What is a Good Decision? Criteria for Environmental Decision Making

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Abstract

What constitutes a good decision about the environment? Some research traditions offer concepts, theories and methods intended to improve both individual and collective decision making about actions that will effect the environment. But there is relatively little explicit discussion of what would be appropriate criteria for calling an environmental decision a good choice. Six criteria for evaluating environmental decisions are suggested: human and environmental well-being, competence about facts and values, fairness in process and outcome, a reliance on human strengths rather than weaknesses, the opportunity to learn and efficiency. It is hoped that an explicit discussion of the appropriate criteria for environmental decisions will lead to better conceptualizations, better tools and ultimately better decisions.

Keywords: *environmental decision making, environmental values, sustainability*

Several research traditions intend to provide concepts, logic and tools that will lead to better decisions about the environment (Dietz 1994; Jaeger et al. 2001; Rosa, McWright and Renn 2001). Utilitarian policy analysis, which is built on the rational actor model, and includes both benefit-cost analysis and risk analysis, is the most elaborate of these efforts (Broadman et al. 2000; Dietz, Frey and Rosa 2001). Over the last two decades, a tradition of theory and research examining democratic deliberation as a basis for environmental policy has emerged (Dietz 1987; Renn, Webler and Wiedemann 1995). Discussions of sustainability, especially when linked to definitions of the concept and efforts to measure performance, also can be viewed as attempts to improve environmental decision making (U.S. National Research Council 1999; World Wide Fund for Nature 2002).

Embedded in these discussions are normative assumptions about what constitutes a "good" decision. In some cases the notion of good is explicit. Utilitarians label as good those outcomes that provide greatest satisfaction to the greatest number of people. Deliberative theorists want participatory processes of decision making. Advocates of sustainable development usually note obligations to future generations, and many of them also note some obligation to other species or to the biophysical environment per se.[2] Yet there is remarkably little discussion of the full range of criteria that might be considered in evaluating the quality of decisions we make about the environment.[3] Here I offer some ideas about what constitutes a good decision. My hope is that more discussion may lead to clearer and broader thinking about what we are trying to achieve when we make decisions that effect the environment and that in turn might lead to better tools and ultimately better decisions.

Prolegomena

Before looking at criteria for "good" decisions, it will be helpful to consider the scope of the discussion. What do I mean by a decision about the environment and who makes such decisions? For an action to be considered the result of an environmental decision in the sense I want to discuss, two criteria must be met. First, there must be a decision — the action cannot be so entrained by culture, social structure or physical infrastructure that there is no reflection upon it. Second, the environmental consequences of the decision must be perceived so that they can be the subject of reflection. Nearly all human action has consequences for the biophysical environment. Many of the most consequential decision that have been made, and many that are still being made, have unintended consequences that are not considered in the decision-making process. Further, many environmentally significant actions are not the result of a conscious decision. Rather, they are embedded in the culture and/or the social structure and/or in the physical infrastructure of a society. So there are a large set of environmentally significant actions that are not the result of the kinds of decisions that I want to consider here.

This restriction on the scope of this discussion is purely a practical one. The environmental consequences of actions that are constrained and not subject to reflection certainly are worthy of serious attention. The first challenge in dealing with such actions is to uncover their environmental significance, and to find alternatives to constrained choices. These steps make such actions the subject of decisions. "Unpacking" environmentally significant actions that are not subject to reflection is a major challenge for a critical human

ecology. Such a critical human ecology would embrace the goal often articulated for psychoanalysis and for critical social theory: making the unconscious conscious, seeing the link between personal troubles and common problems. Once the environmental consequences are manifest and once there are some alternative courses of action in play, an environmental decision is possible.[4]

Environmental decisions are made by individuals, households, communities, formal organizations and political units, and even by the collectivity of nations. In some sense all decisions are individual decisions since the individual must decide what position she or he will take in the process of group decision making — political actions are environmentally consequential (Stern et al. 1999). However, the decisions that are my focus here are those beyond the individual level — the collective decisions that have been the subject of the theoretical and methodological work alluded to above. What then are the criteria for a "good" collective decision?

