

An Economic Perspective on Values and Natural Resource Policy

by
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Conventional neo-classical economic theory assumes a human value structure centered on self interest. That is, when individuals pursue their own interests, resources are "efficiently" allocated and society gains as well. But economics is used both as positive and as normative science. Those who argue most strenuously for free markets are frequently those best served by the result, just as those who support a particular "market distortion" with a policy change expect their interests to be enhanced. We know that real human values are far more complex than "the tendency to avarice," but additional knowledge of those values is difficult to use in either prescriptive or predictive analysis.

This paper considers applications of normative and positive economics to natural resource problems. It concludes with a "user's guide" for effective involvement of economists in natural resource management.

Introduction

The purpose of this paper is to suggest the interface between the discipline of economics and human values, with emphasis on natural resource management. I will try not to impose my own values in this discussion, but will likely fail. Since all social science analyses deal with the causes or results of human behavior, values are an intrinsic part of both the analyst and the subject of study. I will conclude with a brief user's guide for successful engagement of economists in multi-disciplinary natural resource management.

Economics and Selfishness

Economists seem to be second only to dentists at the bottom of the all time popularity chart. Our primary burden, it seems, is that our discipline is alleged to attribute only the basest, narcissistic tendencies to human beings operating within any social environment. We are, it seems, the root cause of the "me generation" and have been for many such generations past. In his book *Adam Smith's Mistake*, Kenneth Lux referred to "the tendency toward avarice" as the central contribution of economics to understanding human behavior, the notion that self interest is the prime human motivator and that, furthermore, self interest is good for society through the mysteries of comparative advantage (Lux, p.26). In Smith's own words, "It is not from the benevolence of the butcher, the brewer or the baker that we expect our dinner but from their regard for their own interest" (Smith, 1776, Book 1, Ch. 1, p. 4). Further, Lux asserted, economics omits any possibility of benevolence, cooperation, altruism, sympathy, or integrity as people pursue their own needs as independent beings with discrete and private welfare functions. Economists, he says, reduce people to factors of production like capital and land to be employed in an appropriate balance to generate products or services that consumers value. His unkindest cut is the assertion that "... immorality finds its intellectual and theoretical justification in the name of economics" (p.90). That about wraps it up! Economics is decidedly the most dismal of sciences.

A recent empirical study proved conclusively that economists are less cooperative than other people. Economist Robert Frank and colleagues compared undergraduate economics majors to non-economics majors in a "prisoners dilemma"² experiment in which unenforceable cooperation between two participants would benefit both more than either one who went on his own. To gain, you have to trust the other party, believe that he or she has your interest in mind. Sixty percent of the economists looked out for themselves and defected, since they weren't sure what the other participant would do. Only 38 percent of non-economists defected. Is it economics training, stressing self interest and maximizing utility, that leads to the lack of cooperation or is it just that uncooperative people tend to study economics? Frank, et.al. discovered that non-economics students tended to become more cooperative through their college years, but not so for economics students. They stayed uncooperative (Frank, et.al.).

From personal observation, I would have to agree that many economists are in fact greedy and uncooperative. Meetings of professional economists are often quite unfriendly events. And I can understand how the discipline itself may give aid and comfort to such attitudes. It suggests a certain redeeming logic to self interest as the guiding human value.

But there is an important distinction to be made. The real problem is the practitioner, the user, the economist, not the discipline. Some people take their discipline too seriously, just as some take their religion too seriously. Economics is a framework, a conceptual apparatus for organizing information, not a uniform point of view as Lux and some economists vigorously assert. Just because economics gives intellectual safe haven to uncooperative people should not obviate the discipline itself. There is sufficient room in economics for useful work that acknowledges diverse human values, if there is an economist willing to do it. ***Normative and Positive Science*** There is an important difference between economics as a positive or predictive science and as a normative science. Those in positions to gain from direct application of economic ideas to the allocation of scarce resources are predictably most enthusiastic about the discipline as a prescriptive paradigm for human interaction. For them, economics is indeed a normative science, revealing how resources should be used. They argue for a society run according to the rules of the competitive system, a "survival of the fittest" approach that permits full exploitation of comparative advantage. Some in business, for example, are simply better off under a system of independent, self interested actors. They argue strenuously to protect free markets; a decision and resource allocation system that functions according to the competitive principles of conventional neo-classical economics serves their interests quite nicely. They already have command of resources and access to appropriate markets. Show me a strident defender of the principle of free markets and I'll show you someone for whom the current market rules are working out just fine. For some economists, the elegance of the neo-classical paradigm is its own source of intrinsic beauty, beyond the outcomes of particular economic decisions.

