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Environmental regulations and the problem of sustainability: Moving beyond “market failure”

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ARTICLE INFO

Article history:

Available online 27 March 2007

Keywords:

Sustainability

Evolutionary policy

Market failure

ABSTRACT

The standard metaphor of market failure is an impediment to the crafting of environmental policy that can escape policy lock in. Sustainability requires a policy process that can avoid this lock in. Sustainability concerns the creation of dynamic human processes that can respond to—indeed anticipate—unanticipated feedback from biological processes.

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The economic life history of the individual is a cumulative process of adaptation of means to ends that cumulatively change as the process goes on, both the agent and his environment being at any point the outcome of the past process. His methods of life today are enforced upon him by his habits of life carried over from yesterday and by the circumstances left as the mechanical residue of the life of yesterday. Thorstein Veblen, “Why is Economics Not an Evolutionary Science?” *Veblen, 1898* [1990], pp. 74–75.

1. The economy and the polity¹

A central organizing principle in economics is that there is something identifiable and separate called *the economy*. Coincident with this perception is the related idea that there is something else called *politics*. That these demarcations happen to mirror the disciplinary turf of modern universities is not unrelated to the bifurcated notion of the modern democratic nation–state. Of course at one time economics and political theory (and philosophy for that matter) were united both mentally and structurally in the academy. But in the early years of the 20th century, when economics came to be defined more by its method (rational choice under cover of methodological individualism) than by its subject of inquiry (the economy), there emerged a felt need to differentiate the alleged “science” of economics from the mere “art” of governance and

politics. Economics came to be about axiomatic models of rational choice, while government and politics remained concerned with interest groups, logrolling, power, and contested visions about the purposes of government and society.

This demarcation, at least in the minds of the welfare economists who gained ascendancy in the latter half of the 20th century, brought us models of *market failure*, *government failure*, and the emergence of a literature whose primary purpose was to pass judgment on when, exactly, so-called government *interference* in the allegedly separate workings of the economy would enhance or stifle economic efficiency and social welfare (Bromley, 1990; Cooter and Rappoport, 1984). Nowhere has this demarcationist program been more seriously pursued than in environmental economics. Most environmental economists, students of public finance (with its frequent reference to distortions, dead weight losses, and the sacred trinity of efficiency, redistribution, and stabilization), regard this demarcationist worldview as quite natural. The matter under discussion here concerns whether it is coherent.

The notion of *market failure* is the defining metaphor in environmental economics. Atomistic choices in the status quo institutional setup (invariably called “the market”) are found to produce outcomes—smoke, toxic fumes, pesticide-laden fruit and groundwater, noise, chemical discharges into rivers—that impose unwanted costs on others. These spillovers (harms) are then said to represent a market failure. But then it will be

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¹ This early section draws on material in Bromley (2006).

objected that this situation cannot automatically be called a market *failure* unless it can be shown that the benefits of correcting the existence of this harm exceed the costs of correcting the status quo institutional setup that produces the harm (the externalities). This approach was inspired by the work of Francis Bator (1957, 1958), Harold Demsetz (1967), and Ronald Coase (1960). According to this view, institutional arrangements should be altered with respect to environmental spillovers when the benefits of doing so exceed the costs of change. If the benefits cannot be shown to exceed the costs then it is efficient (“socially optimal”) that the institutional setup responsible for the externalities not be changed. While the victims might well be seriously harmed by the smoke, toxic fumes, or chemical discharges into rivers, their harm is deemed to be less than the necessary costs to change the existing institutions that allow the unwelcome externalities. The hyper-Coasean would advise the victims to remove themselves from the vicinity of the polluter. To force the polluter to stop polluting would diminish the national dividend and thereby be judged socially inferior.

Along the way, the earnest environmental economist is pleased to insist that an object's (or a circumstance's) economic benefit (or value) is determined by how much people are willing to pay for it. Notice that this claim must be understood for what it is—a mere definition. That is, economists *define* the social value of something as what people are willing to pay for it. Philosophers of science call this a *concept by postulation* (Northrop, 1967). Such concepts obtain their meaning from the theoretical structure out of which they emerge—they have no independent meaning outside of that contrived structure. Is it “true” that the value of a wetland is correctly measured by what individuals are willing to pay for it not to be destroyed? The presence of protest bids in contingent valuation studies might be thought instructive in this regard. The mere fact that many environmental economists happen to believe that WTP is a measure of the “value” of wetlands (or any part of nature) does not make it so. Economists down through the years have shown themselves capable of believing quite fanciful notions. Such belief is merely indicative of a shared set of acquired *definitions*—learned early in graduate school and continually reinforced by the carefully selected literature to be read (and other literature to be artfully ignored). Moreover, the existence of elegant graphical and/or mathematical demonstrations of this definition cannot possibly establish the truth content of the definition. Such demonstrations simply illustrate—but cannot prove—the definition. To assume otherwise is to confuse models of the world—*ideas* about the world—with the world itself. Such confusion is known as Hume's Fork.