Human and Environmental Well-Being

Decisions about the environment are intended to achieve some balance between human well-being and the well-being of the biophysical environment, including other species.[5] Individuals, including theorists, differ in the weight assigned to human well-being and to environmental well-being. For some, only human well-being matters and thus the well-being of the environment must be considered only to the extent that it influences human well-being. This position is commonly labeled anthropocentrism.[6] For the anthropocentrist, the concept of environmental well-being does not have intrinsic ethical weight. There are states or conditions of the biophysical environment and those states have implications for human well-being. But such states need no consideration other than as an influence on human well-being.

Ecocentrism is also possible. Some theorists and others argue that the concept of environmental well-being deserves ethical weight. They feel that value should be assigned to certain states of the biophysical environment independent of the contribution of those states or conditions to human well-being.[7] And of course one can care about the well-being of both humans and of other species, of ecosystems and of landscapes, combining ecocentrism and anthropocentrism.[8]

For anthropocentrists, decisions should be made on the basis of assessing the implications for human well-being of alternative courses of action. For ecocentrists, the implications of alternative actions for environmental well-being must be considered. And for those who partake of both value systems, both assessments must be made, and then compared.

The problem of understanding the implications of alternative courses of action for human well-being is daunting. The problem of assessing environmental well-being is more daunting and finding a way to make tradeoffs between these two forms of well-being is more complex still. These problems occur in individual decision making. The problem of aggregating individual preferences to make a collective decision multiplies the complexity involved.

Depending of whether or not we are strict anthropocentrists, strict ecocentrists or partake of both views, we hope that decisions enhance the well-being of the things we care about. In that sense, a good decision is one that, subject to the constraints of knowledge and resources, maximizes the well-being of those objects of concern. To make things more complex, we seldom know with any great degree of certainty what will happen as a result of our actions. And even if we had complete and certain knowledge, the difficult weighing and tradeoffs noted above would apply. So it does not seem very helpful to stop at saying that a good decision is one that does as much as is possible to enhance the well-being of things we care about. It may be more helpful to suggest some additional criteria, ones that can be realized, albeit only approximately. That is the subject of the rest of this essay.

Competence about Facts and Values

Environmental decisions usually involve a great deal of uncertainty about facts. A good decision should take account of the scientific information available and also attend to the uncertainty in that science. We never know for certain the facts that describe the physical, biological and social processes that determine the outcomes of a course of action. So we don't know with much certainty what will happen in the future. A decision that might make great sense if we could predict the future with certainty will make far less sense if we're not sure what will happen. Decisions in which uncertain science is a central component are rather new. We have a long history of solving engineering problems in which the science was reasonably certain, and a long history of solving economic and other problems involving much uncertainty but little science. Science is a special kind of knowledge and commands a special respect, and also special kinds of mistrust, in contemporary societies. For better or for worse, the image of science in our society derives from the relatively precise fields of physics and engineering rather than from the social and environmental sciences. In the former fields, typical applications have low degrees of uncertainty because the many of the systems under study are relatively simple and deterministic. In contrast, the systems examined by the social and environmental sciences are complex, adaptive and fraught with indeterminacies. Thus using uncertain science to competently inform a decision requires special care and a move away from inappropriate models of science.[9]

But beyond scientific, or factual, competence, good decisions must also be competent with regard to values. People differ in their values. In addition, when faced with novel environmental problems, values may be uncertain. While a substantial effort has been expended over the last few decades on dealing with risk and uncertainty about facts in environmental policy analysis, relatively little effort has been spent on dealing with value uncertainty. Value uncertainty arises in two ways. One is the problem that there is no single best way of aggregating from individual values to societal values. This has been the subject of a good deal of research in economics, political science and philosophy.[10]

While the problem of moving from individual to collective values has been give considerable attention, less thought has been devoted to the second form of value uncertainty — uncertainty at the individual level. This problem arises because environmental problems are novel and their value implications are unclear when we first become aware of them (Dietz and Stern 1995). When environmental problems emerge onto the public agenda, the discussion often draws attention to aspects of human interactions with biophysical systems that are not familiar to most citizens and that are far removed from their everyday life. For example, to develop a position on the use of genetically modified plants in agriculture, most people have to think through issues that seem rather distant from their day to day experience: the wisdom of direct manipulation of the genome of another species. Of course there are more familiar issues as well: safety of food, effects on non-agricultural species, impacts on the political economy of agriculture, etc.

Value uncertainty is often enhanced by the strategic efforts of interested parties to frame the problems with polarizing and very intense images. This encourages people to settle on positions prematurely, without having talked through the full implications of them. Such premature closure precludes serious value learning. Yet such value learning is essential in dealing with environmental and other emerging problems grounded in science.[11] So we need to develop methods of making decisions that are competent with regard to both uncertain science and uncertain values.

