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Working Paper

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AND
THE NATURAL DESTRUCTION OF CULTURE**

Michael Thompson

November 1984
WP-84-92

**International Institute for Applied Systems Analysis
A-2361 Laxenburg, Austria**

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PREFACE

This paper brings together two concepts, *relative surprise* and *cultural bias*. Both have deep roots in IIASA's intellectual tradition but they have been developed in widely separated fields. One has emerged from theoretical ecology and natural resource management; the other from social anthropology and the investigation of decision rationality.

This research was initiated as part of the Core Concepts Project in the System and Decision Sciences Program and completed within the framework of the Interactive Decision Analysis Project.

YURI ERMOLIEV
Acting Chairman
System and Decision Sciences

If you are an expert, you believe
that you are in possession of the truth,
and since you know so much, you are
unwilling to make allowances for
unforeseen developments.

Leo Szilard. "Reminiscences" in
Donald Fleming and Bernard Bailyn (Eds.)
The Intellectual Migration.
Belknap Press of Harvard University Press, 1969.

THE CULTURAL CONSTRUCTION OF NATURE AND THE NATURAL DESTRUCTION OF CULTURE

Michael Thompson

INTRODUCTION

To say that ideas of nature are socially shaped is not to say they can be anything at all. Yet this is the relativist charge that is often levelled at those (for example, the strong programme in the sociology of science and the grid/group approach to the sociology of perception) who make it their business to unravel these knowledge-shaping processes. "Okay, go and jump in front of that train" say the relativity-rejectors, believing themselves to have produced some sort of refutation when the relativist declines the challenge. But, of course, no one is saying that valid knowledge is completely fluid; only that it is not completely solid. Rather, ideas of nature are plastic; they can be squeezed into many different configurations but, at the same time, there are *some* limits. The idea of nature that would have us leaping in front of trains is, I suspect, outside of these limits—it is not a socially viable idea of nature.

The universalist versus relativist debate is a pernicious trivialization of a serious issue and the time is long overdue for its replacement by a notion—*constrained relativism*—that firmly rejects both these polarized extremes. The problem, of course, lies not in saying this but in providing the concepts and the theory to go with it—concepts and theory strong enough and useable enough to avert the dreary decay of the debate to the jump-in-front-of-that-train level. This can be done by bringing together insights from two widely separated areas of inquiry: the sociology of perception (in which viable *ideas of nature* are traced back to the different sets of moral justifications necessary for the maintenance of a small number of distinct types of social organisation) and the ecology of natural resources (in which a small number of *myths of nature* are deduced from the observed behaviour of different kinds of social institutions that strive to manage these complex and only partly understood systems).

CONTRADICTION CERTAINITIES AND THE DISCERNING SPECTATOR

What is a resource? I was once fortunate enough to be spectator to an exchange of views on this question between a distinguished ecologist and a Nobel Prize-winning physicist. The ecologist let drop something about "natural resources" and the physicist was down on him like a ton of bricks. "You cannot talk about *natural resources*," he cried, "there are only *raw materials*" and he went on to explain how a raw material only becomes a resource when human ingenuity, skill and enterprise are successfully focused upon it.

This is a profound disagreement. For our ecologist riches are given to us by nature; for our physicist* they are given to us by culture—by that complex whole that gets transferred from one generation to the next by mechanisms that are not genetic; a whole that includes the whole of language, the whole of knowledge, the whole of technology, and a great deal more besides.

Clearly, our ecologist and our physicist locate resources very differently. Their premises, in other words, are different and, as a result, so are the sorts of policies that they see as desirable (or even feasible). Our ecologist has an *idea of nature* as something stern and unforgiving—as supplying him with a strictly *accountable* inventory of resources. Our physicist, on the other hand, sees these limitations as being of little consequence because they are capable of modification, exploitation and multiplication through the application of skills that are culturally acquired and transmitted. In this way he is led to the idea of nature as essentially *cornucopian*. So here is a fundamental disagreement between experts. Our physicist's world is a world of *resource abundance*; our ecologist's one of *resource depletion*.**

When people argue from different premises they will, in all probability, fail to agree. At best, they may agree to differ. This is something of a disappointment to those bystanders who want to know *the* answer, but the discerning spectator (the individual whose viewpoint I am urging we should adopt) is not one of those. His attention is focused not on the facts of the matter but on the facts of the disagreement. He is not looking for the single truth "out there" but at the various convictions "in here". For him what is being argued about is a foreground distraction and, disregarding this, he zeroes in on what really interests him—the premises and their differences. "Where do these premises come from?", "How many kinds of premises are possible?" ... "What leads this individual to this premise and that individual to that premise?" These are the sorts of questions that the discerning spectator asks, not "Who is right?"

In other words, the discerning spectator begins by granting legitimacy to all these sets of contradictory premises. Nor does the fact that they are contradictory cause him any dismay. On the contrary, he sees social life as a process that depends for its very existence on the perpetual contention between these different sets of convictions about how the world is.

*I say "our" ecologist and "our" physicist because I do not wish to imply that each is typical of his profession. It may well be that more physicists think like our physicist than do ecologists (and *vice versa*) but, as I will explain later, the reasons for this are to be sought in the way their respective disciplines are organised and not in the disciplines themselves.

**But not because one is a physicist and the other a ecologist. Rather because of differences between the ways in which they find themselves incorporated into the social organisation of their respective disciplines.

THE CULTURAL HYPOTHESIS

When we look at our environment we do not see it with the naked eye. We see it as it is filtered through a cultural screen—our idea of nature. From this there follows a very minimal definition of human rationality:* an act is rational if it is consistent with the actor's idea of nature. The only trouble with this definition is that it would seem to insist that *every* act is rational. No matter how bizarre an act may be we have only to dream up and ascribe to the actor a correspondingly bizarre set of beliefs about how the world is for that act to become rational.** But this descent into complete relativism would be inevitable only if, first, there were no social constraints on the beliefs people could adhere to and, second, there were no chance of nature herself pointing out, from time to time, the inadequacies of some of those beliefs. If we allow for the existence of these two sorts of constraints then, instead of complete relativism, we obtain a *system of constrained relativism*—a system that enables us to avoid the dissipative nihilism of the relativist position without at the same time succumbing to the narrow tyranny of the universalist position.

THE SOCIAL CONSTRAINTS

The cultural hypothesis holds that beliefs, though varied, are not free to float about just anywhere. They are closely tied to the social situations that they help sustain and render meaningful. If the number of kinds of social situations that are possible is limited (and the hypothesis claims that it is) then so too will the variation of belief be limited to a quite small number of distinctive patterns or *cultural biases*. If ideas of nature have to pass the test of social viability then the weeding out of the non-viable ideas will leave us with a multiplicity, but not an infinitude, of mutually contradictory ideas each one of which will be associated, through a process of mutual reinforcement, with a distinctive patterning of social relations.

The whole retreat from rationality, which might appear to be relativism's inevitable accompaniment, can be averted if we say that metaphysical beliefs are embedded in culture, and that culture is not some deadweight of habits that is passed on unchanged from generation to generation, but a lively and responsive thing that is continually being negotiated and renegotiated in order to sustain and justify preferred patterns of social relationships. It is the *adaptive* propensity of this negotiating process, coupled with the *adaptive* criteria of the social environment in which it takes place, that gives rise to the first dynamic component of the system—the cultural construction of nature.

*Human, not because animals and plants are not rational, but because they do not have (much) culture.

**Take, for instance, one of the well-known 'gambler's fallacies'.

If some people believe that after a long run of heads the probability of tails on the next toss will be greater than 1/2 then one possibility is that they should be interpreted as believing thereby in a spirit of distributive justice that regulates the whole cosmos with a policy that ensures ever-increasing probabilities of a trend-reversing intervention whenever identical outcomes begin to succeed one another within an otherwise chance set-up ... a gambler's metaphysical belief may be a fault but not the rationality of his reasoning from it. [Johathan L. Cohen (1981) 'Can human irrationality be experimentally demonstrated?' *The behavioural and brain sciences*, 4, pp. 317-70.]

THE NATURAL CONSTRAINTS

That Doctor Johnston was able to refute Bishop Berkeley by kicking a stone should remind us that nature herself can sometimes provide negative feedback to curb the wilder excesses of the relativistic urge. But this sort of feedback does not always get through. In a social setting where everyone subscribes to the same idea of nature there will be no sceptic around to deliberately kick the stone. Of course, if the natural constraint is there, people will sometimes kick stones by accident but it is wonderful what we can collectively manage not to see.

