also less detailed accounts elsewhere, have a great deal in common. The situation can be depicted by a familiar Venn diagram:



Some of the differences between the attempts are due to incompleteness which can be rectified, to some extent, by additions, as will be seen. Moreover some of the regions where the attempts differ can be removed, as based on mistakes, e.g. Drengson's attempt to include in the alternative paradigm such themes as (insufficiently qualified) biological egalitarianism and the Gaia hypothesis. And sometimes the attempts are really directed at isolating paradigms: for example, Drengson in discerning a Cartesian Technocratic Paradigm, can be better seen as trying to isolate a subparadigm of the World Paradigm, namely one that conforms to a Cartesian dualistic-cum-mechanistic philosophy, rather than one which abstracts from types of philosophical positions, and isolates what is common to those falling under dominant paradigms, e.g. what is common to empiricism, pragmatism and Cartesianism.

The procedure illustrates an heuristic method for arriving at higher paradigms, a method already applied in working towards the Growth Economistic Paradigm, namely, removing elements different in certain locally-competing paradigms to obtain consensus, e.g. removing the continental differences between the Dominant Growth Paradigms. While this amounts to working up the tree, there is some art (or perception) required in deciding which items to vary and which to hold constant. By the same method higher Environmental Paradigms can be reached.

The matter of additions, and the incompleteness of earlier tabulations, is bothersome. For instance, what have been omitted from Table 1 are not only contrasts under the headings supplied, e.g. under POLITY the contrast between Institutionally-channelled action and Direct action but, more critically, as Drengson's discussion indicates, a major group of contrasts, under what might be headed

(PHILOSOPHICAL) METHOD¹

Reductionist
Analytic

Nonreductionist
Synthetic, holistic

- differences methodological rules might have been expected to deliver early on. Thus mere deletion is insufficient in reaching high dominant paradigms: what is less effective, addition is also required.

To arrive at high paradigms, then, previous attempts such as Cotgroves and Duff's have to be elaborated as follows in the case of "the Dominant Paradigm":

1. Deletions are required, especially under the heading ECONOMY.
2. Additions are called for, especially under a new heading, METHOD.
3. The tables need to be expanded into fuller form, and also directions given as to how the fuller forms could be presented as paradigms in the technical sense.

Under such a high dominant paradigm, other paradigms such as Neo-classical and State Socialist would fall. Reaching high environmental paradigms is a still more complex, and hazardous, affair. It looks as if a tree structure for environmental paradigms should tie in with a classification of environmental positions (as e.g. Routley² 80). Thus a high paradigm would include qualified or selective economic growth and

¹ It is tempting, and legitimate, to try to go deeper, and to derive these differences, and also other differences, from differences in underlying philosophical theory, in this case the Reference Theory versus the opposite. A beginning is made on such a project in Routley 79, 9.12.

limited resources themes, but leave open (and thus be deliberately incomplete as regards) the crucial matter of intrinsic values. And under this high paradigm would fall shallower and deeper environmental alternatives.

Even when done, the results would inevitably be incomplete, and exhibit a certain arbitrariness and ideological bias. Neither of these features undermines the project of making a synthesis of attempts to discern paradigms. Nor is it unrealistic to try to set down with some exactitude what the high cultural paradigms are like. And there are good reasons for trying, in terms of eventual philosophical returns. As to why it's not entirely realistic but why it is worth trying nevertheless, compare the business - important for verification or refutation - of determining philosophical positions, especially commanding positions which dominate the philosophy of a given time. Nor is the situation quite as bad as it may be looking to some of you. For many purposes it is enough to know necessary conditions, for others sufficient conditions, for given paradigms.

Incompleteness is to be expected, and is rather inevitable (so it is perhaps less damagingly described in terms of openness). It is to be expected because these paradigms are intended to reflect creatures' beliefs as to certain notions and values, and creatures' beliefs are characteristically and (almost) invariably incomplete. Indeed the situation is typically worse than that: 'Converse suggests that only about 10 per cent of the population have complex "belief systems" that deserve the name of ideology, and it is only among these usually rather well-educated or involved people that theories of political ideology and motivation really hang together' (Marsh, p. 106). Thus unless models remain incomplete (and without depth of connection between assumptions encompassed) and exhibited in seriously incomplete form, they will lose contact with their empirical base.