Fairness in Process and Outcome

Fairness suggests that all those having an interest in or affected by a decision should have say in that decision. It furthers suggests that each person should have equal say, or perhaps a standing with weight proportional to what they stand to gain or loose.[12] This is an ancient democratic principle that is very widely accepted in the contemporary world and has been extensively theorized by Dewey (1923) and Habermas (1984, 1987, 1991, 1993). But it is not clear how fairness can be implemented in environmental controversies where decisions involve large numbers of people, some highly mobilized and articulate, some not even aware of the controversy. And fairness means more than simply a chance to speak or vote. It means a chance to have your views taken seriously, to be given a respectful hearing, to speak without having your voice overwhelmed by the bombast or prestige of others. That is not to say that all arguments will be given equal weight in making a decision but rather that the weight given a position should be proportional to its logic and sincerity. Some arguments are more persuasive than others, but all arguments should have equal chance to persuade.

This is procedural fairness. But we must also be concerned with fairness in outcomes. Most democracies have a set of meta-rules, a constitution, in which the powers given the majority are limited to protect minorities. Of course, these meta-rules are themselves the result of majority decisions. So in some sense substantive fairness is always based on procedural fairness. Because of this most democracies have developed a sense that rules about some things should be hard to change while rules about other things can be easy to change. At any given moment this seems appropriate. But from an historical perspective the difficulty in changing some rules can perpetuate situations we later understand to be horrendously unfair. Before the civil war, slavery was legitimated in the U.S. Constitution.[13] Procedural rules about constitutional amendments made it difficult to redress this horrible injustice because the "rights" of the minority of southern slaveholders were protected against the majority who wanted abolition, but at the cost of another minority who had no direct voice in the halls of Congress. One might make the opposite case regarding the persecution of Jews, other minorities, the disabled, political progressives and trade unionists at the hands of Fascists. Rapid rule change devastated their rights. Substantive fairness requires great care regarding procedural fairness.

Relying on Human Strengths, Not Weaknesses

A good decision process should rely on what humans do well, not presume we can do things we usually can't. We are not very good at doing complex algebra in our head, nor in sitting alone and sorting out the reality that lies behind sound bytes and advertising images. The tools of decision theory, formal logic and critical thinking help us compensate for these weaknesses.[14] Our strengths lie elsewhere. Human intelligence is a social or linguistic intelligence. We are good at pattern recognition, language processing and learning from each other in discussion. This may be why we are so easily taken in by sound bytes and campaign rhetoric. We are used to listening to what is said with some respect. Our default

position for evaluating what is offered in conversation may come from millennia in food foraging bands. There all can speak and be heard and an extreme view will likely be refuted by others. Television ads and much of what passes for political discussion doesn't incorporate a broad range of perspectives and doesn't allow extended and thoughtful responses. The views presented are monolithic, polarized and more often intended to entrain the feelings of the listener than provide meaningful discourse. The tendency to listen with respect that has been so useful for most of human history betrays us when manipulated in this way. Decision processes should play to our strengths, not our weaknesses. The tools of decision theory need to be supplemented with methods to filter distorted communication about critical issues.

A Chance to Learn

All good decision processes are social processes. They are social in the sense that they involve many people speaking with many voices. They are also social in that they continue over time. We will never be certain that any particular decision is correct. But we can hope that we will learn from successes and failures and that over time the process of making decisions will improve. Thus a good decision process must involve both social and individual learning.[15]

Good decisions will require opportunities for both factual and value learning. Popper and others suggest that science is powerful and is due respect because it is based on an "evolutionary epistemology" — science is a process that is structured so that we learn from our mistakes (Radnitzky and Bartley 1987). A good decision is one that is scientific in the sense that it allows learning from error.

Dewey (1923, 202-203) argued that such learning could engage the public:

> *"But opinion in the sense of beliefs formed and held in the absence of evidence will be reduced in quantity and importance. No longer will views generated in view of special situations be frozen into standards and masquerade as eternal truths."*

The provision of information about how policies are working can change public views about not just policy but how the world works.[16]

Learning can and must take place around values as well. Values come from early socialization, but are modified by life experience. A good decision process is one that takes account of values — is value competent in the sense described above — but also encourages reflection on values. The decision process should encourage articulation of conflicting value positions so these positions can be understood and respected even in the face of disagreement. Most important, the decision process should encourage people to reflect on their own values and thoughtfully modify them and their application and new views and new problems arise. Value learning is as important as factual learning.