An idea of nature furnishes us with a way of seeing the world and, more importantly, with a way of not seeing the world—it actually filters out most of the negative feedback.* This means that, only when the cumulative costs of maintaining that idea have built up into an intolerable burden, will the negative feedback finally force its way through the cultural filter and be noticed. When this happens we suffer *surprise*. In much the same way that the only lasting laws of nature are negative (cannot do) laws, so no event is absolutely surprising. It is only surprising if, first, it is contradictory in relation to a particular idea of nature and, second, it is noticed. Then, and only then, will a socially desirable element of belief come into direct conflict with an implacable nature. This—the natural destruction of culture—is the second dynamic component that completes the system.

I should hasten to add that, in describing these two components, I claim no originality. Only in the manner in which I hope to bring them together within the context of policy analysis would I venture some presumption. To bring together these two components—the cultural construction of nature and the natural destruction of culture—I will have to effect some synthesis between two promising but new, and academically rather distant, fields—the *sociology of perception*, that has been developed largely by anthropologists, and the literature on *coping with surprise*, that has been inspired by theoretical ecology. But before I do that I should briefly repeat my argument in the language and context of policy analysis.

THE RETREAT FROM RATIONALITY

Let me begin by contrasting the notions of rationality that are built into two approaches to policy analysis: *classic decision theory* and what, for want of a better label, I will call *historical contingency theory*.

I take as an exemplar of the first approach Myron Tribus' standard text *Rational descriptions, decisions and designs*.**

To develop criteria for ... decisions we need to define what we mean by *rational*. We shall say that a person who knowingly makes a decision which is against his own stated objectives is behaving irrationally. That is, if a man asserts that he wishes to accomplish an action, say A, and he deliberately takes action B which he knows will thwart action A, then to the extent that he told us the truth about A, he is acting irrationally. We shall not, in this book, consider what to do about whether or not the man told the truth about A. That is a task for the psychiatrist. Rather we shall take the stated goal, A, as

*The argument for this sort of mechanism, and its plural consequence is set out in my *Rubbish Theory* (Oxford University Press 1979) particularly in Chapter 7.

**1969. Pergamon, p. 2

correct and develop aids to help decide if the actions are consistent with A.

The policy analyst might well find this restriction to just the stated goal rather unhelpful. What he would like is some approach that would enable him to handle the hidden agendas (as he calls them) as well as the visible ones. And, given his daily familiarity with hidden agendas, he may feel that it is he, not the psychiatrist, who is best equipped to understand the sort of strategising behaviour that sometimes leads a person to take action B when his stated aim is action A. The policy analyst (when he can advance some plausible hypothesis in terms of a hidden agenda and an appropriate strategy for its advancement) would dearly like to be able to extend rationality to these sorts of actions.

So classic decision theory certainly cannot handle everything; but, surely, within its explicit and self-imposed limits it is valid and useful. Historical contingency theory takes issue even with this seemingly modest and innocuous claim. Classic decision theory, it concedes, can of course claim validity in all those cases where people know (and say) what their objective is but historical contingency theory holds that this is a category with no members.

Nobody knows what their 'real' interests are. It is a very fundamental principle that nobody knows what is the ultimate effect of almost any act whatsoever ... The actual consequences of almost any act are unknown and unforeseen, which is a little rough on the theory of rational behaviour.*

Of course, Boulding may be wrong but, even if he is, classic decision theory would still only be a theory of *goal-seeking*; we would still be without any theory of *goal-setting*. And, if Boulding is right, then we are left without any theory at all ... of goal-setting or goal-seeking.

REDEFINING THE DECISION THEORIST'S PROBLEM

Real policies, unlike the decisions analysed by decision theory, usually involve a variety of actors and interests, conflicting perceptions of nature, contradictory rationalities and divergent advocacies. They are not static phenomena but historical processes. The rapid development of decision theory, coupled with the decision-maker's desire to know which out of a bewildering array of counsels is the 'right' one, has propelled policy analysis towards the fallacy of misplaced concreteness—towards a pretence that things are tidier than they really are. But complexity, goal ambiguity, contradictory certainties, conflict, institutional inertia, and temporal change are not disfiguring warts on the face of policy; they are its essential characteristics. The central problem, therefore, is to resist the urge to remove them and to reconceive policy in a way that preserves its historical contingency. Only when this has been done can we adequately understand an evolving process and the extent to which we can both manage its evolution to fit our desires and adapt our desires to fit its evolution.

*Kenneth Boulding (1983) *National Defence Through Stable Peace*, (Lectures presented at IIASA, June/July, 1981.)

So how do we re-conceive policy—warts and all? Let me suggest that we put goal-seeking to one side for the moment and begin with the really big question: "How do the goals that people seek get set?" And let me suggest that we approach it by looking at two things—socially viable ideas of nature and relative surprise. Socially viable ideas of nature correspond to what Mary Douglas* has called *cultural biases*—those sets of shared beliefs and convictions about how the universe is that sustain and justify moral judgments. Relative surprise is a natural contradiction of a particular idea of nature that gets noticed by the holder of that idea.

SOCIALLY VIABLE IDEAS OF NATURE

The cultural hypothesis holds that there are just five distinct cultural biases each of which has associated with it a distinct idea of nature. Each of these conjunctions of cultural bias and idea of nature finds itself adopted in one particular reach of social life and rejected in all of the others. The different reaches of social life are described by the two axes of *social context*: *group*, which has to do with the extent to which an individual is incorporated into or free from bounded social groups, and *grid*, which has to do with the extent to which he is subject to or free from socially-imposed prescriptions. Since the processes that give rise to (and sustain) group-formation and prescription-imposition are dynamic processes, group inclusion here implies group exclusion somewhere else and being subject to prescription here implies subjecting to prescription somewhere else. In other words, the group and grid axes have both positive and negative directions.

Since group and grid can only be measured on ordinal scales, there are only five distinctions to be made within this social context space—one at the origin and one in each of the four quadrants. In each of these distinct social contexts we find a distinct social being: at the centre, *the hermit*, free from coercive involvement in both group-formation and personal network-building; at the bottom left, *the entrepreneur*, spurning group involvement and central to a large personal network; at the top left, *the ineffectual*, excluded from social groups and peripheral to the personal networks of others; at top right, *the hierarchist*, strongly grouped and willingly subject to all the prescriptions that serve to maintain the ranked separation of his group from all the others within the group hierarchy; and at bottom right, *the sectist*, strongly grouped but rejecting hierarchy and all the prescriptions that are its inevitable accompaniment (Figure 1).

I trace these five stabilizable conjunctions of social context and cultural bias back to three distinctive kinds of organisation: *the ego-focused network*, *the hierarchically-nested group*, and *the bounded egalitarian group*. I further argue that this typology of organisations is exhaustive—that these are the only kinds of organisation that are socially viable. But how can just three kinds of organisation give rise to five cultural biases? Such a proposition would appear to run counter to Ashby's law of requisite variety.

The answer has two parts. First, the process of personal network-building will (so long as there exist opportunities for economies of scale) result in an asymmetrical pattern of involvement. Some individuals (the skillful, forceful or lucky ones) will become central within large personal networks with the result that other individuals (the de-skilled, ineffectual or unlucky ones) will

*Mary Douglas, 1978. "Cultural Bias" *Occasional Papers of the Royal Anthropological Institute*, No. 34, London.

