

COMMUNITY BASED ENVIRONMENTAL DECISION MAKING

**PROCEEDINGS
SESSION ONE**

APPROACHES TO VALUING THE ENVIRONMENT

A WORKSHOP SPONSORED BY THE US ENVIRONMENTAL PROTECTION AGENCY'S OFFICE OF
ECONOMY AND ENVIRONMENT, NATIONAL CENTER FOR ENVIRONMENTAL RESEARCH AND
NATIONAL SCIENCE FOUNDATION DECISION, RISK, AND MANAGEMENT SCIENCE PROGRAM

May 9, 2000
National Rural Electric Cooperative Association Conference Center
Arlington, Virginia

Edited by Barbara Kanninen
Environmental Law Institute
1616 P Street NW, Washington, D.C. 20036

ACKNOWLEDGEMENTS

Sections of this report, indicated as “summarizations,” were prepared by the Environmental Law Institute with funding from the Office of Research and Development. ELI wishes to thank Matthew Clark of EPA’s Office of Research and Development and Kelly Brown, Julie Hewitt, Nicole Owens and project officer Alan Carlin of EPA’s Office of Economy and Environment.

DISCLAIMER

Although the information in this document has been funded in part by the United States Environmental Protection Agency under Cooperative Agreement CR-826755-01 to the Environmental Law Institute, it may not necessarily reflect the views of the Agency and no official endorsement should be inferred.

**Proceedings for Session I
Table of Contents**

Introduction	Page
Introductory Comments by Henry Longest II, Deputy Assistant Administrator for Management, US EPA Office of Research and Development, Summarization	4
Session I: Approaches to Valuing the Environment	
Environmental Values and Adaptive Management by Bryan Norton and Anne Steinemann, Georgia Institute of Technology, Summarization	5
The Distinction Between Value and Benefit, Mark Sagoff, University of Maryland	9
Policy Discussion for Session I by Julie Hewitt, US EPA Office of Economy and Environment	33
Policy Discussion for Session I by Rachelle Hollander, National Science Foundation Decision, Risk and Management Science Program	38
Question and Answer Period for Session I	42

Introduction to the Workshop by Henry Longest II, Deputy Assistant Administrator for Management, US EPA Office of Research and Development -- Summarization

Matthew Clark of EPA's National Center for Environmental Research introduced Henry Longest, Deputy Assistant Administrator for Management in EPA's Office of Research and Development.

Longest opened his comments by describing the recent growth in the Washington D.C. metropolitan area, and suggesting that the complicated lives people lead here present challenges to the idea of community based environmental decision making (CBED). With dual career families, long commutes and other issues pressing families, how can they meaningfully participate in something like CBED?

Longest said this workshop is the seventh to take place since 1997 and the first to focus specifically on decision making. All together, 75 social science and economics research projects have been funded under the Decision Making and Valuation for Environmental Policy (DMVEP) grants program. Longest emphasized the importance of communicating the program's research results through these workshops, and encouraged an open dialogue between researchers and practitioners.

Longest suggested that the research being presented in this workshop will be important to EPA regions for supporting environmental decision making. EPA has several community based programs, including a livability agenda, smart growth, community partnerships and CBED. The Office of Research and Development (ORD) is committed to sound science for informing and supporting community decisions and supports the community based science council, community assessment workshops and the ORD community science inventory.

In conclusion, Longest expressed the hope that the workshop audience would be able to find ways to put the research presented into practical use. He was thrilled to have a wide range of government, private and academic institutions represented, including nine EPA offices, eleven other federal agencies, and a large number of colleges, universities, foundations and research institutions.

Environmental Values and Adaptive Management

Summarization

Presented by Bryan Norton, Georgia Institute of Technology
Co-authored with Anne Steinemann, Georgia Institute of Technology

Professor Norton began his presentation by arguing for a broader approach to valuation to serve situations of community-based environmental management. He feels that advances in community-based management have, so far, outpaced advances in social science research in articulating and measuring environmental values, and suggested there is a critical need for new research that looks at community-based management. His presentation was based on a research paper coauthored with Anne Steinemann.

To state the problem clearly, Norton assumed social value can be expressed as measurable welfare. If this is so, he argued, then either you have to say that (A) a method exists that uses a physical, causal model to correlate changes in the physical environment with changes in value or (B) a method exists that correlates these two changes without relying on such a model. Norton dismissed (A) by pointing out that ecologists do not believe that such a physical, causal model has been developed, or will be in the near future and (B) by commenting that economists have not yet devised a satisfactory method for doing this. He concluded that there currently exists no method by which to quantify changes in value that result from changes in states of ecological systems.

To support his thesis, Norton quoted economist, A. Myrick Freeman, who said that while the economic framework can be used to measure use and nonuse values of ecosystems as well as the costs of proposed policies, it is inadequate in valuing more holistic concepts, such as biodiversity, the reduction of ecological risks or the protection of basic ecosystem functions.

Norton went on to summarize the advantages and disadvantages of using economic valuation for these types of problems. He emphasized that he is not against the use of economic valuation, but believes the approach needs supplementation. The advantages of the economic approach are that it is relatively straightforward, it is aggregable, and it forces people to think in terms of trade-offs. He sees several troublesome aspects to the approach, however: what is valued must be expressed as a set of commodities; values must be expressed in present value terms; and values are treated as “static,” or unchanging. Norton has learned, through his research, that values are anything but static. People’s values change as they go through the process of community based management, especially as they acquire new information about the problem they are confronting. Economic values also do not pay attention to the specific place and geographic scale.

Norton's proposal for a new valuation framework differs from the economic approach in three ways. First, it uses a multi-criteria system with at least one of the criteria being independent of the standard economic approach to measurement, by, for example, relying on multiple scales of space and time. Second, it allows individuals, after being placed in reflective groups, to change their preferences as they acquire new information and/or become more responsive to longer-term phenomena that may not directly affect them. Third, it allows community-oriented values to be place-based and specific to a community's identity.

To address some of these goals, Norton suggested using adaptive management as a general framework. He reduced adaptive management to three core principles. First, it relies on experimentalism, that is, we do not assume that we understand what sustainability is, or that we know what policies would provide for sustainability. Second, the analysis is multiscalar. To illustrate this idea, Norton referred to Leopold's notion of "thinking like a mountain," to get the idea of the scale of time at which ecological systems change. Third, the approach is sensitive to the particularities of place.

Norton also referred to the ecological theory of hierarchy which has two axioms. The first axiom is that all observations come from a point inside a changing system. All of our observations and activities as planners and managers therefore influence the system as we are describing and managing it. The second axiom is that systems are multiscalar, complex and dynamic, and have subsystems that change more rapidly than the overall, slower-changing environment.

The framework of adaptive management gives a nice, schematic outline of sustainability. Norton illustrated this with a diagram. At a particular point in time, individuals experience their environment as a series of opportunities and constraints. For example, with a standing forest, there are opportunities for recreation and forestry. If the forest is cut down, the range of opportunities available from that forest is reduced. Using this framework, Norton defined an unsustainable situation as one where a generation makes choices that unduly constrain the subsequent generation. In terms of the aforementioned hierarchical model, the individuals in this framework are small-scale subsystems operating in the larger ecosystem.

This suggests that a general conception of sustainability is the act of protecting opportunities and options that will be important to the next generation. The crucial word in such a definition is "important." How do we decide what is important to communities? Norton suggested this should be decided in a democratic way, starting with local communities, recognizing that local community decisions will impact larger scale systems. The procedure then, is to provide a general conceptualization of sustainability and then leave it to communities to specify opportunities that will enhance their own well-being.