Nonetheless, if clean water or air (or a preserved wetland) cannot muster a sufficient willingness to pay on the part of those who find such settings compelling, then it is said to be socially efficient that the air or water remain dirty (or the wetland be drained). It will then be asserted that there is no *market failure* in such cases since the costs of change are claimed to exceed the benefits of that change. In the artful terminology of environmental economics, interference with others in the form of costs shifted on to them (pollution, or a wetland turned into a suburban mall with an over-ample parking lot) that is not worth correcting is regarded as a *Pareto irrelevant externality*. Those exposed to fish they cannot eat,

water they cannot drink, air not fit for breathing, and sunsets they cannot enjoy, may not be amused to learn that the harms they suffer are—we regret to report—Pareto irrelevant.

The message is unmistakable. If democratic governments, under pressure from the victims of externalities, are going to alter the extant institutional arrangements (linguistically privileged by the label “the market”) for the purpose of addressing the visitation of environmental harms on others then those changes (linguistically prejudiced by the labels “regulations” or “government interference”) must pass a benefit-cost test. It is only with the aid of benefit-cost analysis that we will be certain of the “rationality” of new environmental policies (Arrow et al., 1996; Cropper, 2000; Palmer et al., 1995; Pearce, 1997).

Notice that public clamor for relief from such externalities emerges in the only venue where such concerns *can* emerge—the realm of politics. Given the demarcationist worldview in environmental economics, there will be immediate suspicion of such demands. If the masses wish for less pollution let them pay polluters to stop their egregious practices. Otherwise, it might be claimed, those seeking a cleaner environment will be able to free ride by getting something through the legislature (new institutional arrangements leading to an improved environment) without having to pay for it. After all, if they can free ride on the political initiative of others then those who favor less pollution might be able to get a cleaner environment without having to offer payments to polluters to cease their contamination of the water and air. Many environmental economists will assert that if we allow this sort of political maneuvering to occur then society will end up with “too much” environmental quality—the air and water will be too clean, fish will have too few chemical residues in their edible flesh, and there will be too many hectares devoted to wildlife and waterfowl habitat. In other words, we will hear complaints of politicians “meddling” in the economy (Palmer et al., 1995).

Isn't this a bit odd? Suddenly, it seems that public policy is not what we thought it was. Democracy as public participation and reasoned discourse is somehow suspect—not to be trusted. It seems that the public's business cannot be properly conducted unless it adheres to the precepts of individualistic models of “rational choice” applied to collective action. The objective here seems to be a quest for policy without politics—as if such a thing were possible (Tribe, 1972). Or, more correctly, it is a quest for public policy in which applied micro-economics is deployed as the only way to impose “rationality” on an otherwise incoherent and quite un-trustworthy political process.

This is not merely a clash of worldviews. It is a clash of contending truth claims about how to figure out what is to be done in the public sphere—it is confrontation between prescriptive consequentialism and reasoned public debate over how to get to the future. I have addressed this matter in great detail elsewhere (Bromley, 2004, 2006). Here I will focus on the fundamental contradiction that undermines the prescriptive urge that dominates environmental policy.

2. Achieving sustainability in environmental policy

The economy and the polity are always in the process of becoming, yet standard environmental policy is essentially

static and is crafted such that it precludes necessary dynamic adjustment as economic and political circumstances evolve. We may think of this as *policy lock-in*—a form of path dependence. The problem here is that path dependence deprives environmental policy of the dynamic adjustments necessary for achieving sustainability.

I shall here be concerned with the realm of industrial and agricultural pollution—what is usually thought of as the regulatory branch of environmental policy. I will not discuss issues of wetlands preservation, the establishment of new marine parks, reserves, and sundry protected areas. Nor will I discuss endangered species policy under the jurisdiction of the U.S. Department of the Interior. Rather, I am concerned here with environmental policy under the Clean Air Act and the Clean Water Act. The Clean Air Act declares:

SEC. 101.