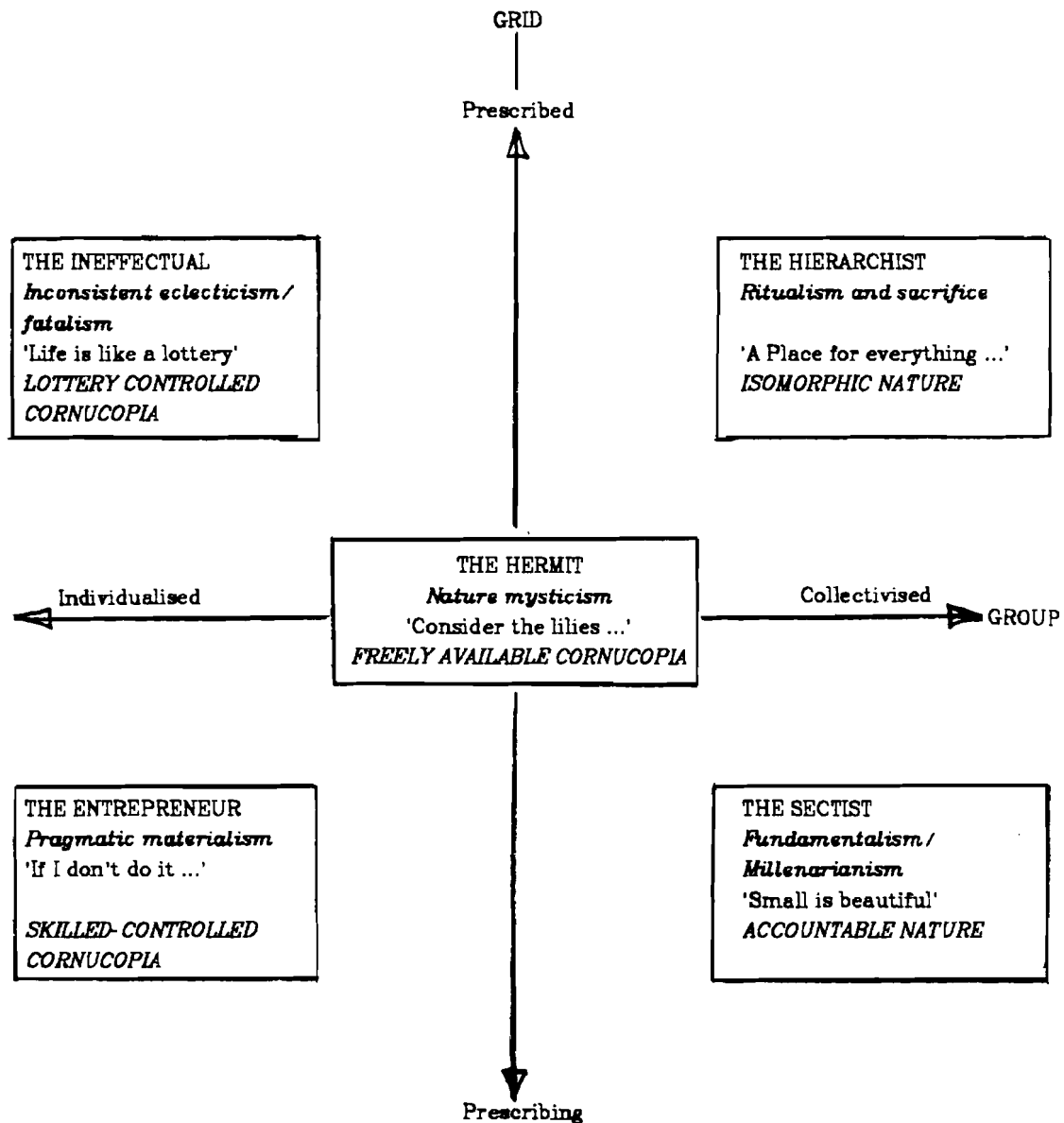


Figure 1. Social beings, cultural biases, justifications and ideas of nature.

find that their network-building is everywhere pre-empted by the ramifying networks of 'The Big Men'. This asymmetry provides the centrality/peripherality criterion that serves to separate the prescribing entrepreneur from the prescribed ineffectual. Second, a personal strategy aimed at the deliberate avoidance of all three organisational forms can also (under certain conditions) result in a viable conjunction of social context and cultural bias—the hermit's. (It is only *coercive* social involvement that the hermit has to avoid in order to achieve stability, and this autonomous cultural bias can be remarkably convivial).*

*For a description of this context, see my "The Problem of the Centre" in Mary Douglas (Ed.) *Essays in the Sociology of Perception* (London & New York: Routledge and Kegan Paul, 1982).

I should stress that I am following the definition of an organisation as a *conceptual scheme*. I do not wish to suggest that the 'concrete reality'—the process of social life—crystallizes out so neatly. In general this process is sufficiently complex and messy for anyone involved in it to be able to conceive it, *and render a plausible account of it*, in one of these three ways. The patternings and transformations of this 'concrete reality' are to be understood as the resultant of these contradictory conceptual schemes as they are acted upon by those who variously hold to them.

So the central idea is that each organisational form has, all the time, to generate within itself the forces that will hold it together. Otherwise, it will fall apart (or become transformed into one of the others). Ideas of nature, and the moral justifications that they provide the basis for, are the means by which these organisational needs are met. In each context just one idea of nature is capable of providing the necessary stabilizing forces and all the others would inevitably result in its transformation.

For example, pragmatic materialism provides a strategy (or behavioural programme) that reinforces the social context of economic individualism and, at the same time, receives its moral justification (and shareability—the necessary condition for moral community) from the 'skill-controlled cornucopia' idea of nature. The great moral justification for economic individualism is 'the hidden hand' that steadily adds to the welfare of the whole, and it would lose all its validity if life were revealed to be a zero-sum game (or, worse still, a negative-sum game). A strictly accountable nature, therefore, is unthinkable. Nature *must* be cornucopian. The skill-controlled part of this idea of nature provides the basis for the other great moral justification of economic individualism—equality of opportunity. If fortune favours the brave, if unused talents atrophy, if faint heart never wins fair lady, if there is a tide in the affairs of men that must be taken at the flood, if a fool and his money are soon parted ... if nothing succeeds like success, then inequality of result can never be a moral reproach to those who have acted with skill and daring.

Conversely, those whose results are less impressive can fashion for themselves a *modus vivendi* by making just a small modification to this cornucopian idea of nature. Where the successful emphasize skill and daring, the unsuccessful can emphasize luck (and a measure of unfair advantage). If it's all in the stars, if your number is on it, if it's your (or, more likely, his) lucky day, if it's the same the whole world over ... if it's always the rich what gets the gravy, then the erratic payouts and withholdings can all be understood in terms of a cornucopian nature that is controlled not by skill but by lottery—a one-armed bandit on the cosmic scale. When, as occasionally happens, the jackpot comes your way ... oh happy day! When, as usually happens, it does not ... those crafty bastards have got it fixed.

The hermit's social context, likewise, is individualised—there are no bounded groups around—but, unlike the contexts of the entrepreneur and the ineffectual, there are no economies of scale around either. Cosmopolitan Sherpas who can grow their own potatoes and raise their own yaks, international owner-driver haulage contractors who can only drive one lorry at a time ... easy-going caretakers who can only look after one modest office building at a time have little incentive to build and maintain vast coercive personal networks. What would they use them for? Their social isolation means that, if they are not economically viable, they will not be around for long and so this means that virtually all those hermits that are around are economically viable. If enough comes in (and the fact that they are still there means that enough is coming in) then enough is enough; if excessive effort just leads to

heavy scenes, if pissing matches with skunks are always disappointing, ... if in getting and spending we lay waste our powers, then what we need are some gentle moral marker flags to prevent us from inadvertently straying into coercive social involvement (be it in personal networks or group formation). Take, therefore, no thought for morrow; consider, instead, the lilies of the field ... get your autonomous act together, man, and nature will provide. For such a quietist morality to remain credible, nature must be cornucopian, but it cannot be skill-controlled nor can it be lottery-controlled. It must be freely available.

In this way one idea of nature—the cornucopian—sustains all three individualised contexts. But each context modifies that idea to suit its particular manifestation of the single organisational type that provides their common origin—the ego-focused network. With no economies of scale networks remain little developed and the cornucopia remains freely available. As economies of scale are introduced so a number of things happen. Networks become competitively developed, an asymmetry opens up between those who are central and those who are peripheral, the cornucopia becomes controlled, and the mode of that control bifurcates between skill and lottery (Figure 2).*

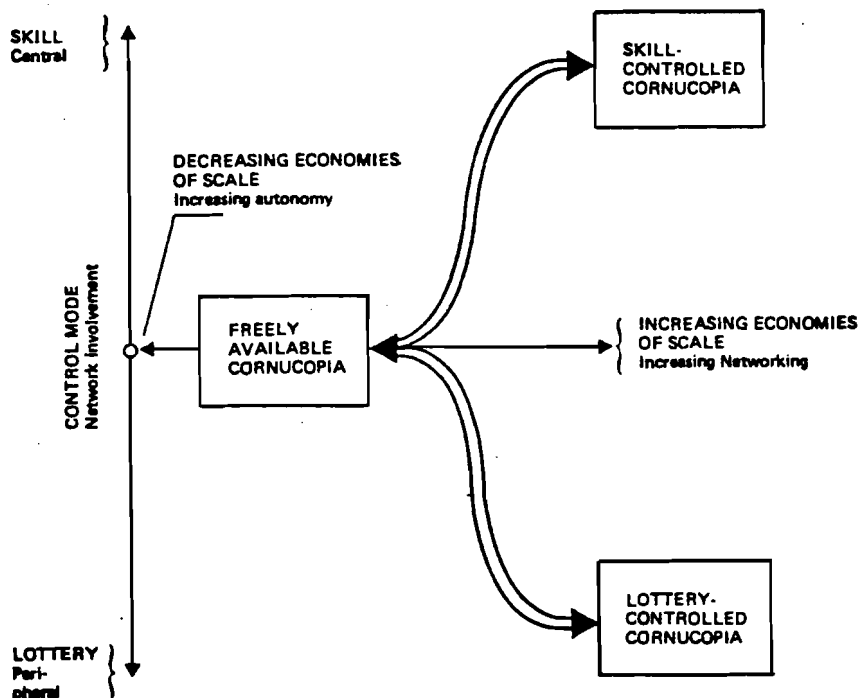


Figure 2. The three cornucopian ideas of nature.