What can social scientists contribute to this process? Norton referred to the work of Rotmans, who distinguishes between supply and demand models as follows. Supply models are created by skilled, disciplinary scientists who use state of the art techniques to develop a mathematical model that allows us to project states of the future based on various parameters. A demand model is a scientific model that is created by a direct response to a social need. Norton

sees the demand model as coming from a community that is struggling to specify its sustainability goals.

Norton also referred to Funtowicz and Ravetz, who stated that curiosity motivated research generally produces public knowledge by relying on rigid disciplinary approaches, while mission oriented research is more transdisciplinary because it must be presented in ordinary language so that it can function as a communication tool for interested parties.

Norton next illustrated how his process would work. The illustration was based on a table with stakeholders on one side and the various existing models on the other. Stakeholders tend to have different mental models. For example, in his work with Lake Lanier, Norton found that homeowners surrounding the lake were concerned about localized bacterial spikes, while water managers were concerned about larger scale issues such as total nutrient loading of the lake. The two different models in the minds of these two parties can create serious failures of communication. Norton's solution is to use the existing models to build an overall demand model that represents a shared conception of the problem, and that is sufficiently transparent for all parties to understand and utilize.

The illustration points to two gaps in our knowledge that Norton's research project is trying to fill. First, the social scientists will try to derive a translation function to translate the mental models of stakeholders into a transparent demand model. Second, using the demand model, a scientific team will try to identify indicators that track the concerns of the public. These indicators will form the bases of the multicriteria that will be developed during the project.

Looking back at the supply and demand models, Rotman suggests three criteria by which to judge models: analytical criteria (or mathematical precision), methodological criteria and usability. Norton argued that these three criteria apply with different weights depending on whether you are modeling supply or demand. In supply modeling, the analytical criteria should dominate judgment of the model. In demand modeling, the usefulness criteria should dominate.

An important component for evaluating the usefulness of a scientific model is the transparency of the model. There are four types of transparency. The first is critical transparency, or the need for the model to be presentable in a way that is clear to nontechnicians (stakeholders who are willing to put in the effort to understand the model). This transparency is critical if the model is to be used to inform public debate. Second is transparency of the boundaries, or, that the boundaries of the problem should make sense both ecologically and politically. A third type of transparency is of anatomy, where the model is compartmentalized enough so that a user can identify where and how specific environmental processes affect different aspects of the model. Finally, the fourth type of transparency, one that has not been achieved to Norton's knowledge, is evaluative transparency, where important descriptive features of the model can be easily related to important social values.

In conclusion, Norton suggested that we use multiple criteria to assess a variety of development paths. From these paths, we can backcast to present day policies to achieve the most desired outcome. The use of demand modeling, combined with locally developed, multiple

criteria for judging possible development paths, will provide more integrative tools for environmental evaluation within community-based management processes.

**AT THE MONUMENT TO GENERAL MEADE, OR ON THE
DIFFERENCE BETWEEN
BELIEFS AND BENEFITS**

Mark Sagoff*

Copyright 2000 by the Arizona Board of Regents.

Reprinted by permission

When you visit Gettysburg National Military Park, you can take a tour that follows the course of the three-day battle. The route ends at the National Cemetery, where, four months after the fighting, Abraham Lincoln gave the 270-word speech that marked the emergence of the United States as one nation.¹ The tour will not cover all of the battlefield, however, because much of it lies outside the park. Various retail outlets and restaurants, including a Hardee's and a Howard Johnson's, stand where General Pickett, at two o'clock on a July afternoon in 1863,

* Senior Research Scholar, Institute for Philosophy and Public Policy, School of Public Affairs, University of Maryland, College Park. Ph.D., Philosophy, University of Rochester, 1970; A.B., Harvard College, 1963. This Article revisits themes the Author explored in these pages twenty years ago in the essay *At the Shrine of Our Lady of Fatima, or Why Political Questions Are Not All Economic*, 23 ARIZ. L. REV. 1283 (1981). The Author gratefully acknowledges the generous support of the National Science Foundation, Grant Nos. SBR-9613495 and 9975770, for this research. The views expressed are those of the Author alone and not necessarily of any funding agency.

¹. ABRAHAM LINCOLN, THE GETTYSBURG ADDRESS (1863), *reprinted in* LINCOLN ON DEMOCRACY at 307 (Mario M. Cuomo & Harold Holzer eds., 1990).

marched 15,000 Confederate soldiers to their deaths. The Peach Orchard and Wheatfield, where General Longstreet attacked, became the site of a Stuckey's family restaurant.² The Cavalry Heights Trailer Park graces fields where General George Custer turned back the final charge of the Confederate cavalry.³ Over his restaurant, Colonel Sanders, purveyor of fried chicken, smiles with neon jowls upon the monument to George Meade, the victorious Union general.⁴ Above this historic servicescape looms a 310-foot commercial observation tower many Civil War buffs consider to be "a wicked blight on the battlefield vista."⁵

One spring day, on my way to give a seminar on "economics and the environment" at Gettysburg College, I drove quickly past the battlefield where 23,000 Union and 28,000 Confederate soldiers fell in three days. I felt guilty speeding by the somber fields, but I had to teach at two o'clock. I checked my watch. I did not want to be late. How do you keep your appointments and still find time to pay homage to history?

My ruminations were soon relieved by a strip of tawdry motels, restaurants, amusement arcades, and gift shops touting plastic soldiers and "original bullets! \$6.95 each." At the battlefield entrance, I caught sight of the famous golden arches of the battlefield McDonald's where, on a previous occasion, my then eight-year-old son enjoyed a Happy Meal combo called the "burger and cannon." Nearby, a sign for General Pickett's All-You-Can-Eat Buffet beckoned me to a restaurant that marks the spot where rifle and artillery fire had torn apart Pickett's underfed troops. If you have young children, you understand the deep and abiding significance of fast food and convenient restrooms in historic and scenic areas. You may ask yourself, though, how you can have comfort, convenience, and commerce and at the same time respect 'hallowed ground.'

I. ARE BATTLEFIELDS SCARCE RESOURCES?

I began the seminar at Gettysburg College by describing a Park Service plan, then under discussion, to build new facilities to absorb the tide of visitors—an increase of 400,000 to 1.7 million annually—that welled up in response to "Gettysburg," a 1993 movie based on Michael Shaara's blockbuster novel, *The Killer Angels*.⁶ Working with a private developer, the Park Service proposed to construct a new \$40 million visitor center, including a 500-seat family food court, a 450-seat theater, and a 150-seat "upscale casual" restaurant with "white tablecloth" service, gift shops, parking lots, and a bus terminal not far from the place where Lincoln delivered the Gettysburg Address.⁷ Several senators, including Senate Majority Leader Trent

². See George Will, *A Conflict over Hallowed Ground*, NEW ORLEANS TIMES-PICAYUNE, June 11, 1998, at B7. For a brief description of the events, see Lisa Reuter, *Gettysburg: The World Did Long Remember*, COLUMBUS DISPATCH, Dec. 5, 1999, at 1G ("At the wheat field alone, 6000 men fell in 2½ hours. One soldier would later write, 'Men were falling like leaves in autumn; my teeth chatter now when I think of it.' So many bodies covered the field, remembered another, that a person could walk across it without touching the ground.").

³. See Rupert Cornwell, *Out of the West; Developers March on Killing Fields*, INDEPENDENT (London), Dec. 18, 1991, at 10 (43,000 deaths in total).

⁴. The Kentucky Fried Chicken restaurant has long occupied the area near the monument and by now may have its own authenticity. Kentucky nominally never left the Union.

⁵. Will, *supra* note 2, at B7.

⁶. See MICHAEL SHARA, *THE KILLER ANGELS: A NOVEL* (1974). For details about the effect on the visitor load, see Will, *supra* note 2, at B7.