(b) The purposes of this title are—

1. to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population;

(c) Pollution Prevention. A primary goal of this Act is to encourage or otherwise promote reasonable Federal, State, and local governmental actions, consistent with the provisions of this Act, for pollution prevention.

And the Clean Water Act declares:

SEC. 101.

(a) The objective of this Act is to restore and maintain the chemical, physical, and biological integrity of the Nation's waters. In order to achieve this objective it is hereby declared that, consistent with the provisions of this Act—

1. it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;
2. it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;
3. it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;

Following several general statements regarding the powers of states and territories, we see that:

(e) Public participation in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this Act shall be provided for, encouraged, and assisted by the Administrator and the States. The Administrator, in cooperation with the States, shall develop and publish regulations specifying minimum guidelines for public participation in such processes.

There are several ways to read this Congressional language. One way would be to dismiss all of it as political grandstanding to the environmental lobby, when in fact Congress meant nothing of the sort. This tack has no doubt been pursued by some polluters and been found defective by the courts. The other way to read such language is to presume that when Congress writes legislation, the intent and language of the statutes carry some weight. On the assumption that Congress meant what it said, and said what it meant, we may

then reflect on what was said. The Clean Air Act declares that its purpose is the *prevention of pollution*. Moreover, the prevention of air pollution is to rely on *reasonable* Federal, State, and local actions. The Clean Water Act alleges that its purpose is “to restore and maintain the chemical, physical, and biological integrity of the Nation's waters.” The Act further asserts that: “it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985.” Finally, we see specific language on public participation. It seems that the purpose of such legislation, and therefore the essential task of the Environmental Protection Agency, is to prevent—and to eliminate—pollution.

The obvious problem is to determine, exactly, what is and what is not pollution? From an economic perspective the question worth asking is: exactly how much are you willing to forego (opportunity costs) to prevent and eliminate pollution (whatever it may be)? Small wonder that water chemists, engineers, economists, and a large number of lawyers and lobbyists soon appear with “expert” testimony in hand. At the end of this long and expensive struggle, a negotiated decision will reveal that the “best” level of emissions or ambient concentration of some pollutant is *X*. Note that this magnitude *X* then becomes enshrined in law and practice. The battle then shifts to the best way to achieve *X*. Shall it be accomplished by engineering standards? Shall it be accomplished by uniform reductions on all firms? Shall it be accomplished by marketable permits? Soon elaborate administrative and monitoring protocols are in place. The system becomes “locked in” around *X*. If, in the future, it is discovered that *X** is the “better” level, much of the struggle must be replayed. Policy path dependence appears in that any deviation from *X* must then be renegotiated against the prior presumptions associated with *X*—a position not easily abandoned by many participants. The fight starts again.

Is this process consistent with the idea of sustainability? I suggest that it cannot be conducive to sustainability. Environmental policy that is consistent with achieving sustainability must *consider the present in terms of the future*. In contrast, the process just described fails precisely because it *considers the future in terms of the present* (Bromley, 2006). When economists offer advice—policy prescriptions—about actions that ought to be taken in the interest of “rational” environmental policy, costs and benefits are discounted back to the present. This practice is central to maximizing the net present value of the potential benefits of public action. We see this most clearly in the struggle with global climate change. The costs of reducing emissions of greenhouse gases occur largely in the present, while the benefits will not occur until some time off in the future. The large literature on discounting in environmental policy addresses precisely this problem. Notice that discounting considers the future in terms of the present. That is, future outcomes (less global warming) are dominated by the fact that benefits and costs are reduced to present values. If all of the benefits of corrective action occurred immediately, while the costs of that corrective action were borne by future generations, discounting would yield a quite different “efficient” policy. And that is precisely the point.

Sustainability is about the world to be inherited by future persons (Bromley, 1998). Sustainability is not about what would be efficient (or even fair) for the present generation to

bequeath to the future. When environmental policy is re-cast as a problem of considering the *present in terms of the future*, we are compelled to ask not about what would be optimal (or efficient) for those of us now living to do for future persons. Rather, we are compelled to ask what future persons would like for us to do now in order that their world might be more to their liking than if we were to pass on to them what is efficient for us.

