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Insight, part of a Special Feature on Nudging Evolution? Critical Exploration of the Potential and Limitations of the Concept of Institutional Fit for the Study and Adaptive Management of Social-Ecological Systems

Environmental Governance as Stochastic Belief Updating: Crafting Rules to Live by

Daniel W. Bromley [1]

ABSTRACT. The idea that humans can "manage" nature is a modernist conceit. Natural systems and social (human) systems are always in the process of becoming. In this setting of unknowable dynamic emergence, it is not possible to design institutional arrangements—rules to live by—that permit an activity called "management." The more fundamental challenge to the conceit of management is that humans are never sure what we want until we are put in a situation of having to work it out. We learn what we want by learning about what it might be possible for us to have. Science, properly engaged with the public, can contribute to this learning process. But science cannot hold itself up as an activity that produces truth about what it would be better to do. Sapient adults work that out, just as we work out the evolving meaning to us of the natural system. Science practiced outside of this realm of human meaning is impertinent.

Key Words: *belief updating; governance; meaning; reasonable*

INTRODUCTION

I wish to focus attention on how beliefs about knowing influence beliefs about doing. My enquiry is motivated—stimulated—by the appearance of what may turn out to be the early stages of a new "settled belief" about the very great difficulties humans face in our long-running attempt to live with nature. It has not been a happy relationship, after all. But reconciliation may be on the way. To borrow only slightly from Winston Churchill, we may be approaching the end of the beginning. And that would be, I submit, a marvelous thing indeed.

Humans did not always imagine themselves to be in control of much of anything. In fact, if we follow convention, the emergence of "sapience" (as in *Homo sapiens*) occurred approximately 50,000 years ago. By implication, humans have spent approximately 49,600 years firmly in the grip of the "other." Then we became modern, and reason liberated us from the tyranny of imposed ideas. Quite soon we came to imagine we were in control. From the idea of control comes the idea of management. Now we "manage" nature.

The prospect that this conceit of management is a spent force in environmental governance is an encouraging omen. Holling and Meffe (1996) write of the "pathology of natural resource management." Ludwig (2001) claims that "the era of management is over." Finally, Anderies et al. (2006) write that social-ecological systems are so complex that understanding them is still a faint hope. If you cannot understand something, "managing" it is problematic. Notice that the precautionary principle is of little value in complex systems that we do not understand. What, exactly, ought we to be careful about—exercise precaution—in a system whose operational characteristics are obscure to us? Which, of a large number of instrumental properties, must be approached with caution? How do we know?

Into this emerging view of just how hard it is to live with nature—and for us moderns "living with" generally means "managing"—comes yet another promising management prescription. It is called Fit (hereafter FIT). In exploring issues in global environmental governance, Oran Young writes:

- To be effective, institutional arrangements need to be well matched to the defining features of the problems they address. This makes it essential to recognize from the outset that environmental problems differ from one another in ways that have fundamental implications for the nature of the arrangements required to solve or at least ameliorate them (Young 2008:20).
- The point of introducing these distinctions is not to argue that some environmental problems are harder to solve than others in some generic sense. Rather, the lesson to learn is that successful governance systems must be based on a recognition of the character of the problems at hand and feature the introduction of behavioral mechanisms crafted to address these problems (Young 2008:21).
- The essential step is to reach agreement on an appropriate structure of rights, rules, and decision-making procedures. Once that is done, it becomes timely to consider the nature of the organizations needed to administer these institutional arrangements (Young 2008:21).

Young's insights, intuitively obvious on their face, entail the following presumptions: (1) the ideal institutional design (a management regime) must fit the problem; (2) behavioral mechanisms must pay attention to incentives; and (3) the necessary institutions (rules) must be embedded in (fit) the

[1]University of Wisconsin-Madison and Humboldt University zu Berlin

proper organizational structure. The clarity of Young's prescriptions is commendable, and their pertinence for environmental governance seems obvious. Unfortunately, it is harder than it appears. In keeping with the growing sense that the pursuit of scientific "management" is problematic, I argue here that the apparent clarity on offer by the idea of FIT is illusory. My doubts arise because the specific prescriptions advanced by Young require the ability to specify a priori the precise functional attributes of particular ecological problems that can then be meliorated if only we would apply the appropriate institutional arrangements that have been purposefully crafted to fit the environmental problems under consideration. Much of what follows will address our inability to specify these functional attributes.