⁷. For a description of the Park Service plan and its history, see Edward T. Pound, *The Battle over Gettysburg*, USA TODAY, Sept. 26, 1997, at 4A.

Lott (R-Miss.), objected that the project “commercializes the very ground and principle we strive to preserve.”⁸

It is one thing to commercialize the *ground*; it is another to commercialize the *principle* we strive to preserve. Tour buses, fast food, and trinket shops, although they commercialize the ground, express a local entrepreneurial spirit consistent with the freedom, vitality, and mystery of the place. The soldiers probably would have liked such haunts as the National Wax Museum, the Colt Firearms Museum, and the Hall of Presidents. They certainly would have appreciated General Lee’s Family Restaurant, which serves great hamburgers practically at the site of Lee’s headquarters. Homespun businesses try to tell the story and perpetuate the glory of Gettysburg—and even when they succeed only absurdly, they do so with an innocence and ineptitude that does not intrude on the dignity and drama of the park.

In contrast, the upscale tourist mall envisioned by the initial Park Service plan seemed, at least to Senator Lott, to elevate commercialism into a principle for managing Gettysburg. Rather than stand by the principle of commercialism or consumer sovereignty, however, the Park Service scaled back its plan.⁹ In its defense, the Service pointed out that Ziegler’s Grove, where its Visitor Center and Cyclorama now stand, overlooks the main battle lines. The revised proposal, which received Interior Department approval in November 1999, calls for razing these facilities and for returning Ziegler’s Grove to its 1863 appearance, in order, as one official said, “to honor the valor and sacrifices of those men who fought and died on that ground for their beliefs.”¹⁰

Since the seminar took place in mid-afternoon—siesta time in civilized societies—I had to engage the students. I did so by proposing a thesis so outrageous and appalling that the students would attack me and it. I told the class that the value of any environment—or of any of its uses—depends on what people now and in the future are willing to pay for it. Accordingly, the Park Service should have stuck with its original plan or, even better, it should have auctioned the battlefield to the highest bidder, for example, to Disney Enterprises.¹¹

I asked the students to bear with me long enough to consider my proposal in relation to the subject of the seminar, the theory of environmental economics. This theory defends consumer sovereignty as a principle for environmental policy. More specifically, this theory asserts that the goal of environmental policy is to maximize social welfare at least when equity issues—matters involving the distribution of benefits among individuals—are not pressing.¹²

⁸. Stephen Barr, *Hill General Retreats on Gettysburg Plan*, WASH. POST, Oct. 2, 1998, at A25. See also Ben White, *Lawmaker Criticizes Plan for Gettysburg*, WASH. POST, Feb. 12, 1999, at A33.

⁹. See Brett Lieberman, *Park Service Unveils Revised Gettysburg Plan*, PLAINS DEALER (Cleveland), June 19, 1999, at 14A.

¹⁰. APCWS POSITION ON PROPOSED GETTYSBURG DEVELOPMENT PLAN (statement by Denis P. Galvin, Deputy Director, National Park Service, Feb. 24, 1998) (visited Mar. 26, 2000) <<http://users.erols.com/va-udc/nps.html>> [hereinafter PROPOSED DEVELOPMENT PLAN].

¹¹. In fact, such a proposal is not as far-fetched as it sounds. See Heather Dewar, *Corporate Cash Eyed for Parks, Bill Puts Sponsorships at \$10 Million Apiece*, DENVER POST, June 8, 1996, at A1; *Parks May Get “Official” Sponsors, Senate Measure Would Lure Corporate Bucks*, ST. LOUIS POST-DISPATCH, June 9, 1996, at 1A. This plan was much derided. See, e.g., Joshua Reichert, *Commercializing Our National Parks A Bad Joke*, HOUSTON CHRON., Sept. 23, 1996, at 19.

¹². From the perspective of welfare economics, a regulation is rational—it promotes the welfare of society—only if it confers on members of society benefits in excess of costs. Since the benefits and costs may well accrue to different individuals, welfare economists recognize two fundamental values in terms of which regulatory policy may be justified. The first is economic *efficiency*, which is to say, the extent to which total benefits of the policy exceed total costs. The second goal is *equity*, which is to say, the extent to which the distribution of costs and benefits is equitable or fair. For a presentation of this view, see generally

Welfare, in turn, is defined and measured by consumer willingness to pay (“WTP”) for goods and services. According to this theory, environmental policy should allocate goods and services efficiently, that is, to those willing to pay the most for them and who, in that sense, will benefit from their enjoyment, possession, or use.

In the United States, unlike Europe, I explained, battlefields are scarce resources which, like any scarce environmental asset, should be allocated efficiently. To be sure, the Park Service tries to accommodate tourists. The problem, though, is that the Park Service does not exploit heritage values as efficiently as a competitive market would. At present, Gettysburg is woefully underutilized, or so I argued. Even Dollywood, Dolly Parton’s theme park in rural east Tennessee, attracts more visitors every year.¹³ The Park Service does not even try to allocate the resources efficiently. It pursues goals that are not economic but ethical; it seeks to educate the public and honor “the valor and sacrifices of those men who fought and died on that ground for their beliefs.”¹⁴

A young lady in the class blurted out, “But that’s what the Park Service should do.” She acknowledged that the Park Service has to provide visitor services. It should do so, she said, only to the extent that it will not “detract from what they did here,” to paraphrase President Lincoln.¹⁵ This young lady thought that the history of the place, rather than what people are willing to pay for alternative uses of it, determined its value. She understood the significance of “what they did here” in moral and historical rather than in economic terms. The value of hallowed ground or of any object with intrinsic value has nothing to do with market behavior or with WTP, she said.

I explicated her concern the following way. A private developer, I explained, might not realize in gate receipts at Gettysburg the WTP of those individuals, like herself, who wished to protect an area for ethical or aesthetic reasons. I promised to describe to the class the contingent valuation (“CV”) method economists have developed to determine how much individuals are willing to pay for policies consistent with their disinterested moral beliefs.¹⁶ Using this method, the Park Service could take her preference and therefore her welfare into account. It could then identify the policy that maximizes benefits over costs for all concerned, whether that concern is based on consumer desire or on ethical commitment.

This reply, I am afraid, did little more than taunt the student. In stating her opinion, she said, she implied nothing about her own well-being. She described what she thought society ought to do, not what would make her better off. The student did not see how scientific management, by measuring costs and benefits, served democracy. The Park Service, she added, had no responsibility, legal or moral, to maximize “satisfactions,” including hers. Rather, it had an obligation keep faith with those who died on that ground for their beliefs. No CV survey, no amount of WTP, she said, could add to or detract from the value of Gettysburg. No action we take could alter, though it may honor or dishonor, what the soldiers did there; no cost-benefit study, however scientific, could change our obligation to those who gave their lives that this nation might live.

ARTHUR M. OKUN, *EQUALITY AND EFFICIENCY: THE BIG TRADEOFF* (1975). He writes, “This concept of efficiency implies that more is better, insofar as the ‘more’ consists in items people want to buy.” *Id.* at 2.

¹³. Dollywood attracts about 2 million patrons annually and is open only during the warmer months. *See Dollywood* (visited Mar. 26, 2000) <<http://company.monster.com/dolly/>>.

¹⁴. PROPOSED DEVELOPMENT PLAN, *supra* note 10.

¹⁵. *See* LINCOLN, *supra* note 1.

¹⁶. *See* discussion *infra* Part VI.