Unfortunately we cannot know what sort of world future persons will prefer. In the absence of that, the standard story is to make sure that irreversible options are not undertaken now that will preclude desirable outcomes for future persons. While necessary, this is not sufficient. *The abiding obligation to fall on present persons is to create a policy process that avoids policy lock-in.* In essence, those of us who stand as dictators over the world to be inherited by future persons must consider the present in terms of the future, and we must formulate environmental policies containing durable processes that bring quasi-automatic updating as new information renders earlier parameters (in this case X) no longer appropriate. Sustainability is accomplished when new information can be readily acted upon without re-creating the initial fights and legal struggles that now characterize the crafting of environmental policy.

The question might be posed: “what does updating have to do with sustainability? Isn't sustainability concerned with preserving natural capital?” Or, it might be suggested that sustainability is concerned with maximizing the time stream of consumption (or utility) across time. Unfortunately, these notions are operationally unhelpful (Bromley, 1989, 1998; Gerlagh and Keyzer, 2001; Howarth, 1997, 1998; Lele and Norgaard, 1996).

The opening quote from Thorstein Veblen reminds us that humans spend their lives adapting means to ends that are themselves always undergoing change. The economy is always in the process of becoming, and it therefore follows that individual ends (and appropriate means) are themselves always becoming. The problem of addressing sustainability in a policy sense concerns how to avoid the imposition of a static goal into a dynamic evolving process. Establishing pollution or emissions standards is precisely the imposition of a static performance goal into an evolutionary system. Moreover, when sustainability is conceived as preserving particular consumption opportunities for future persons, we encounter the inconvenient fact that those of us now living cannot possibly know which consumption opportunities will appeal to future persons. But, on second thought, we need not concern ourselves with that because future persons will value those things that have been valued by earlier generations. Veblen's cumulative causation transmits to future persons the values earlier persons seek to pass on (Bromley, 1998). Indeed, the entire process of environmental policy is to make sure that future persons do not acquire the “wrong” preferences. Environmentalists live in constant fear that their children will come to revere plastic trees.

3. On complexity and vagueness

Two problems defeat the prescriptive certitude sought by standard environmental policy. The first problem concerns

complexity, while the second concerns the philosophical problem of vagueness and contradiction.

3.1. Complexity

...complexity ... takes away the reference point for theory's defense of the market. In the complexity vision there is no proof that the market solves problems. There is no unambiguous way of stating what is and what is not an externality, and there is no guarantee that the market leads to the most desirable equilibrium. Thus deductive theory cannot provide a basis for the defense of *laissez faire* (Brock and Colander, 2000, p. 82).

Complexity denies to us the essential tractability and predictability we need in order to advance tendentious Paretian prescriptions about what is optimal to do in the realm of human action. Models of optimality bring nothing compelling and necessary to the realm of human action—either for individual action or for collective action. This arises from the fact that every policy prescription is, necessarily, also a policy prediction. Policy prescriptions necessarily emerge from explanatory algorithms and those prescriptions seek to ratify particular reasons why certain outcomes are (or are not) observed. That is, prescriptions are concerned with altering the institutional arrangements that at the moment define domains of choice—fields of action—for individuals and groups of individuals. Prescriptions are also predictions in the sense that we say: “enact this particular policy and different (putatively desired) outcomes will ensue in the future.” But just as there must be good reasons for particular outcomes, there must be good reasons for particular policy initiatives—institutional changes.

Complexity denies to us the necessary clarity about whether or not the economy, at the moment, is in a Pareto optimal state. If it is not in such a state, then confident prescriptions about Pareto—improving policy changes are whims of the analyst's imagination and not to be taken seriously.² Complexity does not deny us the opportunity to seek ways to improve the future. Complexity merely forces us toward greater modesty in dispensing prescriptive certitudes that become the basis for policy path dependence.

3.2. Vagueness and contradiction

Premise: one million grains of sand is a pile;
 Inductive Step: if n grains of sand is a pile, then so is $n-1$ grains a pile;
 Conclusion: one grain of sand is a pile.
 [with apologies to Roy Sorensen, 2001, p. 1].