*For a rigorous treatment of this argument, see W. Brian Arthur, "On Competing Technologies and Historical Small Events: The dynamics of choice under increasing returns", Working Paper, IIASA, Laxenburg, Austria, 1983.

Where the tragedy of competitive individualism is the tragedy of the commons, the tragedy of the bounded egalitarian group (the sect) is almost the exact reverse—the tragedy of the crabs in a barrel. In the West Indies fishermen will put their day's catch of live crabs into a barrel. Though crabs are good climbers, the fishermen do not bother to put a lid on top of the barrel because no sooner does one crab climb up towards the rim than it is immediately pulled back down by its fellows. All the crabs could escape if only they were prepared to allow some to go first. But they are not, and they all perish.

The great moral justification needed to sustain the sect is equality, not of opportunity, but of result. To allow priority to some for the sake of the benefits that will eventually accrue to all would be to transgress the rule of absolute equality which, in the absence of the sorts of differentiations that exist in markets and in bureaucracies, has to be the sect's sole organising principle. Positive-sum games, in consequence, are unthinkable. Life has to be a zero-sum (or, better still, a negative-sum) game. A world of resource depletion is the environment best suited to the nurture of a bounded egalitarian group. And a world of resource depletion is guaranteed by an idea of nature as strictly accountable.

Accountable nature also provides the basis for the sect's other great moral justification—that which serves to maintain the sharpness of the boundary that separates the saved on the inside from the damned on the outside. The sect members, by their insistence on equality of result, make sure that they respect Nature's fragile limits. It is those in the wicked world beyond the sect that are misusing her. In this way the boundary between inside and outside is sharply drawn between those who respect Nature and those who abuse her. Blame—system blame—can then be exported.

Both the cornucopian and the accountable ideas of nature would wreak havoc inside that complex edifice—a hierarchical collectivity. The first would undermine the boundaries that sustain its highly discriminated structure; the second would erode the status differences that those boundaries uphold. But, of course, the sort of environment that is created by hierarchically-nested groups rejects both these ideas of nature. The mutual reinforcement that it needs to sustain its existence has no place for individual salvation and no place for equality of result. Rather, it is all geared up to adopt a collectivised and stratified mode of salvation—everyone in Peter's barque but with first-class, second-class and steerage passengers! In a hierarchy, all men do not end up equal; it is this that distinguishes it from a sect. Nor do they all start off equal; it is this that distinguishes it from an ego-focused network. In consequence, neither the moral principle of equality of result nor that of equality of opportunity can mesh with the premise of inequality that sustains a hierarchy. Rather, a hierarchy will stress equality before the law—a hierarchical law that embodies the premise of inequality and entitles those of high rank to be tried by their peers. Peer review—the established method of assessment in the scientific community—provides a nice example of this moral principle at work.

So hierarchy needs rather complicated moral justifications if it is not to be eroded. It needs to justify inequality and it needs to justify separation. Cornucopian nature, with its positive-sum game, would justify inequality but would be destructive of separation. Accountable nature, on the other hand, would justify separation but would pillory inequality. The solution is an *isomorphic nature* that does permit positive-sum games but within certain defined bounds.

On this view nature and society are both complex, yet clearly separate, systems. Though separate they are isomorphic; nature, as it were, holds up a mirror to society. If nature is a positive-sum game (and there is nothing in this mirror idea to insist that it is not) then so too is society. If riches bubble up in nature, it is probably thanks to nature's clearly understood complexity; and, if they are bubbling up there, it is probably because they are the accurate reflection of the positive-sum benefits that flow from the division of labour and status within society. But, if the complexity of the two matched systems is the source of these collective benefits, then it is absolutely vital that the clarity and resolution of the mirror be maintained—that the isomorphism be assiduously preserved. Clarity, predictability, discrimination, resolving power and order—these are the great moral imperatives that are generated by the isomorphic idea of nature. Look after them and the positive-sum benefits will look after themselves.

POLITICAL CULTURES AND PART-REGIMES

In tracing social contexts back to viable organisational forms, and in tracing cultural biases back to shareable ideas of nature, we are able to uncover a very general self-segregating system within which certain conjunctions of social environment and idea of nature become (by a process of moral justification) mutually reinforcing while other conjunctions (by a process of moral indefensibility) become mutually repulsive. It is this system of attractive and repulsive forces that ever maintains the possibility for the existence of the five stabilizable conjunctions.

So these are the eternal bases, as it were, onto which we home-in; and it is this homing-in process that induces and maintains the distinctive *personal strategies* that go with each cultural bias: two manipulative strategies—the individualist and the collectivist—that are adopted by the entrepreneur and the hierarchist respectively; two survival strategies—the individualist and the collectivist—that are adopted by the ineffectual and the sectist respectively; and one autonomous strategy that, by steering clear of the sorts of social involvement that inevitably result in manipulating others or being manipulated, soon recommends itself to the hermit.

When these socially-induced personal strategies are combined with the historical processes of change, they become imbued with a sense of direction and come to resemble closely the *evolutionarily stable strategies* that have so revolutionized our understanding of biological evolution.* The result of this sense of direction is a set of different goals or *futures* that have a sort of final cause quality in that they are projected 'out there' by the various desires that are socially generated in the 'here-and-now'. So this combination of socially-induced strategy and historical contingency is the source of the *goal-setting*, and the various ideas of nature provide the justificatory bases for the pursuit of those goals. In this way ideas of nature become *political* in the deepest possible sense of the word. This is because (thanks to the link that cultural bias provides between the realm of ideas and realm of actions) a person who acts in accordance with a particular idea of nature will be acting to strengthen the particular organisational form that receives its ultimate justification from that idea of nature.

*J. Maynard Smith. 1980. "Evolutionary Game Theory" in Claudio Barigozzi (Ed.) *Vito Volterra Symposium on Mathematical Models in Biology. Lecture Notes in Biomathematics No. 39*, Berlin, Heidelberg, New York, Springer-Verlag, pp. 73-81.

Obviously, for policy analysis, this deep political aspect—the setting of goals in terms of preferred patterns of social arrangements, the *a priori* moral justifications for those goals, and the strategic bases for their pursuit—will be the main focus of interest within this cultural theory. Since the biases are *cultural*, and since their significance is *political*, it seems reasonable when handling them in this particular aspect to speak of them as *political cultures*. And finally, when those who variously hold to these political cultures act in accordance with them, they generate within the concrete reality—within the process of social life—the distinctive part-regimes that are the basic building blocks from which *political regimes* are constituted. In this way the concept of political cultures provides the essential, and currently missing, link between ideas and actions—between moral philosophy and political science (Figure 3).*

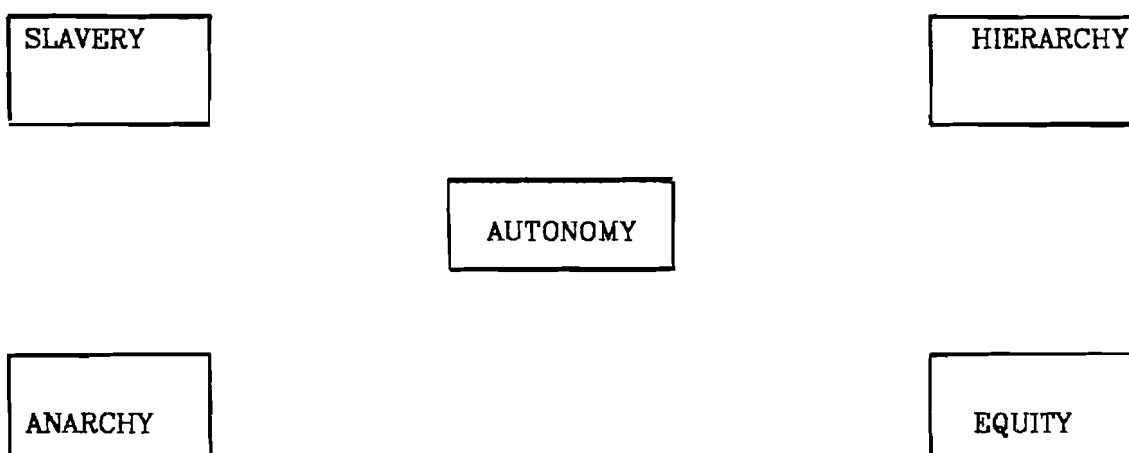


Figure 3. The five-part-regimes.