In fact, however, all market systems have rules and some people do better than others within any given set of rules that determine rights and obligations of market participants. People arguing against "government distortions of the market" (a normative expression) are really arguing to protect the set of rules that serves them best.

A key aspect of efficiency analysis is that distributional and institutional characteristics are explicitly left out. No one worries about whether some groups or individuals may lack the skills or opportunity to participate, or how such institutions as property rights or tax law may affect initial bargaining positions of the bidders. Such concerns are external to the analysis, conditions that are held constant in arriving at efficient resource use. Resources simply go to the highest bidder based on their anticipated net returns over some reasonable planning horizon, so those in positions to bid highly get the resources. For them, the conventional economic model is good. Efficient resource allocation is defined as the allocation such that any re-allocation could help someone only to someone else's detriment.

As a positive science, economics is a useful set of concepts and analytical tools that help predict patterns of resource use within a defined set of market and decision rules. A change in those rules through a policy change could result in a very different pattern of resource use. All resource patterns have both efficiency and distributional implications and in some cases understanding the "who" can be more important than the "what."

Applications to Natural Resource Management

Economics has both positive and normative applications to natural resource management problems. The most familiar prescriptive role has been the required use of benefit cost analysis for major public investments like dams. For many years, the decision rules for multi-purpose water projects of the U.S. Army Corps of Engineers and small watershed projects of the U.S. Department of Agriculture, Soil Conservation Service (now Natural Resource Conservation Service) were spelled out in U.S. Senate Document 97. The basic notion was to maximize efficiency of public dollars by estimating the monetary benefits and costs of such investments "to whom—so—ever they accrue." Explicit goal of the program was to maximize net discounted benefits or returns to scarce public dollars allocated to water projects, without specific reference to who may be impacted by those projects. The rules were later modified to include regional impacts, social well-being effects and environmental quality as separate but equal goals of public spending. These changes were explicit acknowledgment that there is more to

life than economic efficiency. Now water decisions must be based on the broad spectrum of impacts but without the significant advantage of a common measure — dollars.

Measuring the performance of soil conservation spending is required by the Soil and Water Resources Conservation Act of 1977. Similar requirements are part of the Resource Planning Act and National Forest Management Act for public forests. Specific natural resource program evaluations were part of the Program Planning Budgeting System (PPBS) of the Robert McNamara era in the U.S. Bureau of the Budget of the 1960s. Acronyms and program titles come and go, but there is a continuing interest in assuring that public funds available for resource programs are by some consistent measure gaining more than they cost, or at least breaking even. The Government Performance Results Act is the current incarnation of mandated performance analysis of federal agency programs. Thus, economic efficiency is a policy goal, a human value if you will, giving economics as a discipline and a set of analytical techniques a normative role in policy.

But economics is also useful as a predictive or positive discipline in natural resource policy matters. Milton Friedman, the pope of neo-classical economics, has argued cogently that the true test of a theory is whether it can predict reality. Whether or not the underlying assumptions of that theory are realistic is immaterial, he says, if those assumptions are essential to a robust theory. Thus we don't really care if people are really self interested profit maximizers if they behave as if they were profit maximizers. We do not argue that people should act according to the guidelines of efficient resource use, only that in general and over time they seem to do so. A person bidding for a particular parcel of land or choosing a technology for producing paper or automobiles may be guided by altruism, but assuming so could be risky. Assuming self interested behavior by individuals in markets and in their public policy roles can be useful in predicting such well known natural resource phenomena as conversion of farmland at the urban fringe, nitrate contamination of groundwater, depletion of fresh water supply and even over-grazing of public range land. We all know what happened when America On-Line changed the rules for charging their customers for use of the limited Internet access system. They created a congestible common property resource with zero marginal cost for additional time on the net, so people clogged the system to be sure they met their own needs. These are not particularly selfish or evil people causing these problems, just average individuals operating within a set of incentives, behaving in a predictable way. In policy, communities will compete for the chance to annex good farmland that may have development potential. There is little incentive for a given community to forego the possibility for development to maintain productive open space for the larger public. The value system implicit in neo-classical economics can help policy analysts and resource managers understand why certain resource problems emerge and predict what will happen if incentives or opportunities of key actors in the system are adjusted in some way through public policy. Economists really don't care why people do what they do, why they give up a century old farm to a developer or permit erosion to continue, but knowledge that many will do so helps predict natural resource patterns. Assumed "rational self interest" behavior may be wrong, but it is consistent and analytically useful.