The policy ratification of a particular level of some pollutant encounters two profound challenges. First, is it

² The well-known theory of second best seems reassuring in that while we may not be able to get the first-best outcome, the second-best outcome might still be worth pursuing. The obvious problem is that in the absence of clear guidance about first-best policies, the rest of them are incapable of being positioned or ranked.

true that *M* is a pollutant? Second, at what level is *M* a pollutant? Environmental policy operates on the premise that the identification of a pollutant is straightforward (toxic compounds are, after all toxic), and then sets about to specify the exact level at which that pollutant—either as a constituent part of emissions, or as ambient concentrations—constitutes “pollution.” The problem here ought to be obvious. The environmental economist may suggest that all the political fighting would dissipate and be unnecessary if only she were allowed to undertake careful studies that would reveal the efficient level of emissions (or ambient concentrations) of some pollutant. She apparently believes that this would settle matters once and for all.

However, vagueness is parasitic on prescriptive environmental policy. This is not a problem unique to environmental policy. Indeed, the bulk of the serious work on vagueness comes from the realm of poverty. Who is poor? What is poor? Amartya Sen, who has thought some about poverty, observed:

...a formal expression can be extremely precise without being at all a *precise representation* of the underlying concept to be captured. In fact, if that underlying concept is ambiguous, then the demands for precise representation call for *capturing* that ambiguity rather than replacing it by some different idea—precise in form but imprecise in representing what is to be represented (Sen, 1989, p. 317).

There is a growing literature on the problems of vagueness and what is called the *borderline problem* (Qjizilbash, 2003). When does a pile of sand cease to be a pile? When, exactly, is someone bald or not bald? Philosophers have approached this problem in three different ways.

The epistemic approach suggests that sharp boundaries exist but are obscured by our ignorance—and it is therefore necessary to allow for predetermined margins of error. However, in many settings, it is hard to imagine that greater data will fix the problem of vagueness. Will more data on the life of the poor establish a clear boundary between those who are poor and those who are not? Will more information solve the dilemma of who is and who is not bald? The problem, we see, is not one of data. The problem is inherent in the language. Bald and poor do not admit of the necessary precision to do valuable work. The word pollution suffers a similar fate.

The second approach concerns *degree theories*, of which fuzzy sets are an example. These approaches presume that there is some precise truth about the degree to which a vague statement is true. Unfortunately, this is problematic. Are there degrees of truth about degrees of truth?

Finally, there are the *supervaluationist* accounts. Here, the truth of vague statements or expressions depends on how they are (or can be) made more precise. The problem here, of course, concerns the very word “precise.” What, exactly, is meant by making something more precise? Supervaluationist approaches avoid the problem of degrees of truth, and they do not privilege any particular sharp boundary as happens with the epistemic approach. But they still leave us with the problem of vagueness, under another name.

The problem, it would seem, stems from the presumption that there are precise words for imprecise settings and circumstances. But why should we suppose that there is something precise about the term bald? Or about the term poor? Or indeed about the term pollution. The quest for false precision induces a policy process that celebrates precision and then locks it in as if something true (and real) had been produced. Vagueness is the mother of contradiction. And environmental policy grounded on vagueness and contradiction is public policy without coherence.

4. Beyond scientism and market failure: toward finding reasons for policy prescriptions

I opened with an account of the flaws inherent in the prescriptive truth claims common in environmental economics. This criticism was then generalized to encompass the flawed and contentious process of environmental standard setting in the regulatory arena. If environmental policy is to be transformed so that it is consistent with the imperatives of sustainability, two modifications will be required. First, ways must be found to escape the tyranny of hubristic precision inherent in scientism.³ Second, environmental policy must be rescued from the domain of regulatory “interference” with the economy.

4.1. Escaping scientism

The first challenge is to escape the tyranny of scientism. Scientism is parasitic on reason. Scientism sequesters and mocks reasoned dialogue and seeks to trump *reason giving* with reductionist truth claims (Bromley, 2006). The escape from scientism enables the asking for and giving of reasons for desired outcomes and their implied antecedents (Brandom, 1994, 2000). That is why humans engage in reasoning activity. That is, after all, the purpose of language—language is but a tool for getting by (Wittgenstein, 2001). The idea of “sustainability” is problematic precisely because it is utterly devoid of truth content—one can never know if one has achieved it. Small wonder that attempts to make it operational have foundered. Ecologists, economists, and philosophers have struggled Sisyphus-like to bring meaning and coherence to the concept of sustainability—to make sustainability operational. “Grasping a concept is mastering the use of a word (Brandom, 2000, p. 6).” Like baldness, sustainability is simply a word to describe a particular set of circumstances—and it is nothing but a word. Sustainability does not become a coherent concept until we have mastered the word.