We can now define political rationality. An act is rational if it supports one's political culture. And, conversely, any act that supports one's political culture is political. Now we are in business.

POLITICAL CULTURES AND THE FORMATION OF POLICY

Of these five political cultures only three are likely to be active in any policy debate; the ineffectuals cannot gain access, and the hermits deliberately steer clear of all that sort of involvement. So policy debates are biased in the sense that two rationalities—the *rationality of fatalism* (slavery) and the *rationality of immediacy* (autonomy)—though present in the populace, are not represented in the debates. At their widest the debates will encompass just three rationalities—*market rationality* (anarchy), *bureaucratic rationality* (hierarchy), and the *rationality of truculence* (equity). Each of these, drawing on its appropriate strategy and idea of nature, projects its desired future 'out there' and then fleshes out into a living scenario the

*Here I can do little more than mention the idea of part-regimes. For an initial development of this idea, and of the essential pluralism that it entails, see Aaron Wildavsky's *The Nursing Father: Mosses as a Political Leader* (University of Alabama Press 1984).

trajectory by which it must be reached. Like myths, scenarios work themselves out in men and, like hope, they spring eternal in the human breast.

Such scenarios, of course, are historically contingent (which is why they have to go on and on working themselves out and why they spring eternal) but at present they are nicely contrasted within the energy debate as the *business as usual* scenario (anarchy and market rationality), the *middle-of-the-road* (*technical fix*) scenario (hierarchy and bureaucratic rationality) and the *no-growth* (*radical change now*) scenario (equity and the rationality of truculence) (Figure 4).*

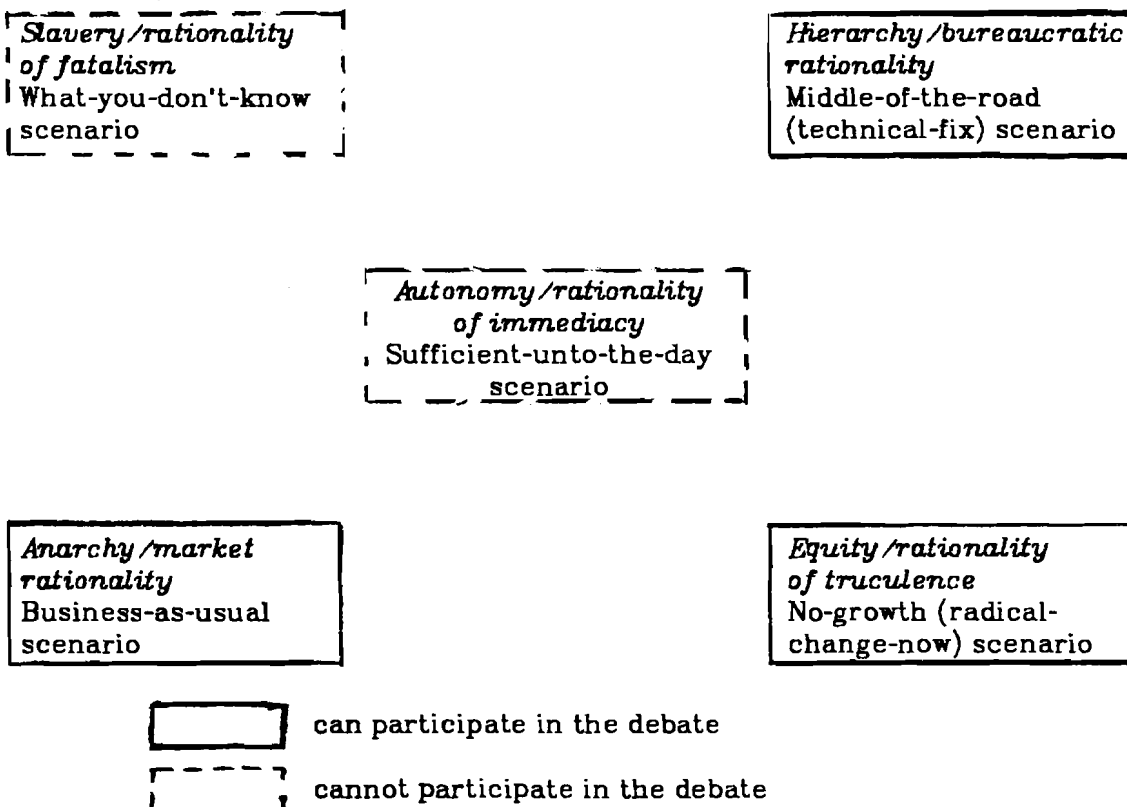


Figure 4. The political rationalities and their scenarios.

JUSTIFYING THE SCENARIOS

Our ecologist and our physicist hold their different ideas of nature, not because of differences between ecology and physics as systems of knowledge, but because of the different ways in which each of them is caught up in the social organisation of those systems of knowledge. The ecologist is a charismatic figure in a sect-like environmentalist group; the physicist is a 'Big Man'—in his youth, the Manhattan Project, more recently, the forceful leadership of a vast national laboratory. It is to these very different social contexts, and not to differences between ecology and physics, that their ideas of nature should be traced.

*The names of these scenarios are derived from Peter Chapman, (1975) *Fuels Paradise*, (London: Penguin) who, in turn, derived them from *Exploring energy choices*, a preliminary report published by the Energy Policy Project, the Ford Foundation.

The world of resource abundance that is provided for him by his cornucopian idea of nature furnishes our entrepreneurial physicist with the perfect justification for his business-as-usual scenario and for the specific energy policies that will lead him to that glorious future. And, at the same time as it is justifying these policies, it is highlighting the nonsenses entailed in those rival policies that are striving towards different and, to his mind, less rosy futures.* In contrast, a world of rapid resource depletion—the inevitable consequence of such expansive behaviour in an accountable nature—is the perfect justification for the radical-change-now scenario and for the draconian measures that are needed if it is to be reached ... before it is too late. But isomorphic nature clashes with both of these. Discounting both resource abundance and resource depletion, isomorphic nature provides a world of resource scarcity. Resource scarcity justifies extensive government intervention in the market but, at the same time, rejects the argument for sudden change. Rather, it becomes a question of carefully controlled and meticulously planned adjustment and transition.

So these notions of resources are the carrots—the 'natural' inducements to act in certain ways and to advocate certain policies. And they are accompanied by the sticks—the 'natural' penalties that will be incurred if the carrots are disregarded; these are *risks*.

The cultural theory of risk begins by rejecting the literalist view that risks are objective but, at the same time, it does not claim that risks are all in the mind. All it says is that risks are selected and that there is a social basis to the resulting pattern of selection biases.** Risks are selected (and rejected) in such a way as to maintain a stable relationship between social context (organisation) and cultural bias (idea of nature). I can use the work of a political scientist, David W. Orr, to explain the different energy-related risks that gain salience in each political culture and the way they help to advance the hidden political agenda—the ushering in of a desired style of governance.

RISK FOR

Orr,*** in trying to make some sense out of the energy debate in the United States, has identified three distinct *perspectives* each of which is appropriate to a set of primary actors and with each of which goes a preferred style of governance and a distinct set of salient risks. Each perspective, moreover, gains its particular orientation from the distinctive way in which the problem is defined. It is here, in the credible ways of defining the problem, that the different ideas of nature come into play but before investigating that I should point out that Orr's scheme is impressively redundant in that each perspective's distinctness is defined over and over again by a whole list of different criteria—it is a *polythetic* classification.**** For instance, he goes on to separate out the different energy goals that each perspective is striving

*For a more detailed account of this see my "Among the Energy Tribes: The Anthropology of the Current Policy Debate", IASA, Working Paper, WP-82-59.

**See Douglas, Mary and Wildavsky, Aaron (1982), *Risk and Culture*, (Berkeley: University of California Press).

***Orr, David W. (1977). 'US Energy Policy and the Political Economy of Participation'. *The Journal of Politics*, Vol. 41, pp. 1027-56.