Incompleteness is rather inevitable because there are infinitely many values it seems, but only assumptions concerning finitely many are included in the relevant paradigms. In fact, the class of values considered is quite restricted, and it might well be asked¹ why such common values as good health and personal survival and security and eating well are not included in any of the tables? An initial answer is that the paradigms concerned are socio-environmental paradigms which do not involve what are classed as personal, or "private" values, but only more "public", or political, values. This distinction has been said to be needed to resolve an apparent paradox in the attitudes of those accounted post-materialists (Marsh, p. 174)², and can be discriminated sufficiently sharply for sociological testing purposes (by linking "private" values with life-satisfaction questions). The values included in the paradigms given coincide in type exactly with those listed by Marsh under political values and are discrete from those listed under personal values (see especially table 7.1, p. 176). While this classifies what is included in the paradigms, it does not really explain what is included. What have been produced as social, or cultural, paradigms are

¹ Such questions were asked at Simon Fraser University (SFU) by P. Hanson and S. Davis. I am indebted for comments to people at SFU and at McMaster University, where earlier and even rougher versions of this paper were presented, and also to J. Rodman, A. Drengson and N. Griffin.

² What appears is that the 'personal values battery is tapping the "postmaterialist phenomenon" rather more successfully ... than the batteries developed ... for the public value domain' (Marsh, p. 183). Marsh sums up (p. 184):

Essentially, post-materialists in the public value domain are politically cynical, moderately efficacious, moderately aware leftists whereas post-materialists in the personal value domain tend to be moderately trusting, highly efficacious, politically sophisticated, and are normally distributed along the left-right continuum, clustering a fraction left of centre.

concerned only with political-economy values (such as would be considered under political economy broadly construed): they are not full cultural paradigms, but are embedded in more comprehensive cultural paradigms which also take account of personal values and their rankings.

§4. Paradigm-shift and transition theses. Since there is evidence of attitudinal shifts away from dominant paradigms along several dimensions (see Table 3 above, and also from work on Inglehart's "Silent Revolution": see Marsh, p. 165 ff.), a straightforward (weak) form of the factual transition thesis holds. Nor is the shift a merely attitudinal one which has no bearing on practice - it has a considerable bearing on preparedness to protest - even though too often changes in attitudes (as expressed) are not accompanied by corresponding changes in practices. Inglehart's thesis is that there has been a substantial change in values held in Western Europe since 1945. Other sociologists claim to have substantiated this thesis¹, and shown that some of the changes concern environmental and political values. Thus, for instance, Marsh: '... strong support exists for Inglehart's basic thesis. Political change in Western Europe, characterized especially by the growth of new nonclass issues concerning participation, liberation, anti-industrialism, and the growth of unorthodox political behaviour has been fueled by the growth of new value orientations'.

However, sociological evidence so far to hand appears to confirm only a weak transition thesis, which is much more limited than the strong thesis Drengson presents (see §1 above). In fact Drengson presents no evidence

¹ What has, however, been much disputed, and with good reason, is Inglehart's reactionary and highly economic explanation of this "silent revolution".

the stronger factual thesis,¹ and it can be reasonably asked whether the evidence is there to be collected. If there were such a major shift going on, one would expect much more evidence of it in practice - whereas superficial observation tends to suggest that for most people in most industrial places little has changed: that for the dominant paradigms it is business almost as usual. However, in these areas attitudes are difficult to translate into practice: and there does appear to have been a substantial alteration in attitudes in recent times, alterations that the sociologists are beginning to record,² e.g. as the silent revolution, and that are increasingly affecting company and organizational practices (though mainly at the PR and environmental-impact-statement levels so far). The documented changes are not confined to environmentalists who form only a smallish fraction of the population, but extend to the general public. (It will require a much greater shift to build up to avalanche conditions.)

Anyone who adheres to an alternative paradigm that differs in major respects from the dominant paradigms will assent to the normative transition thesis. The thesis is contextually-related to a given value system, and contextually-analytic on the adoption of a suitable system.

So the argument for the thesis boils down to the case for adopting an

¹ Part of his thesis Drengson does not render assessable, as he offers no account of 'post-industrial culture'. But his apparent assumption that post-industrial culture can be correlated with person-planetary paradigm rests on a mistake. The idea of post-industrial society, advanced by Bell and others in the 1960s (and summarised, e.g., in Huntington 73, pp.163- diverges drastically from person-planetary ideals: post-industrial society and culture represents rather the next (awful) stage of development of the technocratic paradigm (as heralded by advocates of that paradigm).

² These attitudes afford one important reason for elaborating environmental positions and paradigms: see Routley² 80. Moreover, insofar as philosophy should be keeping track of popular thought, it should presumably be articulating and elaborating new positions: here is part of the case for environmental philosophy. A further part is that it should also be anticipating new directions.

alternative paradigm. And the types of argument for that are, at least in outline, well known (see, e.g. R. and V. Routley 80; also 75).