Rescuing environmental policy from scientism requires that prescriptive conceit must now give way to public discourse, debate, and the offering of reasons. The Clean Water Act calls for public participation. The Clean Air Act declares that its purpose “... is to encourage or otherwise promote *reasonable* Federal, State, and local governmental actions, consistent with the provisions of this Act, for

³ Scientism is the idea that the approaches and attributes of the natural sciences constitute the proper model for guiding other actions.

pollution prevention [Section 101.c].” (emphasis added). And, one might therefore ask: What, exactly, is the purpose of public participation but to work out what seems reasonable? Courts of law are plausible examples of realms in which “reasonable” plays a profound role. Juries are bodies of putatively reasonable peers. Lawyers on both sides advance reasons and justifications and the central task here is for juries (and judges) to sort through the conflicting stories in a quest for what seems reasonable to believe.

The obvious objection from the “experts” to this call for a more deliberative and discursive public participation in the crafting of environmental policy is that environmental policy is too important to be left to the public, and if we were to do so, the public would get it “wrong”—a complaint that is obviously undermined by the absence of a “right” answer. At the extremes—highly toxic compounds—there does appear to be but one “right” answer, a total ban. But easy cases have easy answers only because reasonable people can quickly see the reasonableness of banning highly toxic compounds. It is the hard (complex) situations that make for flawed prescriptive certitude. In law it is said that “hard cases make bad law” precisely because “hard cases” bring together complexity and vagueness out of which must emerge but a single “correct” (by whatever scientific ruler one wishes to measure such things) solution. Much of what goes on in the regulatory arena of environmental policy conforms to the idea of “hard cases.” And of course when those hard cases get to litigation, we see precisely why and how “bad law” emerges. U.S. court dockets are filled with environmental lawsuits precisely because of the triumph of scientism over pragmatism (Bromley, 2004, 2006).

Neither industry nor the environmental lobby would be able to gain litigious traction against environmental policies and practices that are motivated by their reasonableness—their appeal to what most sapient adults would consider reasonable, workable, and fair. But introduce a specific parameter in a misguided rush to prescriptive truth and the battle lines are quickly established.

Achieving sustainability in environmental policy reminds us that sustainability—properly conceived—concerns *human processes*, not biological or ecological processes. If sustainability is to be achieved it requires that human actions and human processes be altered in specific ways. Sustainability demands new outlooks, new worldviews, and new institutional arrangements. Not in order that some prescriptive truth might be attained. Rather, these new outlooks and worldviews and institutions are the reasons why sustainability is worth discussing in the first place. And those are reasons enough.

Environment sustainability can be assured only when the role of science (and of scientists) has been subordinated to the imperatives of democracy. Science is, in many instances, antipathetic to democracy. To the extent that sustainability is a democratic concept, science and scientists can be a serious threat to sustainability. My position flows from the very role of science in modern societies. While scientists of all sorts—chemists, economists, ichthyologists, ecologists—presume that their essential task is to pursue truth, honesty demands that epistemic communities exist to tell the rest of us how to understand what is going on around us, and why. That is what the general public finds

useful about science. The coherence of environmental policy will be enhanced to the extent that the various scientific communities can be dislodged from the role of experts with precise prescriptive certitude. The public needs input from scientists, but it does not need assured truth claims advanced by scientists.⁴

4.2. Escaping the regulatory domain

The second requirement is that environmental policy must be rescued from the regulatory domain. This historic embedding simply reifies and reinforces the flawed demarcationist worldview with which I started—the idea that there is something separate and sanctified called *the economy* that must be judiciously protected from something separate and unsavory called *politics*. I have no illusions that this necessary extrication will be easy. If one lives in a market economy it is quite “natural” to imagine that markets produce good outcomes. It is natural to believe this because from early childhood we are socialized to that belief. When the dominant adjective applied to that description is “free” (as in “free market economy”) the obstacles to extrication are magnified. A corollary of this naturalization project is the commitment that anything appearing to interfere with this sanctified (and mis-named) “free market”—and the private wealth (and public squalor) it produces—must be fought off with great vigor. This reigning ethical commitment was given official sanction in the Reagan administration with its campaign against “inefficient” regulations, and then when President G.H.W. Bush created a “Council on Competitiveness” chaired by Vice-President Dan Quayle. Not to be outdone, the Clinton White House, in 1993, issued Executive Order 12866 entitled “Regulatory Planning and Review.” Soon, the Office of Management and Budget, that curious watchdog of fiscal probity, issued (in January, 1996) its ruling doctrine entitled “Economic Analysis of Federal Regulations Under Executive Order 12866.” The metaphor of “market failure” was now enshrined.