A second concern arises because a specific constellation of institutions (rules) and governance structures, intended to address a particular ecological problem, necessarily sets in motion a new ecological trajectory whose salient properties are unknown until it is too late to craft new appropriate and incentive-compatible institutional remedies. This point has been elaborated in the literature (Holling and Meffe 1996, Anderies et al. 2006). We may think of this problem as a variation of the Heisenberg Uncertainty Principle. If the concept of FIT is to do the required work, then it presumes simultaneous feedback and re-calibration to jointly engage two emerging systems—the ecological and the social—whose idiosyncratic adjustments cannot be known and assessed until it is too late to "fit them back together."

Finally, the concept of FIT introduces the sterile shadow of scientism into a realm in which FIT does not fit. In its narrow version, scientism claims that the natural sciences have epistemology right and the other sciences ought to follow their lead. An obvious entailment of scientism is that of positivism—that we can only know what we can observe and record. Some would add "and prove." The consistent quest of scientism is to get ever closer to the way the world really is—as opposed to how it merely seems to appear to us. As I will elaborate below, scientism is the modernist project that deluded us into supposing that environmental management was possible. Donald Ludwig (2001) offers compelling arguments in support of my doubts.

The appealing aspect of Young's prescriptions about FIT is that they are coincident with our acquired habits of mind concerning what rational science consists in, and therefore what rational scientists ought to do. Our beliefs about knowing preordain our beliefs about doing. But of course the essential question is what, exactly, is this ecological system to which an equally obscure social system is to be creatively joined? What, exactly, is the social system that is amenable to perpetual redesign in order to bring it in line—to make it cohere—with this unknown natural system?

For the concept of FIT to do the necessary work, we must be willing to assume that the natural systems and social systems have the potential to work in harmony—if only we can get the institutions right. It is also necessary to assume that the natural system has a knowable evolutionary dynamic which can be harnessed to the concepts central to the social sciences in such a way that decision makers are capable of crafting the evolutionary architecture of social systems—institutions—in a way that will ensure that the two systems continue to cohere. The point seems to be that while humans are unable to design the natural system to suit our taste, we can design the social system so that it will "communicate with" the pertinent natural system. If successful, this process of artful design will yield timely and appropriate signaling that will preserve the integrity of both subsystems, and it will therefore ensure connectivity and associated long-run dynamic coherence between the two systems.

THE PRESUMPTIONS OF SCIENCE AND PUBLIC POLICY

It seems to me that the conceit of management—of which FIT is paradigmatic—is undermined by at least two vexing problems: (1) how can structured and purposeful thought—the activity we call science—become useful in the search for how to deal with, rather than "manage," nature? and (2) how can human values be transformed to come to grips with our persistent failures at "management"? The first question requires, I propose, a reconfiguration of the fundamental premises of what is called legitimate epistemology; the second question requires continual social discourse in order to work out a shared and evolutionary idea of the purposes of nature. The two questions are related. There must be constant adjustment in our shared conceptions of what nature is for, and there must be constant adjustment in policy-relevant science in order to keep that activity situated inside—as opposed to outside—that collective conversation. What is called science must become part of the discourse about nature, and the discourse about nature must become part of what is called science.