****Redundancy does not mean that all but one of these criteria are unnecessary. That would be true only if the environment in which each perspective was being maintained was completely calm and this is most certainly not the case here. Each perspective's environment contains the other rival perspectives and, in consequence, is turbulent in the extreme. In such an environment, redundancy is essential to viability.

towards, he lists the qualitative value changes that will be entailed, and he ends up with the different 'ultimate energy sources'.

In what Orr calls the *Supply Perspective* the problem is *inadequate energy supply*, the primary actors are the *energy corporations*, the preferred style of governance is *Laissez-faire*—a minimum of government involvement—and the salient risks are those associated with *economic disruption*. In the *Conservation Perspective* the problem is *energy waste*, the primary actor is *government*, the preferred style of governance is *Leviathan*—a major role for government—and the salient risks are those associated with *balance of payments*, *overseas dependence*, and *energy wars*. In the *Energetics Perspective* the problem is *social and cultural*, the primary actors are *the public* (I would prefer to say the *public interest groups*), the preferred style of governance is *Jeffersonian*—one in which a participatory citizenry blows the whistle on government—and the salient risks are *technological accident*, *resource exhaustion*, and *climate change* (Figure 5).

PERSPECTIVE CRITERION	SUPPLY	CONSERVATION	ENERGETICS
THE PROBLEM	Inadequate supply	Energy waste	Cultural and social
PRIMARY ACTORS	Energy corporations	Government agencies	The public (public interest groups)
ENERGY GOALS	Inexhaustible cheap energy	Near term: efficiency Long-term: Inexhaustible (but not cheap) energy	Decentralized solar-based society
PREFERRED STYLE OF GOVERNANCE	Laissez-faire	Leviathan	Jeffersonian
VALUE SYSTEM CHANGES REQUIRED	No change	Small (and gradual) change	Large (and sudden) change
SALIENT RISKS	Economic disruption	Balances of payments Overseas dependence Energy wars	Technological accidents Resource exhaustion Climate change

ULTIMATE ENERGY SOURCE	Breeder/fusion	Conservation leading to breeder/fusion	Decentralized solar, wind and bio-mass
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Figure 5. Orr's framework.

The polythetic quality of this classification laces each perspective together into a whole package, as it were, and in so doing emphasizes the unity of each and their clear separation from one another. I put the *ultimate energy sources* together in a separate box in order to emphasize that each package is assembled in such a way as to lead inevitably to the desired future, while each is so separated from the others as to constitute a *chreod*—a necessary path—that, once committed, cannot be changed. This does not mean to say that policy cannot hop this way and that between these paths but only that the three paths that between them define the policy space will always remain clearly separate.

One consequence of all this is that risk is never just risk but always 'risk for' (in the same way that history is always 'history for')*. The 'risks for' are the sticks—the sanctions—that are being used to drive the society towards the desired energy future and, more importantly, towards the desired pattern of social relations that is perceived as accompanying that future. Risks in other words, are selected in order to provide rationalizations (in terms of the different rationalities that inform each cultural bias) for preferred patterns of social relations. That, given the inevitability of 'risk for', is the cultural definition of risk.

BEYOND SELF-INTEREST

Most policy analysis approaches policy debates in terms of 'the decision making process'. Such an approach begins (like Orr) by identifying 'the interested parties'—the groups and individuals who, in pressing their different advocacies, give rise to the debate. Such an approach has to assume:

- (a) that those who are not party to the debate are not interested;
- (b) that the reason for the interest of the interested parties is self-evident—it is essentially self-interest;
- (c) that what they are talking *about* in the debate is what they are interested *in*.

The cultural approach queries these assumptions rather in the way that 'the New Journalism'** queries the assumption that reportage (mere reportage, some diehard positivists would say) is just some self-evident data-base from which literary creation then takes off. In querying these assumptions it has us ask some unfamiliar and intriguing questions:

- (a) What of those who are interested but cannot gain entry to the debate, and what of those whose interest is best served by steering well clear of the debate?
- (b) How do people who act in their own best interest come to know where that interest lies; that is, how are the goals they seek set?

*Levi-Strauss, Claude (1966), *The Savage Mind*, London, Wiedenfeld and Nicholson, p. 257.

**Literary people were oblivious to this side of the New Journalism, because it is one of the unconscious assumptions of modern criticism that the raw material is simply 'there'. It is the 'given'. The idea is: given such-and-such a body of material, what has the artist done with it? The crucial part that reporting plays in all story-telling, whether in novels, films, or non-fiction, is something that is not so much ignored as simply not comprehended."

[Tom Wolfe 1973, "The Feature Game" in Tom Wolfe and E.W. Johnson (Eds.), *The New Journalism*, Picador, 1975 edn., London, p. 27.]

(c) What about the hidden agenda; if all those parties are really arguing about something else—about what kind of society we should live in—should we not try to read the debate in those terms and regard its visible agenda as little more than a convenient medium for the expression of these social concerns?

These are the questions that cultural theory tries to answer.

Orr's framework is, of course, historically contingent—it is specific to a particular society (that of the United States) and to a particular period (the late 'seventies) in the history of that society. It certainly makes a lot of sense of the space-time context to which it is anchored and, in addition, it provides a tantalisingly suggestive orientation for understanding other debates in other places and at other times. The problem, therefore, is to somehow or other cut the adhesions that tie this framework to its unique historical context so that we can move towards an understanding of the eternal bases of which it is but one specific manifestation. How, in other words, do we move from phenomena to their possibility?

Orr's scheme is essentially an explanation in terms of goal-seeking; the goals being set by the evident self-interest of his primary actors. To cut it free from its anchorage in space and time we need to underpin it with an explanation at the much deeper level of goal-setting. We need to ask how it is that the primary actors can come to know where the self-interest that they act in lies. But we have already answered this question—the explanation of goal-setting is to be found in the mutually reinforcing relationships between organisational types and ideas of nature. All we need to do is to slide this eternal cultural framework beneath Orr's historically contingent scheme (Figure 6).

SOCIAL CRITERION \ BEING	ENTREPRENEUR	HIERARCHIST	SECTIST
ORGANISATION (CONCEPTUAL SCHEME)	Ego-focused network	Hierarchically- nested group	Bounded egalitarian group
CULTURAL BIAS	Pragmatic materialism	Ritualism & sacrifice	Millenarianism / Fundamentalism
SOCIALLY- INDUCED PERSONAL STRATEGY	Individualist manipulative	Collectivist manipulative	Collectivist survival
IDEA OF NATURE	Skill-controlled cornucopia	Isomorphic	Accountable
CARROT JUSTIFIED BY IDEA OF NATURE	Resource abundance (culturally bestowed)	Resource scarcity (culturally be- stowed with- in natural frame)	Resource depletion (naturally bestowed)
STICK JUSTIFIED BY IDEA OF NATURE	Economic risks (market)	Control risks (bureaucracy)	Involuntary and irreversible risks (voluntarism)
PART REGIME	Anarchy	Hierarchy	Equity

SCENARIO THAT STICKS & CARROTS ARE STEERING TOWARDS	Business-as-usual	Middle-of-the- road	Radical-change- now
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Figure 6. The cultural underpinning for Orr's framework.

Again, this classification is polythetic and, again, I have put the scenarios in a separate box in order to emphasize the way in which each cultural/organisational package is put together in such a way as to lead inevitably to the desired future. Nor is this a complete framework; it is possible to go on adding more and more separation criteria, thereby adding to the strength of the separation between the three packages. The three participating rationalities, for instance, can be added and so too can Lakatos's anomaly-handling styles—*monster-accommodating* fits the expedient opportunism of the entrepreneur, *monster-adjusting* nicely matches the sorts of rearrangements that leave the hierarchist's essential frame unaltered, and *monster-barring* perfectly expresses the 'foreign body expulsion' that serves to maintain the sect's pure equality.*

*Lakatos, Imre. 1976. *Proofs and Refutations: The Logic of Mathematical Discovery*, Cambridge

The cultural hypothesis's polythetic classification, you could say, is like a tool-kit. You can go on and on adding to it and, though this may be a satisfying activity in itself, the main thing is to develop some sort of 'feel' that will enable you to select from it the most appropriate tools for each particular job of policy analysis.