II. CONSERVATION REVISITED

To prepare for the seminar, I had asked the students to read *Conservation Reconsidered*,¹⁷ an essay economist John V. Krutilla published in 1967 in response to neoclassical economists, who studied the effects of technological advance on economic growth. Neoclassical macroeconomists like James Tobin,¹⁸ Robert Solow, and William Nordhaus¹⁹ argued that technological progress would always make more abundant materials do the work of less abundant ones—for example, the way kerosene substituted for whale oil in providing household illumination.²⁰ Solow, a Nobel laureate in economics, wrote that “[h]igher and rising prices of exhaustible resources lead competing producers to substitute other materials that are more plentiful and therefore cheaper.”²¹ These economists adopted a model of economic growth that contained two factors: capital (including technology) and the labor to apply it.²² This model differed from that of classical economists, such as Ricardo and Malthus, because “resources, the third member of the classical triad, have generally been dropped.”²³

In the essay the class read, Krutilla cited studies to show that advancing technology has “compensated quite adequately for the depletion of the higher quality natural resource stocks.”²⁴ He observed that “the traditional concerns of conservation economics—the husbanding of natural resource stocks for the use of future generations—may now be outmoded by advances in technology.”²⁵ Krutilla, along with other environmental economists in the 1970s, rejected the view that the resource base imposes limits on growth.²⁶ Had they accepted the Malthusian position, they would have risked losing credibility both with their mainstream colleagues and with foundations and institutions, such as the World Bank, that supported their work.²⁷

¹⁷. John V. Krutilla, *Conservation Reconsidered*, 57 AM. ECON. REV. 777 (1967).

¹⁸. See, e.g., William D. Nordhaus & James Tobin, *Is Economic Growth Obsolete?*, 5 ECON. GROWTH 1 (1972).

¹⁹. See generally WILLIAM D. NORDHAUS, *INVENTION, GROWTH, AND WELFARE: A THEORETICAL TREATMENT OF TECHNOLOGICAL CHANGE* (1969).

²⁰. See DANIEL YERGIN, *THE PRIZE: THE EPIC QUEST FOR OIL, MONEY, AND POWER* 22 (1992).

²¹. Robert M. Solow, *Is the End of the World at Hand?*, in *THE ECONOMIC GROWTH CONTROVERSY* 39, 53 (Andrew Weintraub et al. eds., 1973) [hereinafter Solow, *End of the World*]. Solow sought to establish that technological change, rather than the resource base, is essential to economic production. See, e.g., Robert M. Solow, *A Contribution to the Theory of Economic Growth*, 70 Q.J. ECON. 65 (1956); Robert M. Solow, *Technical Change and the Aggregate Production Function*, 39 REV. ECON. & STAT. 312 (1957).

²². Solow argued that if the future is like the past, raw materials will continually become more plentiful. See Solow, *End of the World*, *supra* note 21, at 49.

²³. Nordhaus & Tobin, *supra* note 18, at 14. Many mainstream economists accept Solow’s argument. As analyst Peter Drucker has written, “[w]here there is effective management, that is, application of knowledge to knowledge, we can always obtain the other resources.” PETER DRUCKER, *POST CAPITALIST SOCIETY* 45 (1993). Others have argued that our technical ability to substitute resources for one another is so great that “the particular resources with which one starts increasingly become a matter of indifference. The reservation of particular resources for later use, therefore, may contribute little to the welfare of future generations.” HAROLD J. BARNETT & CHANDLER MORSE, *SCARCITY AND GROWTH: THE ECONOMICS OF NATURAL RESOURCE AVAILABILITY* 11 (1963).

²⁴. Krutilla, *supra* note 17, at 777.

²⁵. *Id.* at 778.

²⁶. See Krutilla, *supra* note 17, at 784. See also, e.g., V. Kerry Smith, *The Effect of Technological Change on Different Uses of Environmental Resources*, in *NATURAL ENVIRONMENTS: STUDIES IN THEORETICAL AND APPLIED ANALYSIS* 54, 54–87 (John V. Krutilla ed., 1972). Smith wrote, “advances in scientific knowledge and a mastery of techniques have been sufficiently pervasive and rapid to allow for an ever expanding supply of natural resource commodities at constant or falling supply prices.” *Id.* at 54.

²⁷. See WORLD BANK, *WORLD DEVELOPMENT REPORT: 1992* (1992). This document contains a sustained argument against the views of ecological economics and defends the neoclassical assumption that, with technological advance and good government, resources do not limit growth.

The neoclassical model of growth, insofar as it takes natural resources for granted, did not sit well with environmentalists, many of whom rejected neoclassical thinking and joined the maverick discipline of ecological economics, which emphasizes traditional Malthusian concerns about resource depletion.²⁸ The neoclassical theory of perpetual resource abundance, moreover, left environmental economists no obvious scarcities to study. It suggested that economists could do little more than to advise society to privatize resources, enforce contracts, and otherwise not to worry but just leave markets alone.

Krutilla and other mainstream environmental economists, to find fertile fields for research, moved the focus of their science from macroeconomic to microeconomic analysis.²⁹ Microeconomists study the behavior of individuals and firms as they trade in competitive markets. When markets fail properly to bring buyers together with sellers, prices at which goods and services change hands may fail to reflect the full WTP for them and the full costs involved in producing them. Microeconomists identify ways to correct market failure and to make prices better reflect marginal supply and demand.³⁰

Pollution is the standard example. If the production of a good, say, an automobile, imposes costs, for example, dirty air, on members of society for which they are not compensated, these individuals unwillingly subsidize the production or consumption of that item. This subsidy distorts markets because it encourages the overproduction of some things (e.g., cars) and the underproduction of other things (e.g., clean air) relative to what people want to buy. The production and use of cars imposes social costs, costs on society, that are not reflected in the private costs, prices people pay, to own and drive those cars. This gap between social and private costs, economists reason, justifies regulation.

As early as 1920, welfare economist A.C. Pigou had distinguished between “private” and “social” costs and had characterized pollution as an unpriced “externality” or social cost of production.³¹ Pigou had also proposed the solution: to tax the difference between private costs, those reflected in prices, and social costs, those people bear without compensation, so that the prices charged for polluting goods would reflect the full costs, including the pollution costs, that go into providing them.³²

By the 1960s and 1970s, economists had fully characterized Pigou’s argument as what one called “the economic common sense of pollution.”³³ After 1970, little new could be said or has been said on this subject. The microeconomic analysis of pollution in terms of a divergence between private and social costs, however, has had little if any effect on public policy. Pollution control law relies for its justification on common law principles of nuisance, not on a Pigouvian concept of market failure. Public law regulates pollution, in other words, not as an “externality”

²⁸. See, e.g., Robert Costanza et al., *Goals, Agenda, and Policy Recommendations for Ecological Economics*, in *ECOLOGICAL ECONOMICS: THE SCIENCE AND MANAGEMENT OF SUSTAINABILITY* 1, 8 (Robert Costanza ed., 1991) (arguing that we have “entered a new era” in which “the limiting factor in development is no longer manmade capital but remaining natural capital”).

²⁹. See, e.g., EDWIN MANSFIELD, *MICROECONOMICS: THEORY AND APPLICATIONS* (2d ed. 1976). Mansfield writes that economics is divided “into two parts: microeconomics and macroeconomics. Microeconomics deals with the economic behavior of individual units like consumers, firms, and resource owners; while macroeconomics deals with the behavior of economic aggregates like gross national product and the level of unemployment.” *Id.* at 2.

³⁰. See generally *THE THEORY OF MARKET FAILURE: A CRITICAL EXAMINATION* (Tyler Cowen ed., 1988).

³¹. See A.C. PIGOU, *THE ECONOMICS OF WELFARE* 172–203 (4th ed. 1932).