Efficiency

There is a fascinating contradiction in much environmental and economic thinking. Environmentalists often emphasize scarcity. Given anticipated increase in human populations and their consumption, such concerns about scarcity are warranted. But environmentalists tend to be skeptical of economics, which is the science of scarcity. Economists partake of a parallel contradiction. While ideas of scarcity drive their discipline, when it comes to thinking about environmental problems, economists are often the most skeptical about scarcity — suggesting that prices and human ingenuity will find substitutes for whatever is scarce.[17]

I believe the problem of scarcity is real. We should use resources as efficiently as possible. The utilitarian tradition offers a sophisticated repertoire of tools for policy analysis. But we must take care not to define scarcity in too narrow a sense, or assume that price mechanisms, such as the market, take adequate account of scarcity in determining social value. If we are careful in thinking about the limits of markets and prices in guiding analysis, consideration of efficiency can be of immense use in making environmental decisions. But we must also realize that efficiency (the most butterflies for the buck) is only one criterion for making decisions. Since efficiency can often be quantified by cost-benefit and risk analysis and other criteria cannot, we must take care not to let what we can quantify dominate what we cannot. We should not let "bad numbers drive out good paragraphs" or even let good numbers displace what can only be expressed qualitatively.

Apologia

Some of these suggested criteria may be based on flawed logic. Some of them certainly will contradict others in practice. Some may contradict others even in theory. I am aware that there are recondite literatures touching on these issues whose wisdom is not reflected in what I have written. There are undoubtedly other criteria for good environmental decisions that I have ignored and that may be more important than the criteria I discuss. But all these flaws may be an advantage if they motivate readers of this essay to become writers of more insightful essays and if in the process we develop a dialogue about good environmental decision making that leads to better theory, better tools and better practice.