Toward evolving purposes of nature

When the field of natural resource management was in its early days—primarily under the influence of Martin Faustmann, Gifford Pinchot, and Aldo Leopold—their accepted purpose of the forests and of the wildlife that resided there would now seem rather narrow to us. In those days, forests were for the provision of timber, and wild animals were for shooting. The pressing "management" issues certainly appear much simpler and more straightforward than they do now. But that is not the interesting point. Rather, the focus of our concern must lie with the evolutionary process whereby a particular type of land cover—a particular plant and animal community—has come to be seen as much more complex, much more interesting, much more dependent on other distant ecosystems,

and much more important to the well-being of those other ecosystems. Indeed, we must also understand how that same idea of this ecosystem—a forest—has itself become much more complex and at the same time undergone continual mental transformations.

When Europeans came to be modern under the influence of August Comte and René Descartes, we were led to believe that there is a unique and knowable reality out there in the world that would become available to us if we would but first purge our minds of all existing ideas and thoughts about that reality. Only then could we grasp and comprehend that extant reality, and then we would—at last—have an accurate and irrefutable description of it. Our knowledge of it would be complete and incorrigible. With that durable knowledge in hand, we would then be getting very close indeed to the truth about that particular reality—the "thing in itself" as the Enlightenment philosophers put it. Some will refer to this as the representational model of knowing.

In contrast to this notion of observing and thereby "knowing," there is a more engaging, both literally and figuratively, perspective available to us (Rorty 1979, Bromley 2006, 2008). This alternative construct is attractive because it entails the working out of what seems to be the case out there in the world. In other words, we must entertain the possibility that understanding is not based on passive observation but rather active discernment. A workable view of the world out there, and its meaning to us, comes to fruition (is realized) as a process of convergence. I stress "workable" here because pragmatists insist that humans (*Homo sapiens*) are too practical as evolved coping animals to be preoccupied by unattainable images of the really "real" (Rorty 1979). In contrast to the "mask of representation" which authorizes an expert to define for us what is out there, this alternative approach authorizes an epistemic community to engage in a process whose very purpose is the creation of convergence. When a consensus emerges among members of that epistemic community, then this consensus might as well come to be regarded as the accepted account of that observed and apprehended reality. In other words, what is really out there is the agreed upon account presented to us by those whose job it is to study and analyze what is out there, and then report back to the rest of us. Charles Sanders Peirce put the matter this way:

> *The opinion which is fated to be ultimately agreed to by all who investigate, is what we mean by the truth, and the object represented in this opinion is the real. That is the way that I would explain reality.* (Peirce 1934:405)

This approach suggests to us that there is no plausible, reliable, complete, irrefutable, comprehensive, true, and accurate account of a "forest," or an "ecotype," or an "ecosystem." Indeed, that Holy Grail of environmental policy—species—is itself an artificial construct (Broberg 1992).

For humans, the only thing that matters about forests and various ecosystems is nothing more than the categories and meanings and purposes that humans attach and attribute to them. Each of these "environmental assets" becomes for us what we have made of them. This implies that we will see nature and revere nature and use nature in ways that necessarily evolve. The forest is for us nothing but the sum of its effects on us. An ecosystem is to us the sum of its effects on us. Of course forests and ecosystems are also parts of other biological, chemical, and physical systems. But human interaction with forests and ecosystems can be understood only in terms of the effects those forests and ecosystems have on us. When we try to "manage" forests and ecosystems, we are, in fact, managing (redefining) the effects that forests and ecosystems have on us, as we "manage" and redefine the effects we have on them.

We attribute our own idiosyncratic meanings to a stunning sunset, or a high mountain meadow, or the boreal forest, not by anything inherent in those physical settings but rather by the effects those settings and circumstances have on us. Wolves, for example, are understood to have certain traits defined by what they do—kill creatures that are mostly smaller and that do not fly well. That is what wolves do—it is what they are. One could easily say that this is what wolves are for. Indeed, we might expect that, if there were no wolves in particular ecosystems, something that does what wolves do now would appear. We know about vacuums in nature. But we also know that some individuals, though not all, load onto wolves other grander images—noble creatures reminiscent of a more pristine age. "Just look, they survive where it is really cold. Aren't they something?" Wolves become special not by what they do—kill other animals—but by what humans make of wolves. Again, to quote Peirce:

> *Consider what effects, that might conceivably have practical bearings, we conceive the object of our conception to have. Then, our conception of these effects is the whole of our conception of the object.* Peirce (1934:1)

Our conception of the effects of a sunset, or of a forest, or of an ecosystem, or of a wolf is the whole of our conception of a sunset, or of a forest, or of an ecosystem, or of a wolf. That is all there is. The mind is not a mirror of nature (Rorty 1979). Rather, the mind creates our own "nature" in the light of our current embeddedness in particular social and economic and cultural settings and circumstances. Eskimos and Sami are unlikely to regard wolves as charismatic marvels. Nature has no meaning without an interpretant—the human will in action, considering the effects of nature (Hiedanpää and Bromley 2011, 2012).

When the "circumstances of nature" change, then the construction project in our mind recreates nature in keeping with the emergent futures we think we see before us. This recreation of nature is always undertaken in light of our imagined purposes of the future. This necessarily follows because human consciousness is already living in the future (the very next second).

In terms of management and the idea of FIT, the implication here seems to be that what Young regards as "nature" (the ecosystem) does not and cannot exist independently of us. We have created it both ontologically via our prior colonization of it, and ideationally through our mental impositions upon it (see Norgaard 1984). What exactly is this ecosystem that can be instrumentally hitched—with an auspicious FIT—to the social system?

The realm of rules

The conceit of management, and the inter-system coherence envisioned by Young, the very coherence that is necessary for FIT to do valuable work, requires the design of a regime of rules (and perhaps rights) that will connect the social system to the ecosystem in mutually instrumental ways. This seems improbable.

The presumption underpinning a commitment to FIT is that the rules to live by can be carved at the joints so that some clear subset of those rules will bring about coherence between the social system and the natural system. However, as suggested earlier, ecosystems are always in the process of becoming—ontologically as well as ideationally. And of course social systems (human systems) display the same evolutionary tendencies. We have the difficult challenge of needing to anticipate future pathways of these two co-evolving systems and then trying to figure out how to make them cohere. This seems unattainable.

The fundamental challenge to the attainment of coherent "management" (and thus FIT) is that the scientific community must be able to create—and then have implemented—a suite of appropriate instrumental rules and rights (institutions). These rules to live by would need to be adopted by national parliaments and international organizations in the face of quite obvious contestations over the purposes of nature. What emerges from these layers of contestation appears to stand only the smallest of chances of providing meaningful guidance to those who would somehow "manage" nature.

The reason, discussed above, is that the way in which different participants in this quest for coherence come to see nature cannot be distinguished from the various ways in which they imagine the purposes of nature—that is, their idiosyncratic belief about what nature is for. Indeed it is their vision of what nature is for that prefigures how they come to see and to regard nature. Thus, any discussion of using science to produce improved management of nature, and this necessarily entails the design of new institutional arrangements (rules), must recognize that the first requirement is that the scientific "knowledge" must be commensurate with the disparate purposes of nature held by the many individuals and groups who claim to speak on behalf of nature. Therefore, the pertinence of science for policy about nature is not found in the FIT of science to nature. Rather, science is pertinent to policy about nature when that science accords to what humans imagine nature to be for. Science practiced outside of that realm of human meaning is impertinent.

The challenge for public policy in the service of managing nature—and thus the challenge for the concept of FIT—is to figure out how to reach agreement among a large number of individuals, across the international community, concerning exactly which rules are required to bring about coherence between the global social system and the earth's natural system.

It is in the nature of being individuals that we necessarily formulate and hold individualized impressions of our world—not the world, but our world. Only then do we form our individualized expressions by collecting, sorting, and re-describing to ourselves the sum of our impressions of the effects of the subjects of our apprehended senses. It follows that each of us occupies different lifeworlds, and thus each of us will have quite distinct expressions about the world "as it is" and about our situatedness in that world. In the context of joint action this means that there are as many "stages" as there are participants in the global community whose task it is to ascertain but a single idealized (optimal) course of action for the future. That is what "management" entails.