Toward a Better Understanding of Economic Behavior

We know intuitively that people are in fact more complex than suggested by the "tendency to avarice" postulated in economic theory, at least you and I are! Yet little of that complexity is included in a typical university economics course. Most economists know that human values exist, but do not consider them germane to the analysis. More importantly, it is inconvenient to incorporate complex human preferences into the formal models of economics, prompting Brookings economist Henry Aaron to observe, "The stubborn unwillingness of so much behavior to fit our models leads to the wry characterization of economists as people who upon discovering that reality and theory conflict conclude that the evidence is mixed" (Aaron, p.19). We all know that reality is a special case.

We also know that people do care about others. They will sacrifice to help other people even when reciprocity is not expected, will return lost objects, and exhibit other forms of selfless behavior. Sometimes they don't know any better, cooperating out of confusion or lack of information (see Andreoni; Frank, 1988, pp.254–59). But there is more to it than that. There is increasing attention in economics to empirically measuring real human behavior and trying to understand what is really involved when specific transactions occur and choices are made. While economics has been largely a deductive science, built around a priori principles rather than empirical study, there are several lines of challenge by those seeking a more inductive approach to better understanding both the institutional

and behavioral context for economic choice (see Lewin). Experimental economics deals with these micro-incentives, seeking patterns that may improve prediction (see Smith). These more complex models are compelling descriptions of revealed human values, but have yet to be widely used in formal predictive models.

Values about use of natural resources have changed in recent years. Preference polls show that people as taxpayers and consumers do value environmental and ecological integrity. They are unwilling to accept physical growth of their communities at any price. Two-thirds of respondents to a 1995 Times Mirror poll agreed with the notion that environment and economy are mutually supportive not competing goals. They are not willing to accept that we can enjoy prosperity only by accepting environmental degradation. Sixty percent of respondents said that if environment and economy were in direct conflict in a given situation, they would go with the environment. Part of this expressed value may be out of fear, ignorance, or the self interested desire to avoid being poisoned in the environment. But people also value, and in fact will sacrifice for, an attractive rural countryside, substitution of biological pest control strategies for farm and forest chemicals, and other natural resource goals. U.S. Sugar Corporation in south Florida was approached recently by Ben and Jerry's Ice Cream company in search of the "greenest sugar in America." Consumers do act on their preferences and companies respond.

Changes in human values are reflected in political processes as people of like mind organize and press their concerns. Thus, the background rules of the game that define rights and obligations of resource competitors do change with changes in human values. And changes in market rules produce a new efficient allocation. Some economists focus their attention on the institutional structure that evolves from prevailing values and preferences, establishing the arena within which efficient allocation may be accomplished.

A User's Guide to Successful Involvement of Economists in Natural Resource Management

Economists can be effective participants in multi-disciplinary teams involved in both management and analysis of public and private resources. They are useful both because of and in spite of their discipline, if one follows a few simple rules.

1. Most importantly, pick the right person. As with most disciplines, there is wide variety of perspectives and professional orientations. Find an economist who cares at least as much about the resource problem in question as the discipline. This is not an idle distinction. Some economists emphasize an analytical technique or set of prescriptions and search for problems to which these apply, while others are turned on by the substance of the issue and select from economics and even other social sciences the techniques and concepts that may be useful. If the resource problem is narrowly defined, perhaps the disciplinarian will do; if not, choose someone with some versatility and an open mind. Economists have values too. Find one who cares about the problem at hand and can see both strength and challenge in diversity of values and expectations surrounding a particular resource problem. Find a person who cares about institutions, the whole complex of rules and conventions that frame the process of choice. Some really don't care about these things and having an unhappy economist can be pure misery.
2. Once you have an economist, involve him or her directly in defining the management or policy problem. In fact, insist on that involvement. Do not bring her in after the interesting work is done and management recommendations are developed to mop things up or to justify what has already been decided. After all, the natural resource management process is at base an economizing activity, seeking a pattern of resource use consistent with prevailing preferences. An economist can help with that. Most economists are decent people, but with delicate egos. They do not like being tacked on at the end, with an economic impact statement or quantitative appendix.
3. Once you have an economist, get another one, or at least create a way for the economist to interact with other economists through an adjunct appointment at a nearby university. Economists are like kittens — it's better to have two of them so they can keep each other entertained, or they will tear up the furniture.