History repeats itself. In the 1970's there was concern that government agencies (primarily the Bureau of Reclamation and the U.S. Army Corps of Engineers) were building too many water projects. In the 1990s there was concern that government agencies were squeezing the profit out of American businesses and rendering them “uncompetitive”—whatever that might be taken to mean. One can muster a certain sympathy for efforts to make it more difficult for the Corps of Engineers to straighten crooked rivers, or for the Bureau of Reclamation to make the deserts bloom for the sake of alfalfa and cotton. But a quite different logic is required to muster sympathy for those efforts that make it safe (perhaps “safer” would be a better word) for American industry to kill plants and animals as they go about their business. One need not be hostile to commercial endeavors to understand that all economic calculations are made against a set of socially ascertained legally permissible actions. There is nothing natural and immutable that farmers be allowed to kill birds and fishes as they go about their regular business of killing plant pests. Legal and economic opportunities exist for doing

⁴ For an elaboration of the fundamental distinction between *warranted assertions* from epistemic communities and *valuable assertions* in the eyes of a sapient public, see Bromley (2004, 2006).

the second without also doing the first. Killing plant pests without killing birds and fishes may cost farmers a bit more, but so what? The reigning *zeitgeist* is that we must make sure that not killing birds is efficient and not too harmful to making a living.

The obvious issue here is that many participants in environmental policy simply cannot imagine how one would cope with water and air pollution except in the sort of convoluted regulatory domain that has been with us since the 1970s. Actually, it is not as difficult as it might seem. To consider an obvious example, land-use policy in America is shaped under a wide array of democratic processes. Local communities have enormous latitude, as long as Constitutional strictures on due process and equal protection are followed, to set parameters on lot sizes, building shapes and sizes, signage, set backs, and any number of rules that redefine what it is that businesses and homeowners suppose their “rights” to encompass. Scottsdale, Arizona is quite capable of demanding quaint hitching posts on a few of its main streets, and the McDonald's Corporation (along with a host of other local and international firms) goes along without a fight. Other towns in America surely have similar proclivities toward local history or the indulgence of idiosyncratic tastes. One searches in vain for evidence that the democratic working out of local standards of taste and historic commitment has produced outcomes that are Pareto defective.

Here is a “regulatory” arena that is not fixated on reductionist truth rules about social optimality, or Pareto efficient levels of pollution. Nor is a moment's attention paid to the bizarre concern in OMB's manifesto, *Economic Analysis of Federal Regulations*, that a proposed action should “maximize net benefits to society.” Are we to suppose that those who created this OMB document actually believe that it is possible to know when we have maximized “net benefits to society”?

The issue here is that millions of citizens and thousands of local governments have been crafting and re-crafting their villages, towns, and cities for as long as there have been villages, towns, and cities. They were doing this long before benefit-cost analysis was created. They were doing it long before Pareto laid down his rules. They were doing it long before OMB thought it clever to talk of “maximizing net benefits to society.” And they were doing it long before it was announced that the “value” of a wetland is what individuals are willing to pay for it not to be destroyed.

America's villages, towns, and cities continue to confront a variety of new and unwelcome assaults on what they thought had been settled. Citizens become agitated, officials listen, proposals are advanced, citizens react, there is great and good discussion, some do get angry, but eventually they work it out:

This area over here shall remain green space, we will put lots of shops and parking lots over there, and we will put a big-box retail structure at the end of this road. And, by the way, remember that homes must be painted at regular intervals and lawns must be mowed so that the place looks nice.

Imagine that. Where is the talk of market failure? How is it possible that these things happen without OMB making sure that net social benefits are maximized?

National environmental policy has been captured by the scientists and the lawyers. It seems like a good time to let the citizens in the room. The outcome could not possibly be worse than it is now. Some will probably object that environmental policy is a national issue and cannot possibly be worked out as proposed here. Notice that this is not a theoretical claim but rather an empirical claim. There is only one way to ascertain the truth content of empirical claims.