³². See *id.*

³³. Larry E. Ruff, *The Economic Common Sense of Pollution*, PUB. INTEREST, Spring 1970, at 69.

to be controlled to the extent that the benefits outweigh the costs, but as an invasion, trespass, or tort.³⁴

Krutilla and colleagues saw a way, however, to apply the Pigouvian analysis of market failure far, far beyond the problems of pollution. These economists knew that people often make sacrifices, e.g., by paying dues, to support causes and to vindicate convictions concerning the natural world. These beliefs or commitments surely involve values; values, in the context of economic theory, suggest costs or benefits and, therefore WTP, that market prices may not fully capture.³⁵ This WTP, if entered into a social cost-benefit analysis, could serve environmentalism by justifying regulation.

The young lady in my seminar, for example, thought the Park Service should restore rather than commercialize the battlefield. If policy went her way, arguably, she would experience a benefit, if not, a cost. This example and many others like it suggest that markets may fail whenever people support principles or judgments they cannot easily vindicate through private exchange. Experts might correct market allocations by measuring WTP for outcomes consistent with political beliefs and moral commitments. This possibility opened a new vista to environmental economics.

III. MORAL COMMITMENT AS MARKET DEMAND

At about the time neoclassical economics removed resource scarcity as a cause for concern, citizens across the country swelled the rolls of organizations such as the Sierra Club, which sought to preserve pristine places, endangered species, wild rivers, and other natural objects. These environmentalists, Krutilla pointed out, contributed to organizations such as the World Wildlife Fund “in an effort to save exotic species in remote areas of the world which few subscribers to the Fund ever hope to see.”³⁶ Krutilla noted that people “place a value on the mere existence” of resources, such as species, even though they do not intend to consume or own them, as they would ordinary resources.³⁷

Krutilla argued that if people value natural objects because they are natural, then technological advance cannot provide substitutes for them.³⁸ Among the permanently scarce

³⁴ . Since pollution is clearly a form of coercion rather than of exchange, to ask how much pollution society should permit is to ask how far one individual may use the person or property of another without his or her consent. Nothing in our law, shared ethical intuitions, or cultural history supports or even tolerates the utilitarian principle that one person can trespass upon another—indeed, should do so—whenever the benefits to society exceed the costs. *See, e.g.,* United States v. Kin-Buc, Inc., 532 F. Supp. 699, 702–03 (D.N.J. 1982) (holding that the Clean Air Act preempts federal common law claims of nuisance for air pollution). *See also* William C. Porter, *The Role of Private Nuisance Law in the Control of Air Pollution*, 10 ARIZ. L. REV. 107, 108–17 (1968).

The non-utilitarian basis of pollution control law is so obvious that, as Maureen Cropper and Wallace Oates observe, “the cornerstones of federal environmental policy in the United States,” such as the Clean Air and Clean Water Acts, “explicitly prohibited the weighing of benefits against costs in the setting of environmental standards.” Maureen L. Cropper & Wallace E. Oates, *Environmental Economics: A Survey*, 30 J. ECON. LIT. 675, 675 (1992).

³⁵ . For an illustrative example of this sort of reasoning, see E.B. Barbier et al., *Economic Value of Biodiversity*, in GLOBAL BIODIVERSITY ASSESSMENT 823, 829 (V.H. Heywood ed., 1995) (“Moral or ethical concerns, like tastes and preferences, can be translated into a willingness to commit resources to conserve biodiversity.”).

³⁶ . Krutilla, *supra* note 17, at 781.

³⁷ . *Id.*

³⁸ . *See id.* at 783 (arguing that “while the supply of fabricated goods and commercial services may be capable of continuous expansion from a given resource base by reason of scientific discovery and mastery of technique, the supply of natural phenomena is virtually inelastic”). Krutilla had to show, however, that technology cannot provide substitutes for natural phenomena (such as the Grand Canyon) as it can for natural resources. Krutilla apparently infers from the inelasticity of the

phenomena of nature, Krutilla cited familiar examples including “the Grand Canyon, a threatened species, or an entire ecosystem or biotic community essential to the survival of the threatened species.”³⁹ On this basis, Krutilla and many colleagues reinvented environmental economics as a “new conservation”⁴⁰ that addresses the failure of markets to respond to the “existence” or “non-use” value of natural objects people want to preserve but may not intend to experience, much less use or consume.

Krutilla was correct, of course, in observing that people often are willing to pay to preserve natural objects such as endangered species. Among them, for example, is Tom Finger, a Mennonite, who said, “we’re eliminating God’s creatures. All these nonhuman creatures...have a certain intrinsic worth because they are part of God’s creation.”⁴¹ People who believe species have an intrinsic worth may be willing to pay to protect them. Does this suggest that endangered species are scarce resources? Do those who believe extinction is wrong suffer a loss, a kind of social cost, when species vanish? Does endangered species habitat have an economic value market prices fail to reflect?

Krutilla thought so. He reasoned that those who wished to protect natural objects or environments find it difficult to communicate their WTP to those who own those resources. Given this practical difficulty, “the private resource owner would not be able to appropriate in gate receipts the entire social value of the resources when used in a manner compatible with preserving the natural state.”⁴² Accordingly, Krutilla proposed that the analysis Pigou had offered to justify the regulation of pollution might also serve to justify governmental action to protect species, wilderness, and other natural objects. He wrote, “private and social returns...are likely to diverge significantly.”⁴³

Krutilla’s analysis suggests an argument to show that a private firm should manage Dollywood but not Gettysburg, even if the principle of consumer sovereignty applies equally to both. At Dollywood, the owners can capture in gate and table receipts total WTP for the goods and services the resort provides. Owners who respond to market signals supply just those goods and services the public most wants to buy. The managers of Dollywood, moreover, cover all the costs in labor, materials, etc., of their business. The prices they charge, then, will reflect the full social costs involved in producing what they sell.

At Gettysburg, it is different. Patriotic Americans, many of whom may never visit the area, may be willing to pay to restore the battlefield or to save it from commercial exploitation. Private, for-profit owners of Gettysburg would have no incentive to take this WTP into account, however, because they cannot capture it in gate and table receipts. The prices managers charge for attractions, then, will not reflect the full social costs of providing them—particularly the costs to patriotic Americans who would suffer if the battlefield is desecrated. Because price signals

supply of natural phenomena that technology cannot offer substitutes for them. This is obviously a non-sequitor. Technology can provide amusements—for example, IMAX[®] theater presentations of the Grand Canyon followed by a great party where one can meet celebrities—for which people may be willing to pay as much as to go to the Canyon itself. It is not clear, then, that inelasticities of supply bear on the question of whether technology can provide economic substitutes for intrinsically valuable objects of nature. Technology may provide goods and services for which people are willing to pay the same amount.

³⁹. *Id.* at 778.

⁴⁰. *Id.* at 783.

⁴¹. Carlyle Murphy, *A Spiritual Lens on the Environment; Increasingly, Caring for Creation Is Viewed as a Religious Mandate*, WASH. POST, Feb. 3, 1998, at A1.

⁴². Krutilla, *supra* note 17, at 779.

⁴³. *Id.*

distort true WTP for preservation, the government, rather than a for-profit firm, should manage or at least regulate Gettysburg. Thus, a Pigouvian argument may provide an economic and, in that sense, scientific rationale for the belief that society should restore Gettysburg to its 1863 condition rather than sell the area to Disney Enterprises to run as a theme park.

This kind of economic argument may appeal to environmentalists because it opposes the privatization of places, such as Gettysburg, that possess intrinsic value. This argument seems especially appealing because it rejects privatization for economic reasons—the very sorts of reasons that might be thought to justify it. Since this Pigouvian analysis leads to comfortable conclusions, environmentalists might embrace it. Why not agree with economic theory that the goal of social policy is to maximize net benefits with respect to all environmental assets, whether in places like Dollywood or in places like Gettysburg? After all, the cost-benefit analysis, once it factors in the WTP of environmentalists, surely will come out in favor of protecting the environment.