4. There are several specific areas of inquiry important to public or private natural resource management or more academic treatment of the management process to which an economics may contribute. Keep your economist constructively employed.

Following are the areas of high priority, in my view:

First, we need a better understanding of the policy process as a precursor to improved natural resource policy. Economists can help analyze why certain problems show up on the policy agenda, and the human preferences behind certain policy issues. What attributes of a rangeland or forest or farming area generate utility for non-owners, and why? What are the policy options by which those non-owner benefits may be secured, and how well do those options perform? Who pays and who gains under any particular policy regime? The distributional policy impact is usually far more important than overall magnitude.

Secondly, economists can design ways to infer intensity or extent of effective demand for natural resource attributes that are not captured in a market price. That is, if we could charge individual citizens for the perceived benefits of endangered species habitat, what price would they pay? To what extent does our food production capacity in this country contribute to the general long run sense of well-being for United States citizens? Both of these benefits are pure public goods in the sense that the cost of an additional user is zero and no one may be excluded from the benefit. Thus, there is no direct way to measure effective demand for those resources. But policies to sustain these resources in some way must stand up to the measured value of the land use options foregone in that resource protection effort. These non-market benefits of natural systems are as valid as the market benefits, but are less apparent. Through contingent valuation methods, estimates may be developed. It is most critical that our economist not take specific estimates too seriously. They are simply beginning points in a bargaining process. They give protagonists something more definite to argue about (see Shabman and Stephenson) and for that reason are important to the policy process.

Thirdly, more work on the economics of cooperation could aid in developing better, more practical systems for managing common property resources like a fishery or rangeland. We know that people do cooperate in accomplishing mutual improvement. Elinor Ostrom and colleagues have identified the essential ingredients of self-governing systems for common property management, relying on mutual support and cooperation rather than rules administered by a central authority (see Ostrom). They agree that collective monitoring and enforcement by mutually acceptable standards is important to success, acknowledging that altruism will not fully displace self interest. Economist James Andreoni has conducted a series of laboratory experiments incorporating social influences that affect interpersonal behavior. He concludes that cooperation is about half kindness and half confusion about the specific incentives or rules, with kindness replacing confusion as participants gain experience with the situation (1996, p.900). Arora and Cason raise hopes for voluntary compliance with pollution control standards based in the industry perception that consumers prefer a clean environment and will reward producers that protect water quality (1996). These studies could be useful points of departure for design of natural resource management systems that accept a human value structure beyond the self interest assumption of conventional economics.

A fourth area for priority attention is the effect of changing incentives on the choices made by range users. There may be ways that incentives can be adjusted such that private choices by ranchers and other users will consistent with the long term interest in resource sustainability. Recent suggestions include a fee reduction tied to less intensive use, or flexible permits that may be bought and sold to accomplish desired range use objectives.

Conclusions Many economists can and do incorporate study of real human values and resultant impacts on decision institutions into their analysis of natural resource management. Some focus on the implications of changing institutions for specific resources or ecosystems, like forests, wetlands, farmland at the urban fringe or public rangeland. Their contributions tend to be of the "what if" variety, rather than normative prescriptions of how resources should be allocated. Ironically, that posture can be frustrating for some production and engineering scientists who know the best way to solve a technical problem and expect the same decisiveness from an economist. We take grief both for being too smug about "what is right" and too wishy washy on natural resource questions. The point is that the discipline accommodates more diversity than many may realize; the conceptual apparatus and analytical tools can be valuable contributors to any natural resource management effort, when vested

in an economist whose professional focus and values are appropriate to the task.

FOOTNOTES

¹ Dr. Lawrence W. Libby stepped down as chair, Department of Food and Resource Economics, University of Florida to join the Center for Agriculture in the Environment on February 15, 1996 for a year's sabbatical. In August 1997, he joined Ohio State University as the C. William Swank Chair in Rural Urban Policy. Prepared for the symposium "How Values Influence Science and Management," Society of Range Management Annual Meeting, Rapid City, South Dakota, February 18, 1997. ([Back to top.](#))

² Two people have jointly committed a crime. They are caught and put in separate rooms, unable to communicate with each other. Each is offered a chance to confess to the crime and be set free, while causing the other party to get a 30 year prison term. If *both* defect, however, they each get 15 year terms. If both stay silent, they will be freed in a year. Thus each is better off to confess, getting no more than a 15 year sentence, rather than to take a chance on the other remaining silent. Yet by silent and trusting cooperation, they both come out far ahead. ([Back to top.](#))

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