RELATIVE SURPRISE

This section draws heavily upon collaborative work carried out at the Institute of Resource Ecology, at the University of British Columbia and at the International Institute for Applied Systems Analysis in Austria. It concerns five case studies in the management of living resources—forests and pests, fisheries, savannah grazing, forest fires, and plant and human disease. Each was selected for its social or economic importance and each has had a troubled and surprise-ridden management history. The part of the study that particularly concerns us is that in which the various management policies and goals are examined "in order to identify the *apparent concepts of reality* that generated them."* The result is a typology of what the authors call *myths of nature*.

Myths of nature are "partial representations of reality". Such myths are the cultural devices by which we can capture, in an elegant and simple form, some essence of experience or wisdom. Myths, in the face of our inevitably incomplete knowledge, guide our actions and moderate our fears of the unknown. Without myths we would be in a bad way. Since each is replete with accumulated wisdom, the question is not whether we should have myths or not but, rather, which myths we should have. The obvious answer is to have them all—to pool all that accumulated wisdom and experience—but this option, it would seem, is not available. Each myth contradicts all the others, and to embrace one we must first reject the rest. The case studies show that we do this not with reluctance but with alacrity. Different management institutions home-in onto the different myths and, once there, cling onto them as if their very lives depended on them. Cultural theory shows us that they do.

Though I have yet to effect the mapping of these myths of nature onto the ideas of nature that sustain the viability of social organisations, the similarities and perhaps, even, the identities between them are already becoming apparent. While this trend is gratifying—it is, after all, what I am trying to do—I should pause for a minute to stress the totally different theoretical origins of the ideas and the myths. While the ideas of nature have been deduced from the different kinds of moral justifications needed to stabilise different patterns of social relations, the myths of nature are arrived at entirely by ecological argumentation. The ecologist studies the forest as a system of which the trees are one crucial part. The soil, the rain, the sun's energy, the birds

University Press.

Bloor, David. 1982. "Polyhedra and the abominations of Leviticus in Mary Douglas (Ed.), *Essays in the sociology of perception*, London and New York, Routledge and Kegan Paul.

*The relevant papers are: C.S. Holling, "Myths of Ecological Stability: Resilience and the Problem of Failure" in C.F. Smart and W.T. Stanbury (Eds.) *Studies in Crisis Management*, Montreal, Butterworth for the Institute for Research on Public Policy, pp. 97-109.

C.S. Holling, C.J. Walters and D. Ludwig, "Myths, Time Scales and Surprise in Ecological Management". (This is an unpublished draft which expands on Holling's published paper). Though most the quotes I give are from the published paper, I have drawn extensively on the ideas contained in the unpublished paper and, for this reason, refer to "the authors" throughout rather than just to Holling.

and the bees are other components of that system and so too, when they make their presence felt, are the spruce budworms whose depredations have caused so much alarm among those who strive to manage the forest resource. The managing institutions then act, modifying the eco-system and thereby themselves becoming the objects of the ecologist's scrutiny. The ecologist, therefore, encounters these institutions in a way that is altogether different from the way the anthropologist encounters them. He encounters them as particular patterns of intervention in the eco-system he is studying; and what he finds particularly interesting is that, faced with exactly the same situation, different management institutions intervene in completely different ways. The myths of nature are then deduced from these observations. They are the minimal representations of reality that have to be ascribed to the various management institutions if those institutions are to be granted the dignity of rationality.

The authors identify four myths of nature which, they claim, constitute a Compleat Mythology. For reasons that will shortly become apparent, I will put their fourth myth—The Myth of Nature Resilient—to one side for a moment and consider just the first three: Nature Benign, Nature Ephemeral and Nature Perverse/Tolerant. The challenge is to map these myths of nature onto the ideas of nature. If the *system of constrained relativism* hypothesis is valid then these two—the myths of nature (derived from resource ecology) and the ideas of nature (derived from the sociology of perception)—should meet up. If they can be mapped onto one another the synthesis is achieved; if they cannot the synthesis has failed.

THE MAPPING

The authors' approach is by way of *surprise*. They do not, of course, speak of *relative surprise* but the fact that these case studies all have a "troubled and surprise-ridden management history" means that the surprises they focus on have all been noticed and have, in some way or other, challenged the various management myths. Since the way managed systems respond to unexpected events is determined by their stability properties, the authors characterise the myths as myths of stability. The stability myth for Nature Benign is a ball in a basin, for Nature Ephemeral it is a ball on top of an upturned basin; and for Nature Perverse/Tolerant it is a ball in a basin-like depression on top of a mesa.

Nature Benign is wonderfully forgiving; it does not matter what knocks you deliver, the ball will always find its way back to the equilibrium position. Nature Ephemeral is terrifyingly unforgiving; nature is so fragile that the least jolt may cause its complete collapse. Nature Perverse/Tolerant is a curious, but comfortingly static, combination of these two. Jolts, in moderation, are alright but you must be careful not to knock the ball right out onto the mesa. With Nature Benign "the hidden hand" becomes entirely credible—just let everyone knock the ball around as energetically as possible and we'll soon find out where the bottom of the bowl is. And the existence of global stability removes all misgivings about large-scale action. Big becomes necessary. With Nature Ephemeral we get the exact opposite. Of course, the fact that we are still here despite our perturbations makes this myth a non-starter, but we only need to introduce a small dose of spatial heterogeneity for the myth to become locally tenable and that is all that those who advocate those small tight-knit communities need in order to justify a respect for nature's fragile limits and to insist that small is beautiful.

Nature Benign encourages and justifies bold and individualistic experimentation. But such behaviour becomes unspeakably selfish and irresponsibly destructive if nature is ephemeral. Nature Ephemeral requires us, first, to set up effective group sanctions to prevent this sort of thing from happening and, second, to join together in joyous celebration of incuriosity and trepidity. Though Nature Perverse/Tolerant contains elements of the other myths, it turns out to be completely different from them both. Where Nature Benign encourages bold experimentation in the face of uncertainty, and Nature Ephemeral encourages timorous forbearance, Nature Perverse/Tolerant encourages the pursuit of certainty and predictability. If there is a boundary line (a *separatrix*) between equilibrium and disequilibrium then you can act boldly right up to that limit. Individualistic exuberance is all very well so long as it does not cross the line, strong group sanctions will be needed to prevent this from happening and, to apply those effectively, you need to know just where the line is.

The authors go on elaborating the consequences of these myths (for instance, centralisation goes with Nature Benign, anarchy with Nature Ephemeral and control with Nature Perverse/Tolerant) to produce an impressive polythetic classification, but we already have enough criteria to confidently map Nature Benign onto the *skill-controlled cornucopia* idea of nature that sustains the entrepreneur, Nature Ephemeral onto the *accountable* idea of nature that sustains the sectist, and Nature Perverse/Tolerant onto the *isomorphic* idea of nature that sustains the hierarchist. But this, encouraging though it is, is only a partial mapping. What about the *lottery-controlled* and the *freely available cornucopia* ideas of nature and where, if anywhere, does the myth of Nature Resilient fit in?

The Compleat Mythology, it turns out, is not complete. Since few if any hermits or ineffectuals are likely to be found filling senior positions in forestry services or heading up international programs for the eradication of malaria, the authors have understandably missed two myths of nature—Nature Capricious and Nature Truly Benign.

Nature Capricious is the myth that would map onto the the *lottery-controlled cornucopia* idea of nature that sustains the ineffectual. Here the ball sits neither in a bowl, nor on a bump, nor on a mesa. It clatters around a roulette wheel. The hermit is more of a problem. It is the pursuit of centralisation and the imperative of big-is-necessary, that are encouraged and justified by the myth of Nature Benign, that give rise to both the entrepreneur's centrality and the ineffectual's peripherality within the ego-focused networks by which both centralisation and bigness are achieved. Since it ends up doing this to the ineffectual, the entrepreneur's myth is not exactly benign. Nature Benign, you could say, is the public face of the entrepreneurial cultural bias. The lion lying down with the lamb is, properly speaking, the hermit's idea of nature but there are good explanations for the entrepreneur stealing it from him when it suits his purpose.

The rain it raineth on the just
And also on the unjust fella:
But chiefly on the just, because
The unjust steals the just's umbrella.*

*Lord Bowen (1835-1894) quoted in Walter Sichel, *Sands of Time*.

When due allowance is made for this libertarian sleight-of-hand, Nature Benign begins to give way to Nature Red in Tooth and Claw.

Since hermits and ineffectuals do not participate in policy debates, the authors have not come across them in their case studies and so have had no option but to take the entrepreneur's eye-view of the ego-focused network. Recourse to the cultural framework allows us to take in the other two individualist eye-views and to make the appropriate modification to the entrepreneur's myth. The hermit's social context is stabilized by an absence of opportunities for economies of scale and by a myth of nature as Truly Benign. When economies of scale are present we get a separation between network centrality (stabilized by the entrepreneur's myth of Nature Somewhat Falsely Benign) and network peripherality (stabilized by the ineffectual's myth of Nature Capricious).