The problem is this: to buy into this argument, one must accept the idea that the same goal or principle—net benefits maximization—applies to both Dollywood and Gettysburg.⁴⁴ Critics of economic theory may contend, however, that the approach to valuation appropriate at Daydream Ridge in Dollywood is not appropriate at Cemetery Ridge in Gettysburg. At Daydream Ridge, the goal is to satisfy consumer demand. At Cemetery Ridge, the goal is to pay homage to those who died that this nation might live.

To say that the nation has a duty to pay homage to those from whom it received the last full measure of devotion is to state a moral fact. You can find other moral facts stated, for example, in the Ten Commandments. The imperative “Thou shalt not murder” should not be understood as a policy preference for which Moses and other like-minded reformers were willing to pay. Rather, like every statement of moral fact, it presents a hypothesis about what we stand for—what we maintain as true and expect others to believe—insofar as we identify ourselves as a moral and rational community.

Our Constitution puts certain questions, for example, religious belief, beyond the reach of democracy. Other moral questions, over military intervention in conflicts abroad, for example, invite reasoned deliberation in appropriate legislative councils. Environmental controversies, once the issues of resource scarcity are removed from the agenda, turn on the discovery and acceptance of moral and aesthetic judgments as facts. The belief that society should respect the sanctity of Cemetery Ridge states a moral fact so uncontroversial nobody would doubt it. This tells us nothing, however, about a scarcity of battlefields, an inelasticity of hallowed ground, market failure, or the divergence of social and private costs. It suggests only that the principle of consumer sovereignty that economists apply to evaluate management decisions at Dollywood do not apply at Gettysburg or, indeed, wherever the intrinsic value of an environment is at stake.⁴⁵

⁴⁴. “Market-determined prices,” some economists claim, “are the only reliable, legally significant measures of value.... [T]he value of a natural resource is the sum of the value of all of its associated marketable commodities, such as timber, minerals, animals, and recreational use fees.” Daniel S. Levy & David Friedman, *The Revenge of the Redwoods? Reconsidering Property Rights and the Economic Allocation of Natural Resources*, 61 U. CHI. L. REV. 493, 500–01 (1994) (discussing the possibility of WTP estimates for existence values).

⁴⁵. Gettysburg here serves as an example of any moral decision that confronts society. Economists have applied the WTP criterion to adjudicate the most important moral decisions that confront society. For example, economists have argued that the decision to wage war in Vietnam represented not a moral failure or political failure, but a market failure. The decision to carry on the war failed to reflect the WTP demonstrators revealed, for example, in the travel costs they paid to protest against it. See

IV. ARE BELIEFS BENEFITS?

By construing intrinsic or existence value as a kind of demand market prices fail to reflect, Krutilla and other environmental economists envisioned a brilliant strategy to respond to the quandary in which neoclassical economic theory had placed them.⁴⁶ They kept their credentials as mainstream economists by accepting the neoclassical macroeconomic model with respect to resources the economy uses. Yet they also “greened” their science by attributing a general scarcity to “non-use” resources such as wilderness, species, scenic rivers, historical landmarks, and so on, that people believe society has a duty to preserve. Indeed, by applying the divergence-of-private-and-social-cost argument not just to pollution but also to every plant, animal, or place that anyone may care about for ethical or cultural reasons, economic theory performed a great service to environmentalists. Environmentalists now could represent their moral, religious, or cultural beliefs as WTP market prices failed to reflect.⁴⁷ At last, they could claim that economic science was on their side.⁴⁸

By transforming moral or cultural judgments about the environment into preferences for which people are willing to pay, Krutilla and his colleagues in the early 1970s achieved a great deal. First, they created a complex research agenda centering on the measurement of benefits associated with non-use or existence value.⁴⁹ Since 1970, indeed, research in environmental economics, both theoretical and empirical, has been preoccupied with measuring the economic benefits people are supposed to enjoy as a result of environmental policies consistent with their moral and religious beliefs.⁵⁰

Second, Krutilla and colleagues created a division of labor between policy scientists and policy consumers.⁵¹ As policy scientists, economists lay down the goals and principles of environmental policy—indeed of all social policy—on the basis of their own theory and without

generally Charles J. Cicchetti et al., *On the Economics of Mass Demonstrations: A Case Study of the November 1969 March on Washington*, 61 AM. ECON. REV. 179 (1971).

Whatever the question, from segregation in housing to certain kinds of slavery, practices people oppose for moral reasons may also be characterized as objectionable for economic reasons, once the WTP of those opponents is factored into the cost-benefit analysis. See generally Duncan Kennedy, *Cost-Benefit Analysis of Entitlement Problems: A Critique*, 33 STAN. L. REV. 387 (1981).

Microeconomists sometimes seem to hold that WTP can adjudicate all questions of truth, beauty, and justice. The use of WTP or utility “to measure preferences can be applied quite generally,” three economists explain. “Utility or preference exists for any activity in which choice is involved, although the choices may themselves involve truth, justice, or beauty, just as easily as the consumption of goods and services.” JONATHAN A. LESSER ET AL., ENVIRONMENTAL ECONOMICS AND POLICY 42 (1997).

⁴⁶. That is, the quandary involved in finding a subject matter for environmental economics to study when mainstream economics had determined that natural resources could be taken for granted.

⁴⁷. The high-water mark of this approach to environmental evaluation may be found in Robert Costanza et al., *The Value of the World’s Ecosystem Services and Natural Capital*, 387 NATURE 253 (1997) (estimating the economic benefits of the world’s ecosystem services and natural capital at \$33 trillion per year).

⁴⁸. See, e.g., Pete Morton, *The Economic Benefits of Wilderness: Theory and Practice*, 76 DENV. U. L. REV. 465, 465 (1999) (“While steadfastly acknowledging that the economic benefits of wilderness will never be fully quantified, without at least qualitatively describing and understanding these benefits, politicians and public land managers will continue to make policy decisions that shortchange wilderness in public land management decisions.”). Some environmentalists question the use of contingent valuation largely for technical reasons. See, e.g., KRISTIN M. JAKOBSSON & ANDREW K. DRAGUN, CONTINGENT VALUATION AND ENDANGERED SPECIES 78–82 (1996).

⁴⁹. For examples of this research agenda, see VALUING NATURAL ASSETS: THE ECONOMICS OF NATURAL RESOURCE DAMAGE ASSESSMENTS (Raymond J. Kopp & V. Kerry Smith eds., 1993).

⁵⁰. For a good review of the literature, see generally A. MYRICK FREEMAN III, THE BENEFITS OF ENVIRONMENTAL IMPROVEMENT: THEORY AND PRACTICE (1979).

⁵¹. See Krutilla, *supra* note 17, at 779 n.7 (describing environmentalists as having subjective reactions to, rather than objective opinions about, the loss of a species or the disfiguring of an environment).

any political deliberation, consultation, or process.⁵² Economists Edith Stokey and Richard Zeckhauser, for example, assert that “public policy should promote the welfare of society.”⁵³ A. Myrick Freeman III explains, “The basic premises of welfare economics are that the purpose of economic activity is to increase the well-being of the individuals who make up the society.”⁵⁴ In a widely used textbook, Eban Goodstein states, “Economic analysts are concerned with human welfare or well-being. From the economic perspective, the environment should be protected for the material benefit of humanity and not for strictly moral or ethical reasons.”⁵⁵

As policy consumers, citizens make judgments about what is good for them.⁵⁶ Economists reiterate that “each individual is the best judge of how well off he or she is in a given situation.”⁵⁷ Henry Ford is reputed to have said that people could have automobiles “in any color so long as it’s black.”⁵⁸ From the standpoint of economic theory, individuals can make any social judgment they wish, as long as it concerns the extent to which policy outcomes harm or benefit them.⁵⁹

Economists may offer a ceremonial bow in the direction of markets, but this is quickly followed by a story of market failure followed by a call for centralized management based on cost-benefit analysis.⁶⁰ Experts, i.e., economists themselves, must teach society how to allocate resources scientifically, since markets cannot cope with environmental public goods. In markets, individuals make choices and thus function as agents of change. In microeconomic theory, in contrast, individuals function not as agents but primarily as sites or locations where WTP may be found.