Endnotes

1. Email: tdietzvt@aol.com; Mailing address: Thomas Dietz, Sociology, Berkey Hall, Michigan State University, East Lansing, Michigan 48824. I have benefited substantially from discussions of this issue with Bedrich Moldan, Steve Percy, Robert Prescott-Allen and especially Ferenc Toth. Lori Baralt provided valuable assistance in the development of this essay. This work has been supported in part by grants from the U.S. National Science Foundation and the U.S. Environmental Protection Agency as well as by funds provided by Michigan State University.
2. Definitions of sustainability and sustainable development abound. Murcott (1997) identifies 57 definitions, 19 sets of principles, 12 criteria and 29 sets of indicators that had by then been proposed to specify what is meant by sustainability.
3. Some of these criteria were mentioned in Dietz (2001). The literature on environmental conflict resolution has suggested criteria for resolving such conflict (Crowfoot and Wondolleck. 1990; Lewicki, Gray and Elliot 2003). Shutkin (2000) and Clark and Dickson (2001) have some suggestions about components of good environmental policy. Webler (1995) provides detailed criteria for deliberative practice. But there has been surprisingly little extended discussion of the subject.
4. In a theoretical sense, environmental decisions occur when there is agency (Dietz and Burns 1992). Thus a goal of a critical human ecology is to expand the scope of agency with regard to the environment. This has some parallels with Sen's (1999a,b) emphasis on "capabilities" in his examination of welfare economics though moving from an anthropocentric to biocentric conceptualization of concepts such as welfare, capabilities and even sustainability remains a challenge. Brulle (2000) attempts to move the critical theory of Habermas away from anthropocentrism.
5. I use the term "well-being" rather than "welfare" as the latter term suggests a utilitarian view of how to make ethical judgments. Health is an alternative but "human health" has a narrower connotation than I want to imply.
6. The value stances that might motivate concern with the environment are discussed, using slightly different language, in Stern, Dietz and Kalof (1993).
7. It is useful to differentiate the pure anthropocentric position from a weaker, "methodological" anthropocentrism that acknowledges the intrinsic value of environmental well-being but notes that all efforts to assign value or importance to environmental well-being depend on humans assigning that value or importance. One can be a nomothetic ecocentrist but an anthropocentric methodologist.
8. Indeed, although the logical distinctions between ecocentrism and anthropocentrism are clear, most empirical research shows the general public expresses concern about both humans and the environment (Stern et al. 1999).
9. Morgan and Henrion (1990) and Moss and Schneider (2000) are among the more impressive attempts to offer guidance on dealing with uncertainty in science. Rosa (1998; Rosa, McWright and Renn 2001) discusses the implications of scientific uncertainty for environmental policy.
10. A huge literature flows from Arrow (1951). Sen's (2002) thinking on social choice is another key contribution to understanding the move from the individual to the collectivity. He has begun the task of linking the social choice tradition with ideas of deliberative rationality that flow from Habermas (1984, 1987, 1991, 1993).
11. The issues that arise around environmental problems are also emerging around biotechnology and some aspects of information technology and will certainly arise around nanotechnology.
12. Only human can have "voices" in most mechanisms we deploy for making decisions. Obviously, if the decision is one that involves talk or voting, the best we can do for other species is to let someone speak for them. In economic analysis, our methods of valuation rely on using human actions, either in the market or in surveys, to assign value to non-human species and ecosystems. And even in the legal system of the U.S., despite some arguments that we should do otherwise, only human citizens have "standing." A move towards a different approach has emerged in New Zealand which has granted some legal rights to our closest genetic kin, the great apes (Lubinski 2002).
13. E.g. Article IV, Section 2.
14. See Morgan and Henrion (1990) and Stern and Kalof (1996).
15. Dewey (1923:145-146) argued *"...that policies and proposals for social action be treated as working hypotheses, not as programs to be rigidly adhered to and executed. They will be experimental in the sense that they will be entertained subject to constant and well-equipped observation of the consequences they entail when acted upon and subject to ready and flexible revision in the light of observed consequences.*" Campbell (1969) and Holling (1995) make the same point. There is a long tradition of assuming that we don't know how social programs work and designing evaluations into program implementation to make both corrective and summative judgments. But there is far less tradition of doing so with environmental programs. A number of programmatic efforts to evaluate energy conservation programs started in the 1970s and 1980s (Dietz and Vine 1982; Harris and Blumstein 1984; Kowalczyk et al. 1983; Stern et al. 1986; Vine and Crawley 1991; Vine, Crawley and Centolella 1991). Dietz and Stern (2002) discusses the evaluation of voluntary and educational environmental programs, noting that we often know very little about how or whether such measures work. Daniel Esty has asked (*The Economist* (July 6, 2002, "How Many Planets? A survey of the global environment", p.6), "Why hasn't anyone done careful environmental measurement before? Bussinessmen always say "what matters gets measured." Social scientists started quantitative measurement 30 years ago and even political science turned to hard numbers 15 years ago. Yet look at environmental policy and the data are lousy." I suspect that the reason we have been slow to do better analyses of environmental problems is a disciplinary disjuncture. The social sciences provide the grounding for social programs and there is sufficient skepticism about the quality of our knowledge that we don't assume that programs will work. Further, the social sciences have a half a century of trying to understand how to extract information about causation from non-experimental data on complex systems. In contrast, environmental programs are often grounded in the culture of the physical sciences, where there is great confidence in theory and where there is concomitant inexperience with causal analysis of messy non-experimental data. Unfortunately, environmental policies always involve some aspects of human behavior and the physical and biological systems involved are often quite complex,

so the assessment of effects is not simple. Progress will be made as we adopt the methods of the social sciences to the evaluation of environmental policies.

16. Eighty years ago, Dewey (1923:141-142) foresaw the special problem associated with technological change — "*In reality, the trouble springs rather from the ideas and absence of ideas in connection with which technological factors operate. Mental and moral beliefs and ideals change more slowly than outward conditions. If the ideals associated with the higher life in our cultural past have been impaired, the fault is primarily with them. Ideals and standards formed without regard to the means by which they are to be achieved and incarnated in flesh are bound to be thin and wavering. Since the aims, desires and purposes created by a machine age do not connect with tradition, there are two sets of rival ideals and those which have actual instrumentalities at their disposal have the advantage. Because the two are rivals and because the older ones retain their glamour and sentimental prestige in literature and religions, the newer ones are perforce harsh and narrow.*"
17. When this contradiction is recognized and articulated, fruitful work can follow. Much of the careful thinking about sustainability in economics emerged as economists responded to the "Limits to Growth" study (Meadows et al. 1972; Pezzey and Toman 2002).

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