REFERENCES

- Arrow, Kenneth J., Cropper, Maureen J., Eads, George C., Hahn, Robert W., Lave, Lester B., Noll, Roger G., Portney, Paul R., Russell, Milton, Schmalensee, Richard, Smith, V. Kerry, Stavins, Robert N., 1996. Is there a role for benefit-cost analysis in environmental, health, and safety regulation? *Science* 272, 221–222 (12 April).
- Bator, Francis M., 1957. The simple analytics of welfare maximization. *American Economic Review* 47, 22–59 (March).
- Bator, Francis M., 1958. The anatomy of market failure. *Quarterly Journal of Economics* 72, 351–379.
- Brandom, Robert B., 1994. *Making it Explicit: Reasoning, Representing, and Discursive Commitment*. Harvard University Press, Cambridge, MA.
- Brandom, Robert B., 2000. *Articulating Reasons*. Harvard University Press, Cambridge, MA.
- Brock, William A., Colander, David, 2000. Complexity and policy. In: Colander, David (Ed.), *The Complexity Vision and the Teaching of Economics*. Elgar, Cheltenham, UK.
- Bromley, D., 1989. Entitlements, missing markets and environmental uncertainty. *Journal of Environmental Economics and Management* 17, 181–194.
- Bromley, Daniel W., 1990. The ideology of efficiency: searching for a theory of policy analysis. *Journal of Environmental Economics and Management* 19, 86–107 (July).
- Bromley, Daniel W., 1998. Searching for sustainability: the poverty of spontaneous order. *Ecological Economics* 24, 231–240.
- Bromley, Daniel W., 2004. Reconsidering environmental policy: prescriptive consequentialism and volitional pragmatism. *Environmental and Resource Economics* 28 (1), 73–99.
- Bromley, Daniel W., 2006. *Sufficient Reason: Volitional Pragmatism and the Meaning of Economic Institutions*. Princeton University Press, Princeton.
- Coase, Ronald, 1960. The problem of social cost. *Journal of Law and Economics* 3, 1–44.
- Cooter, Robert, Rappoport, Peter, 1984. Were the ordinalists wrong about welfare economics? *Journal of Economic Literature* 22, 507–530 (June).
- Cropper, Maureen L., 2000. Has economic research answered the needs of environmental policy? *Journal of Environmental Economics and Management* 39 (3), 328–350.
- Demsetz, Harold, 1967. Toward a theory of property rights. *American Economic Review* 57, 347–359 (May).
- Gerlagh, R., Keyzer, M., 2001. Sustainability and the intergenerational distribution of natural resource entitlements. *Journal of Public Economics* 79, 315–341.
- Howarth, R., 1997. Sustainability as opportunity. *Land Economics* 73, 569–579.
- Howarth, R., 1998. An overlapping-generations model of climate-economy iterations. *Scandinavian Journal of Economics* 100, 575–591.
- Lele, S., Norgaard, R., 1996. Sustainability and the scientist's burden. *Conservation Biology* 10, 354–365.
- Northrop, F.S.C., 1967. *The Logic of the Sciences and the Humanities*. Meridian Books, New York.

- Palmer, Karen, Oates, Wallace, Portney, Paul R., 1995. Tightening environmental standards: the benefit-cost or the no-cost paradigm? *Journal of Economic Perspectives* 9, 119–132.
- Pearce, David W., 1997. Benefit-cost analysis, environment, and health in the developed and developing world. *Environment and Development Economics* 2, 210–214.
- Qizilbash, Mozaffar, 2003. Vague language and precise measurement: the case of poverty. *Journal of Economic Methodology* 10 (1), 41–58.
- Sen, Amartya, 1989. Economic methodology: heterogeneity and relevance. *Social Research* 56, 299–330.
- Sorensen, Roy., 2001. *Vagueness and Contradiction*. Clarendon Press, Oxford.
- Tribe, Laurence H., 1972. Policy science: analysis or ideology? *Philosophy and Public Affairs* 2 (1), 66–110.
- Veblen, Thorstein., 1898. Why is economics not an evolutionary science? *The Quarterly Journal of Economics* 12 (4), 373–397 July. Reprinted. Veblen, Thorstein (Ed.), 1990. *The Place of Science in Modern Civilization*. Transaction Publishers, New Brunswick, NJ.
- Wittgenstein, Ludwig, 2001. *Philosophical Investigations*. Blackwell, Oxford.