What ought to be is not what is: we are far removed from the ideal worlds of alternative paradigms (i.e. worlds where they are realised). How are we to move towards the practical adoption of such paradigms? What action is to be taken to shift prevailing thought in deeper environmental directions and to counter the translation into practice of dominant social paradigms? Before (rather familiar) answers to such questions are outlined, there is a crucial complication to be considered. The problem arises because there is no necessary connection between practices and ideals, with the result that seeking a change in paradigms should not be the first or only objective of environmental action against the intellectual foundations of contemporary industrial society. This is especially so since an important route to changing beliefs and attitudes is through changing behaviour and practices.¹

§5. Defects of the attitudinal approaches: the attitudes elicited may not be put into effect. Briefly, practices followed diverge, often sharply, from the position or attitudes that responses to questions indicate. This happens both with regard to the dominant paradigms and as regards more environmental alternatives. Consider the more important dominant case.² Practices are increasingly distorted from neoclassical

¹ Cognitive dissonance theory explains attempts to bring ideas and attitudes into line with behaviour through an alleged human drive to avoid inconsistency.

² In the environmental case, also, attitudes expressed may differ from practices. This may be because the attitudes are not genuinely held or are only disingenuously held. But it may be because though the attitudes are held the structural framework of social life does not readily permit, or punishes, the expression of these attitudes in practice. Again the latter can happen in a range of ways, from non-availability of choice, through social and political pressure, to explicit punishment.

(or mainstream) ideals and assumptions by the role of large organisations (including governments, multinational corporations, etc.). Under the present arrangements, of what is sometimes called advanced corporate capitalism,¹ leading features of the usually-discerned dominant paradigm atrophy. In particular, the market diminishes in importance (e.g. it is displaced by such things as pre-ordering through subsidiaries or associates), and ceases to be "free" (i.e. does not approximate perfect competition at all), because of monopolistic or oligopolistic arrangements of large organizations, producer-manipulated demand, etc. Likewise many other features applauded under the contemporary neoclassical paradigm disappear or are replaced: the man (still the man) who is most handsomely rewarded under the newer arrangements is not the entrepreneur but the organisation man; working for the organisation is much favoured over individual self-help², and so on.

A major problem here intrudes as regards the determination of paradigms, a problem that applies also to world-views and ideologies, and indeed, in a more familiar way, to beliefs. Are we, in deciding what paradigm a person adheres to - or for that matter in defining paradigms - to take account of what a person says or what a person does? Do we put an industrialist solidly in the neoclassical paradigm because he says, of course, that he believes in market mechanisms, etc., or do we push him out because in his daily practices, his revealed beliefs, so to say, he regularly shuns market devices? The problem is not new, and is familiar as regards religious beliefs and paradigms, in such shapes as Sunday-believers. We can distinguish an espoused paradigm and a revealed

¹ Writers with Marxist sympathies have other labels, e.g. monopoly capitalism (oligopic capitalism would be more accurate), paternalistic capitalism, etc.

² Sometimes it is pretended that these coincide.

paradigm. It seems plain that if we want to know what paradigm a person really adheres to - like what beliefs he really holds - then it is the latter that matters. So paradigms can still be linked with beliefs in the expected way, i.e. an adherent of a paradigm believes in its themes or assumptions, and world paradigms retain their linkage with world-views and ideologies. But questionnaires may not be a reliable guide to (revealed) paradigms as opposed to espoused paradigms, especially if the questions are naive - as they appear to be on the sociological testing that has so far been done. For example, on Cotgrove and Duff's survey, respondents were asked to indicate their preferences as to the sort of society they would like to see with questions like this: '13. A predominantly capitalist society, in which market forces and private interests predominate, or a predominantly socialist society, in which public interests and a controlled market predominate?'.¹ To determine an industrialist's beliefs as distinct from his expressed views much more indirect questioning, of types well known to sociologists, would be required (since attitudes to the market are rather like those to Motherhood and like those to God used to be): e.g. 'If you were buying z's would you buy from an associate who supplies them or would you first shop about ...?' [There are doubts, too, properly raised about such formulations].

Organizational objectives and goals do not coincide with those of neoclassical theory. While characteristically organisations tend to operate in their own interests,² their interests are not just

¹ Many of the questions build in false dichotomies in rather the way this one does, e.g. public/private, capitalist/socialist, etc.

² Although this is an assumption of most texts on organization theory, perhaps they don't always: the connection does not appear to be analytic.

profit-maximization - so they are not neoclassical firms - but include such objectives as maintenance or growth of the organisation (self-preservation is commonly achieved through growth), removal of small "competitors", prestige, etc. (Galbraith and others have set out these features). Those who manage and work in large organisations, while they may frequently espouse a neoclassical paradigm, or something like it, often do not adhere to such a paradigm.