Third, as the methodology for benefits estimation developed, it typically assigned very high shadow prices to existence values, and this appealed to environmentalists. An endangered butterfly, for example, may be worth millions if every American is willing to pay a dime for its survival. Public interest groups, who associated economists with the enemy, now saw that economic science could be their friend.⁶¹ Environmentalists, who might have complained that industry groups had “numbers,” could now come up with numbers, too.⁶² And since WTP adds

⁵². For a general statement and defense of the position of welfare economics in environmental policy, see Daniel C. Esty, *Toward Optimal Environmental Governance*, 74 N.Y.U. L. REV. 1495 (1999). See also Louis Kaplow & Steven Shavell, *Property Rules Versus Liability Rules: An Economic Analysis*, 109 HARV. L. REV. 715, 725 (1996) (taking the cost-benefit balance to define ideal regulation).

⁵³. EDITH STOKEY & RICHARD ZECKHAUSER, *A PRIMER FOR POLICY ANALYSIS* 277 (1978).

⁵⁴. A. MYRICK FREEMAN III, *THE MEASUREMENT OF ENVIRONMENTAL RESOURCE VALUES* 6 (1993).

⁵⁵. EBAN S. GOODSTEIN, *ECONOMICS AND THE ENVIRONMENT* 24 (2d ed. 1999).

⁵⁶. Commentators generally refer to this idea as the principle of consumer sovereignty. For a general statement of how this principle fits within the foundations of economic theory, see Martha Nussbaum, *Flawed Foundations: The Philosophical Critique of (a Particular Type of) Economics*, 64 U. CHI. L. REV. 1197, 1197–98 (1997).

⁵⁷. FREEMAN, *supra* note 54, at 6.

⁵⁸. For a discussion of Ford’s beliefs, see ROLAND MARCHAND, *ADVERTISING THE AMERICAN DREAM: MAKING WAY FOR MODERNITY, 1920–1940*, at 118, 156–58 (1985).

⁵⁹. Following social choice theory, economists apply the principle of consumer sovereignty to all views but their own—in other words, they regard everyone else as having wants rather than ideas. For the classic statement of this position, see Joseph Schumpeter, *On the Concept of Social Value*, 23 Q.J. ECON. 213, 214–17 (1909).

⁶⁰. See, e.g., Allen V. Kneese & Blair T. Bower, *Introduction*, in *ENVIRONMENTAL QUALITY ANALYSIS: THEORY AND METHOD IN THE SOCIAL SCIENCES* 3–4 (Allen V. Kneese & Blair T. Bower eds., 1972).

⁶¹. See Kennedy, *supra* note 45, at 401–21.

⁶². Critics of Krutilla’s approach charged that it came primarily “from economists desperately eager to play a more significant role in environmental policy and environmental groups seeking to gain the support of conservatives.” Fred L. Smith, Jr., *A Free-Market Environmental Program*, 11 CATO J. 457, 468 n.15 (1992).

up quickly when aggregated over all members of society, environmentalists could be sure that the numbers would come out “right.”

V. IS EXISTENCE VALUE A KIND OF ECONOMIC VALUE?

To establish a connection between existence value and economic value, economists have to explain in what sense people benefit from the existence of goods they may neither experience nor use. To be sure, individuals are willing to pay to protect endangered species, rain forests, and other wonders of nature they may never expect to see. That they are willing to pay for them, however, does not show that they expect to benefit from them. Generally speaking, just because a person’s preferences are all his own, it does not follow that the satisfaction of all or any of those preferences necessarily improves his welfare or well-being. The students in my class were quite willing to contribute to a fund to protect hallowed ground at Gettysburg. They did so, however, largely from a sense of moral obligation and not in any way or manner because they thought they would be better off personally if the battlefield were preserved.

I wrote the following syllogism on the blackboard.

Major premise: The terms “economic value” and “welfare change” are equivalent.

Minor premise: Existence value has no clear relation to welfare change.

Conclusion: Therefore, existence value has no clear relation to economic value.

I defended the major premise by quoting leading environmental economists. According to Freeman, “[T]he terms ‘economic value’ and ‘welfare change’ can be used interchangeably.”⁶³ He adds that “[s]ociety should make changes in environmental and resource allocations only if the results are worth more in terms of individuals’ welfare than what is given up by diverting resources and inputs from other uses.”⁶⁴ Economists Robert D. Rowe and Lauraine G. Chestnut observe that “[e]conomists define value as the well-being, or utility, derived from the consumption of a good or service.”⁶⁵

The major premise, which equates economic value with welfare, explains the sense in which economic value is *valuable*. Unless “economic value” referred to some intrinsic good, such as felt happiness or satisfaction, one would be hard-pressed to explain the sense in which environmental economics can be a normative science.⁶⁶

To establish the minor premise, I argued that the statement “society ought to do x and I will contribute to its cost” does not entail “I shall benefit from x .” When behavior is motivated by ethical concerns rather than by self-interest, it lacks a meaningful connection with well-being or welfare. Accordingly, economist Paul Milgrom concedes that for existence value to be considered a kind of economic value, “it would be necessary for people’s individual existence

⁶³ FREEMAN, *supra* note 54, at 7.

⁶⁴ *Id.*

⁶⁵ ROBERT D. ROWE & LAURINE G. CHESTNUT, *THE VALUE OF VISIBILITY: THEORY AND APPLICATION* 9 (1982). Economists often use consumer surplus as the appropriate measure of economic value in calculating the benefits associated with environmental improvements. *See, e.g.*, RICHARD E. JUST ET AL., *APPLIED WELFARE ECONOMICS AND PUBLIC POLICY* 69–83 (1982); John R. Stoll et al., *A Framework for Identifying Economic Benefits and Beneficiaries of Outdoor Recreation*, 7 *POL’Y STUD. REV.* 443, 445–48 (1987).

⁶⁶ Environmental economists typically ground economic valuation in the moral theory or utilitarianism according to which happiness has intrinsic value. As Goodstein points out, the “moral foundation underlying economic analysis, which has as its goal human happiness or utility, is known as utilitarianism.” GOODSTEIN, *supra* note 55, at 24.

values to reflect only their own personal economic motives and not altruistic motives, or sense of duty, or moral obligation.”⁶⁷

To escape the conclusion that existence value has no relation to economic value, an economist may challenge either the major or minor premise. The major premise seems to be indispensable, however, if economics is to rest on a consequentialist moral theory such as utilitarianism. The reference to welfare explains why the benefits with which economists are concerned are *benefits*. The minor premise may be more vulnerable. This premise would be falsified if individuals made choices only in response to their beliefs about what will benefit them. Why not suppose, then, that people (other than economists) judge policy outcomes only on the basis of personal self interest? This assumption would connect preference with well-being for the ordinary citizen.