As above, the central challenge in collective action for global resource policy is to reconcile the multitude of contending ideas about the future. The issue here is not to discover the "right" idea about the future. The task, instead, is to focus on the various reasons for the contending ideas about what would be good to do. Serious deliberation is called for—deliberation is not a process of discovering what we want, but a process of reflecting upon what there is the most reason to want (Raz 1997). Progress is to be found in reasoned debate—the asking for and giving of reasons (Brandom 1994, 2000). To quote Hans Joas:

> *[it is] ...impossible to hold the position that the setting of an end is an act of consciousness per se that occurs outside of contexts of action. Rather, the setting of an end can only be the result of reflection on resistances met by conduct that is oriented in a number of different ways. Should it prove impossible to follow simultaneously all the various guiding impulses or compulsions to action, a selection of a dominant motive can take place which then, as an end, dominates the other motives or allows them to become effective only in a subordinate manner...*

> *action is teleological only in a diffuse fashion. Even our perception is shaped by our capacities and the possibilities for action*. (Joas 1993:21)

We see here recognition of the many images of action, and we see that the setting of ends outside of the context of action is psychologically impossible. That is, the prior specification of desired states in the future—allegedly the purpose behind creating FIT—is impossible until those who must act are in a position (a context) to act. At what point are we to seek consilience between these two evolving systems so much in need of connectivity? Individuals, or groups, are constantly updating what they think they want, and they are constantly updating the epistemic presuppositions about how best to go about getting what it is they think they want. The updating of beliefs in the course of working out reasonable expectations about choices and outcomes can be thought of as a process of compacting the notional decision space. In the course of that compacting, the original objective function—the volitional premise of action—cannot possibly emerge unscathed. What individuals seem to want at the end of enquiry about choice rarely comports with that they imagined they would want when that enquiry about choice started.

When Young tells us that rules and rights can be modified to bring the social system into greater coherence with the natural system, the impression seems to be that these institutional reconfigurations can be rather easily wrought. But of course this cannot be the case. Institutional change often entails a rather profound re-specification of who must or must not undertake some specific action (duty), who may undertake certain actions without interference from other individuals (privilege), who can undertake certain actions with the explicit aid of the collective power (right), and who cannot expect the collective power to undertake certain actions in their behalf (no right) (Bromley 2006).

The paramount difficulty in collective action is that all participants in the process will have their own individual perception of the nature of the problematic situation, the nature (and often the specifics) of a desired outcome in the future, and the preferred means by which that outcome might be brought about. In essence, each individual must work their way through this process by continually "updating" their beliefs, as new evidence emerges, in order to reach some consensus on the exact problem, plausible solutions to that problem, and the range of feasible instruments by which that solution might be achieved (Bromley 2008).

Truth as coherence

We come to an awkward pass. My claims above, if plausible, suggest that there is no assured way, relying on standard methods of what is called science, to hitch the human system to the natural system in order to effect what is called "management." I also claim that the activity called science, if it is to be useful in public policy toward nature, must become part of the on-going discourse about how the human system might be nudged in new directions regarding the purposes of nature. This suggestion will alarm those who cling to the quaint idea that science is some pure and insulated pursuit of truth.

But there is a more serious issue yet to be addressed. Considerations of environmental governance are ethically defective unless they include all those who are potentially affected by decisions reached. Lacking that, the discourse about environmental governance resembles the neo-colonial practice of ruling down on others. And if we cannot hector them into accepting our views on the purposes of nature, we will buy their acquiescence with payments for environmental services. The presumption seems to be that those living in the North are properly animated by this good cause, and others, who must make a hard-scrabble living among what we call valuable biodiversity, need to be brought around to embrace our ethical commitments. The instrument by which others can be harnessed to our cause is called science. And the practice of science is carved into epistemic communities (Haas 1992).