A final quibble is that anarchy cannot really go with Nature Ephemeral and with small-is-beautiful. This myth and its associated aesthetic principle reject unbridled individualism (true anarchy). What they enjoin is small egalitarian groups and the coercive utopianism that is needed to sustain them. Anarchy may feature in the rhetoric of such groups but not in their reality (Figure 7).

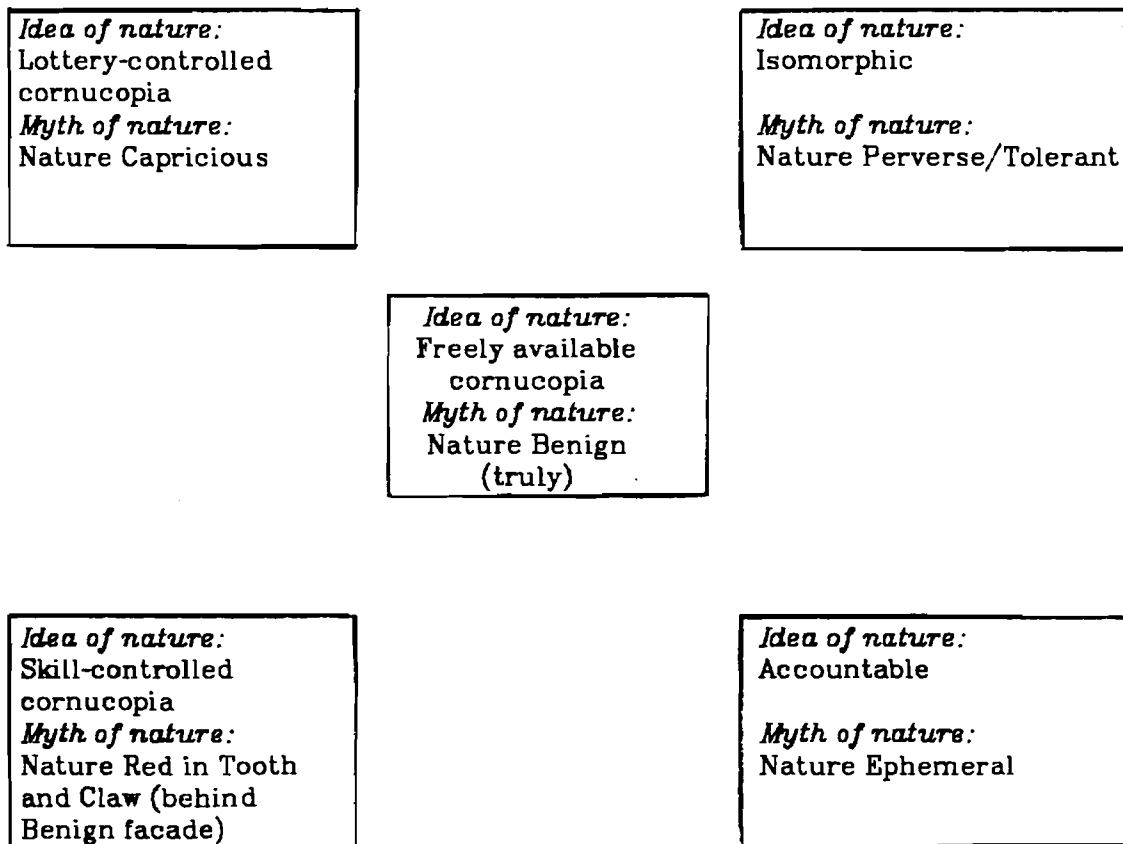


Figure 7. Relative surprise (myths of nature) mapped onto socially viable ideas of nature.

THE MYTH OF NATURE RESILIENT

Though the authors insist that myths are simple and elegant representations, the ball-and-landscape that goes with Nature Resilient is nowhere near so simple or so elegant as those that accompany the other myths. The argument is that, though both the ball-in-a-bowl and the ball-on-a-bump are each present locally in the ball-in-a-bowl-on-a-mesa landscape, the pursuit of knowledge and certainty that characterises that myth is still misguided because it fails to recognize that the movement of the ball itself *transforms* that landscape. Because it fails to capture these crucial transformational properties, the myth of Nature Perverse/Tolerant encourages management policies that start well but end up increasing the brittleness (and hence the unmanagability) of the system. Keeping the ball away from the boundary line works, and goes on working, until that unsuspected moment when the bowl suddenly ceases to be a bowl and becomes a bump instead, and then all is lost. So we could say that the myth of Nature Resilient is an attempt to capture these transformational systems properties that are not captured by any of the other myths.

But Nature Resilient, though it captures some essence of wisdom and experience that is not captured by Nature Benign, Nature Ephemeral or Nature Perverse/Tolerant, is not a myth in the same way that these others are myths. First, it does not have the simplicity and elegance of the other myths. In the myth of Nature Resilient the duality—the clear separation—of the two key elements—the landscape and the ball—becomes compromised in some mysterious way (or, at any rate, is a way that is not at all elegantly or simply captured by the myth).

But the topography itself is not static Changing the values of parameters can change the stability landscape ... the values of these parameters at any moment define the form of the topographic landscape. In essence, natural selection produces a balanced set of parameters whose value is, in part, the consequence of the historic variation of the system. Changing the patterns of variability can thus change this balance. Moreover ... often there is little change in the topography until a certain point, when the topography suddenly shifts: stability regions "implode"; new regions of stability and instability appear. There are, in short, separatrices in parameter space as well as in state variable space.*

The second curious property of the myth of Nature Resilient is that you can get to it only by criticising the other myths. When the myths of nature are mapped onto the ideas of nature we can pin down this distinction more precisely. The simple and elegant myths readily map onto the ideas (and so too do the two myths that go with the hermit and the ineffectual) but there is no place on this map for the myth of Nature Resilient. The reason is that Nature Resilient can only be reached by bending over backwards to compensate for cultural bias whereas the other myths are what you get when you give full rein to the different cultural biases. Nature Resilient can be expressed only as a reaction to the other myths. It is, therefore, a *transcendent* myth—a meta-myth, as it were, that allows us, in some way, to pool all the wisdom and experience that is contained in the contradictory primary myths.

*C.S. Holling, "Myths of Ecological Stability: Resilience and the problem of failure". op.cit. pp. 103-104.

Resilience is a sort of nirvana. There exists no organisational type that our embracing of the myth of Nature Resilient will strengthen; there is no position that we could take up within the process of social life that would lead us to bias our culture towards the idea of a resilient nature. There is no resilient direction; there is no bias towards resilience. Just as nirvana is escape from the wheel of suffering so resilience is escape from the coils of cultural bias. Resilience does not map onto the plural rationality framework; it is, rather, the consequence—the deep implication—of that framework.

CONCLUSION

Now that the myths of nature have been satisfactorily mapped onto the ideas of nature we should ask ourselves two questions. First, what are the consequences and capabilities of the increase in self-knowledge that this synthesis confers (assuming that is, that the ecological and cultural hypotheses are valid)? Second, what are the implications of all this for the re-conception of policy?

The answer to the first question is that we have now established (on a sound and broad theoretical base) a transcendental level (characterised by such notions as resilience, plural rationalities, political cultures, and constrained relativism) that simply was not there before. The answer to the second question is that, as debates spill out of their narrow technical confines (and, given the eternal nature of political cultures, they often do and often will), we are now able (thanks to this conceptual frame that allows us confront contradiction without at the same time demanding its removal) to shift our focus to the wider democratic concern that permeates all of technological choice—how best to moderate specific debates so as not to erode general consent.

As we make this shift we rediscover an old truth—that that which is inevitably transcendent at the level of individual cognition is part and parcel of the everyday business of the institutions and constitutions that make up what we are accustomed to call government. The paradox is that that which is unattainable for the individual is inescapable for the mediating institutions of democracy.

Though this whole exercise has been directed towards demonstrating that rationality is plural, yet there is a very real (but, so far as the individual is concerned, transcendent) sense in which its success can be seen as demonstrating the exact opposite—that rationality is unitary.

There being really no duality, pluralism is untrue.
Until duality is transcended an at-one-ment realised,
Enlightenment cannot be attained.*

**The Tibetan Book of the Great Liberation*, Edited by W.Y. Evans-Wentz, Oxford University Press 1981 (reprint), p. 208.