But (unfortunately, because neoclassically based projects are often easier to argue against), it is not widespread adoption of the neoclassical paradigm that is tied with some of the worst of present environmental problems; it is the dominance of organisations and their practices that are at the source of many problems. Thus it is also important to delineate, so far as can be done, features of the organisational paradigms, and their interrelation with dominant paradigms already indicated. There are several reasons why filling out the picture is important; e.g. for seeing what environmentalists are up against, for better estimating the prospects for change, as regards the questions of how to achieve change, where leverage is pointful, where policy might be altered, how organisations might be modified, etc. Also important, and connected, are questions as to how organisational neofeudalism, in particular authoritarian trends within organisations and in their impact on social life, can be reversed, and further drift toward totalitarianism avoided (for and on these themes see Hart and Scott).

Setting out a central part of the (obvious) organisational paradigm is straightforward since it is the same as the dominant world paradigm already adduced. Take the Neoclassical Paradigm of Table 1, delete the market and individual self-help elements, and much of the organisational paradigm is apparent. Some entries should be modified, e.g. the rewards are given for intra-organisational loyalty

and achievement. In place of profit-maximization, which the neo-classical market presupposes, maximization-of-organisational-interests appears. The organisational paradigm is a submodel of the World Paradigm, and is opposed by at least those paradigms that oppose the World Paradigm.

The divergence of revealed paradigms from espoused paradigms, especially of the exposed organisational paradigm from the espoused dominant neo-classical paradigm, complicates not only any theory of environmental thought which takes due account of what environmental positions are opposed to, but also the question of appropriate environmental action. For example, focussing on the neo-classical paradigm and directing polemics primarily against it would be, to some extent, misguided. Indeed, often enough, something would be accomplished by having components of the neo-classical paradigm genuinely adopted, e.g. in decision- and policy-making, in place of corresponding assumptions of the organisational paradigm.

What then is the role of alternative paradigms in environmental thinking and action? Requisite changes in environmental practices and attitudes will not be achieved by waiting for alternative paradigms to be adopted: indeed they are so far from being politically acceptable as to be commonly dismissed (as noted) as "politically unrealistic".¹

¹ This familiar issue is discussed, e.g., in Ophuls, final chapter. There are, for this sort of reason among others, severe, though not insuperable, difficulties for proposals to rationally induce paradigm shifts (at least as regards higher paradigms). Still the situation is not as desperate or inevitably irrational as Kuhn and others suggest. According to Kuhn(p.44), the arguments for a new paradigm may be 'immensely persuasive' but that they cannot 'be made logically or even probabilistically compelling' except to people who are prepared to 'step into the circle' (i.e. adopt the paradigm). The reason is that 'when paradigms enter, as they must, into a debate about paradigm choice, their role is necessarily circular. Each group uses its own paradigm to argue in that paradigm's defense.' This neglects such strategies as those of isolating critical elements or parts of paradigms (submodels), of ascent to higher paradigms where there is sufficient common ground, as well as the extent to which rational argument characteristically falls short of affording logical compulsion. A familiar but flawed high redefinition of 'rational argument' underlies the irrationality theme.

While alternative paradigms can fulfil all the roles of ideal models, for instance providing bases for argument, positions to fall back on and around which to consolidate, and states to aim for, their main function is ideological; they are not where the main focus of action should be if requisite change is to be effected. That action has to be directed where it has been directed, and as it has been directed, against the sources of environmental despoliation, primarily organisations, and those supposed to regulate them, further public organisations in the shape of governmental bodies, with a view to persuading them - or helping to make it so¹ - that the despoliation is not in the general interest, or in narrow organisational interests, or differently again with a view to blocking, delaying or otherwise hindering their despoiling operations, by both institutional procedures and direct action. If changes are to be effected there is no alternative - if far too much of the environment that is valuable is not to be lost² - to action (of a broadly political type). Philosophy, though relevant, is not enough.³

¹ For example, why utilities are ceasing to invest in new nuclear plants is explained in part by environmental action against nuclear plants and the impact of that action.

² This is irrespective of whether the world system eventually collapses in some way to some extent or not.

³ Part of the fuller argument for this theme may be found in the final eloquent chapter of Collingwood 51. This intrusion of Collingwood into the picture is by no means coincidental. For Collingwood's theory of (metaphysical) presuppositions has much in common with more recent work in terms of paradigms and theory-dependence. A further use to which the explication and explanation of paradigms through models might be put is to tidy up formally, and integrate into the fuller theory, Collingwood's theory of presupposition.

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