As above, it is usually claimed that the purpose of science is to pursue truth. A more honest description is that science is a structured process that gives voice to reasons for holding particular beliefs about complex events and observations. Science is one of the realms of human affairs in which reasons are formulated and debated. The goal of those who do science is to advance and debate reasons in order to produce what Charles Sanders Peirce would call "settled belief." The essential purpose of the activity called science is to create focused circumstances in which new ideas can be debated on their merits.

The individual mind is formed by accommodating itself to prevailing customs and practices (Ramstad 2001). The issue then becomes a matter of what seems "reasonable" to the habituated mind. The dominant challenge to global environmental governance is that the idea of "reasonable" responses to specific problems will necessarily vary across nation-states. It follows, therefore, that the formulation of "reasonable" solutions to a new global problem is inseparable from the customary practices to which all individuals—but especially those political leaders who are at the front line in working out those solutions—have become habituated. And of course those habituated practices are "reasonable" or they would not have been adopted. That is, the habituated mind comes to see current practices, current choices, and current actions as normal, right, and correct.

Reason giving is the essential component of democratic discourse in which a gradual evolution in mental models is the point of that discourse (Bromley 2006). The goal of such discourse is to agree on the catechism as process rather than specific answers as outcome. We see this in the process called "harmonization" in the construction of the European Union. Here we see an example of alignment, of convergence, of

melding. Notice, as well, that it is not driven by concepts such as compliance, conformity, or standardization. Harmonization suggests an activity that centers on reason giving. More to the point, harmonization suggests an activity that centers on reciprocal reason giving. Compared to compliance, harmonization is a two-way street (Hiedanpää and Bromley 2011).

IMPLICATIONS FOR ENVIRONMENTAL GOVERNANCE

> *The object of reasoning is to find out, from the consideration of what we already know, something else which we do not know.* (Peirce 1877 [1997]:9)

What conclusions might be drawn concerning governance, and particularly the idea of FIT as an aid to environmental governance? I have argued here that the concept of FIT is problematic because it presumes too much about our ability to prescribe forward-looking coping strategies in a complex, indeterminate, and thus opaque world. Humans struggle with their individual and shared perceptions of reality, they struggle with notions of causation, they are never quite sure what they know about their world, they are often at a loss for good reasons, they can never be sure of the reasons for the actions of others, and they are prone to accept those things they hear or read when that new information fits comfortably within the mental matrix that informs their lifeworld. New data that do not find an accommodating place in their particularistic matrix of meanings are easily ignored or rejected. We are creatures of various habits of mind—some of which seem to serve us well, and some of which often seem at odds with our overall well-being. But who is to know which is which?

And of course the problem is compounded by the fact that other individuals, living in those places that also contain valuable biodiversity, cannot be assumed to share our vision of what would be better to do.

It seems that social scientists already have a number of operational concepts that enable us to analyze institutions in terms of their effects on human behavior regarding nature. We know that a price for carbon (an institution) will deter carbon emissions. We know that public awareness campaigns—advancing new "norms" (new institutions)—have a profound effect on consumer behavior with respect to food purchases, littering, recycling, purchase of hybrid vehicles, and other daily actions. We know that gasoline priced at $7.00 a gallon (yet another new institution) would have an enormous impact on driving habits where gasoline is now priced at $2.30 per gallon. That pricing change would preserve thousands of hectares of peri-urban greenspace and farmland, it would stimulate a massive shift to mass transit—with the attendant good effects on the emission of greenhouse gases—and it would revitalize a number of urban areas in the United States. We know that the recent decision—a new institutional arrangement—in Germany to abandon nuclear power will have a profound impact on research and development for new alternative energy sources.

The essential point is that we are not short of policy instruments—new rules to live by—to influence how individuals and groups interact with the natural world. I suggest that the problem for those who worry about global governance is not the lack of such rules (policy instruments) but rather the lack of political will to invoke those instruments. The pertinent question therefore becomes "Does the concept of FIT offer important new insights and possibilities that will alter the political dynamic between the social system and the natural system?" In other words, is the concept of FIT "good to think with"? If it is, then perhaps there is a role for the concept. If not, it merely joins a long list of ideas that often diverts us from the central task at hand.

I hope the point has been made and sustained that it is not just the physical characteristics of an ecosystem that are determinative of the appropriate management arrangements that will be brought to bear on that system. Rather, it is the social construction of that ecosystem—its shared mental objectification—that will be decisive in terms of institutional arrangements for addressing issues of global governance. This necessarily follows from the fact that the concepts of sustainability and resilience are themselves nothing but mental artifacts of the world out there. When ecologists tell us of "regime shifts" and "structure" and "function" they are asking us to grant them conceptual license. For the most part, those attributes (concepts) are our creations (Rorty 1979, 1982, 1999). As creations they help ecologists carry on a conversation. But do these concepts speak to the political class? We have ample evidence that "sustainability" has failed miserably in this regard.

I have argued elsewhere that humans are unable to be sure about what they want until a learning process has been allowed to run its course—the end result of which will be a set of possibly desired outcomes, the specifics and likelihood of each one being impossible to ascertain a priori (Bromley 2006, 2008). This arduous arrival at a possible purpose for action—and all desires are nothing but the working out of a purpose for action—must never be conceptualized as finished (final). All purposes are contingent, and all desiring is therefore contingent. The practical implication of this is that when specific scientists—ecologists, economists, political scientists—urge upon us a management regime that will produce resilience (or sustainability), we must understand two things.

First, the specific representatives of an epistemic community who use these words (these concepts) in the broader public are seeking to use others as the instruments of their community's desires. Alasdair MacIntyre has noted that "We use moral judgments not only to express our own feelings and attitudes, but also precisely to produce such effects in others" (MacIntyre 1984:12). Of course it is entirely appropriate to

invoke resilience (or sustainability) as an organizing concept to communicate with those outside of the specific epistemic community that created those concepts. This is the community of science in a descriptive mode.

Second, note that the concepts of resilience and sustainability are but the momentary efflorescence of a suite of prior and quite contingent beliefs that, as with all scientific claims, must be understood as provisional. Therefore, to insist that resilience (and the sustainability it underwrites) is a desired management goal for an ecosystem is to advance a moral claim that asks for justification. It is a moral claim precisely because the value position of the speaker is that sustainability is a desired state. It is of the class of propositions that contains "I love opera, you should too." We will be told that ecosystems will "crash" if they are not managed sustainably. Two responses are possible: (1) how do you know that? and (2) so what? The first is an epistemological challenge, while the second is yet another moral claim. MacIntyre insists that moral claims are the linguistic survivors of classical theism which is no longer available to us as an anchor for moral assertions. Sentences advancing moral claims are residues of earlier habits of mind.

But notice that the epistemic part—allegedly "the science"—is also encumbered. A natural scientist approaches an ecosystem as morally justified—as legitimate. It acquires its legitimacy by dint of its existence. We have here a species of "natural rights" thinking. The scientist then describes to us what an ecosystem does and why it matters to us. We then come to realize its moral claim on our attention. We have joined the scientist's moral community. And then we quite easily agree that all ecosystems must be allowed to carry out their essential purposes un-infringed by human action. Those of us who are not ecologists have been brought into the world view of the natural scientist. We have become honorary members of the ecologist's epistemic community. By being so affiliated, we are then empowered to advance limited claims on behalf of all ecologists. While many social scientists, including Young, appear happy to do so, their authority can rest only on moral persuasion or coercion since their membership in the epistemic community of ecologists is honorary and morally based, not epistemological or reasoned.

It seems to me that the concept of FIT is not particularly "good to think with." My agnosticism springs from the fact that neither of the two distinct mental systems in need of connectivity—the natural system and the social system—can be appropriately specified in a way that enables the necessary connectivity. If there is nothing to connect, I suggest that there is nothing to FIT.

Responses to this article can be read online at:
http://www.ecologyandsociety.org/vol17/iss3/art14/responses/

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