The students pointed out to me that Krutilla adopts this very position. In the essay the class read, he proposed that individuals who wish to protect the wonders of nature do so for self-seeking reasons, for example, to increase their own psychological satisfaction.⁶⁸ Krutilla wrote that

These would be the spiritual descendants of John Muir, the present members of the Sierra Club, the Wilderness Society, National Wildlife Federation, Audubon Society and others to whom the loss of a species or the disfigurement of a scenic area causes acute distress and a sense of genuine relative impoverishment.⁶⁹

The reference to “distress and a sense of genuine relative impoverishment” is crucial, of course, because these factors link existence value with economic value by connecting them with expected changes in welfare. Krutilla continued, “There are many persons who obtain satisfaction from mere knowledge that part of wilderness North America remains even though they would be appalled by the prospect of being exposed to it.”⁷⁰ The reference to “satisfaction” connects the “is” of WTP to the “ought” of economic value and valuation.⁷¹

VI. CONTINGENT VALUATION

During the past thirty years, economists have worked hard to develop a method, known as contingent valuation (“CV”), to assess the “existence” or “non-use” values of natural phenomena.⁷² The CV method, as one authority writes, “is based on asking an individual to state

⁶⁷. Paul Milgrom, *Is Sympathy an Economic Value? Philosophy, Economics, and the Contingent Valuation Method*, in *CONTINGENT VALUATION: A CRITICAL ASSESSMENT* 417, 431 (J.A. Hausman ed., 1993).

⁶⁸. Even if Krutilla were correct about what people want, namely a sense of satisfaction, this would not serve to justify the CV approach. One would then need to distinguish between the value of the policy option (which CV is supposed to measure) and the value of the expected moral satisfaction (which people are supposed to want). For further discussion of the possibility that WTP estimates in contingent valuation studies refer to the value not of a policy but of a state of moral satisfaction, see Daniel Kahneman & Jack L. Knetsch, *Valuing Public Goods: The Purchase of Moral Satisfaction*, 22 *J. ENVTL. ECON. & MGMT.* 57, 57–70 (1992).

⁶⁹. Krutilla, *supra* note 17, at 779.

⁷⁰. *Id.* at 781.

⁷¹. One can understand this argument in terms of an ambiguity between two senses—one logical, the other psychological—in the term “satisfaction.” To satisfy a preference in the logical sense is to meet or fulfill it; this is the sense in which equations and conditions are satisfied. To satisfy a person in the psychological sense is to cause contentment or a feeling of well-being. Krutilla seems to have assumed that to satisfy a preference in the logical sense is to cause a psychological sense of satisfaction. Nothing justifies this inference.

⁷². For commentaries, see generally John F. Daum, *Some Legal and Regulatory Aspects of Contingent Valuation*, in *CONTINGENT VALUATION: A CRITICAL ASSESSMENT*, *supra* note 67, at 389; William H. Desvousges et al., *Measuring Natural*

his or her willingness to pay to bring about an environmental improvement, such as improved visibility from lessened air pollution, the protection of an endangered species, or the preservation of a wilderness area.”⁷³ The authors of a textbook write that the CV method “asks people what they are willing to pay for an environmental benefit...”⁷⁴ They see this method as “uniquely suited to address non-use values.”⁷⁵

Contrary to what this textbook asserts, the CV questionnaire never asks people what they are willing to pay for an environmental *benefit*. It asks respondents to state their WTP for a particular policy outcome, for example, the protection of a rare butterfly. Economists interpret the stated WTP for the environmental improvement as if it were WTP for a personal benefit the respondent expects it to afford her or him. Yet a person who believes that society ought to protect a species of butterfly may have no expectation at all that he or she will benefit as a result. Indeed, as Tom Tietenberg observes, people who do not expect to benefit in any way from an environmental good may still be committed to its preservation.⁷⁶ He notes that “people reveal strong support for environmental resources even when those resources provide no direct or even indirect benefit.”⁷⁷

Empirical research shows that responses to CV questionnaires reflect moral commitments rather than concerns about personal welfare. In one example, a careful study showed that ethical considerations dominate economic ones in responses to CV surveys.⁷⁸ “Our results provide an assessment of the frequency and seriousness of these considerations in our sample: they are frequent and they are significant determinants of WTP responses.”⁷⁹ In another study, researchers found that existence value “is almost entirely driven by ethical considerations precisely because it is disinterested value.”⁸⁰

Some observers acknowledge that “existence value has been argued to involve a moral ‘commitment’ which is not in any way at all self-interested.”⁸¹ They explain that: “Commitment can be defined in terms of a person choosing an act that he believes will yield a lower level of personal welfare to him than an alternative that is also available to him.”⁸² If the satisfaction of “existence” value lowers welfare, then on which side of the cost-benefit equation should it be entered? The individual does not want less welfare per se, but “adherence to one’s moral commitments will be as important as personal economic welfare maximization and may conflict with it.”⁸³

Resource Damages with Contingent Valuation: Tests of Validity and Reliability, in CONTINGENT VALUATION: A CRITICAL ASSESSMENT, *supra* note 67, at 91.

⁷³ JAMES R. KAHN, THE ECONOMIC APPROACH TO ENVIRONMENTAL AND NATURAL RESOURCES 102 (2d ed. 1998).

⁷⁴ LESSER ET AL., *supra* note 45, at 282.

⁷⁵ *Id.*

⁷⁶ TOM TIETENBERG, ENVIRONMENTAL AND NATURAL RESOURCE ECONOMICS 37 (5th ed. 2000).

⁷⁷ TOM TIETENBERG, ENVIRONMENTAL ECONOMICS AND POLICY 62-63 (1994).

⁷⁸ D.A. Schkade & J.W. Payne, *How People Respond to Contingent Valuation Questions: A Verbal Protocol Analysis of Willingness to Pay for an Environmental Regulation*, 26 J. ENVTL. ECON. & MGMT. 88, 89 (1994).

⁷⁹ *Id.*

⁸⁰ Barbier et al., *supra* note 35, at 836.

⁸¹ *Id.* at 836 (citing Amartya Sen, *Rational Fools: A Critique of the Behavior Foundations of Economic Theory*, 16 PHIL. & PUB. AFF. 317 (1977)).

⁸² *Id.*

⁸³ *Id.* The authors nicely summarize the question as follows: “Indeed, the debate over environmental values often turns on whether values are considered as ethical judgements or equivalence measures, i.e. whether environmental values are statements of principle or a reflection of social costs.” *Id.* at 829. This question should be asked of the value assumptions of

However they can, respondents to CV questions express disinterested views about policy rather than judgments about what will benefit them. Reviewing several CV protocols, economists concluded that “responses to CV questions concerning environmental preservation are dominated by citizen judgments concerning desirable social goals rather than by consumer preferences.”⁸⁴ Two commentators noted that the CV method asks people to “comment, without very much opportunity for thought, on a hard issue of public policy. In short, they most likely are exhibiting offhand opinions on the same policy issue to which the cost-benefit analyst purports to give his own answer, not private preferences that might be reflected in their own market transactions.”⁸⁵

We should not confuse WTP to protect a battlefield, species, or wilderness with WTP for some sort of benefit. Battlefields and benefits constitute different goods which can be provided and should be measured separately. If economists cared to measure the economic value, i.e., the benefits, of alternative outcomes, the CV questionnaire should ask respondents to state their WTP for the welfare change they associate an environmental policy. Here is an imaginary protocol I suggested to the class:

Many people believe society should respect the “hallowed ground” at Gettysburg for moral, cultural, or other disinterested reasons. This questionnaire asks you to set aside all such disinterested values; it asks you not to consider what is right or wrong or good or bad from a social point of view. In responding to this survey, consider only the benefit you believe you will experience, i.e., the personal satisfaction, if the battlefield is preserved. Please state your WTP simply for the welfare change you expect, not your WTP for the protection of the battlefield itself.

Since CV questionnaires in fact ask nothing about benefits, responses to them tell us nothing relevant to economic valuation. Yet CV methodology, which economists have been developing for decades, has become the principal technique policymakers use to measure “nonmarket benefits based primarily on existence value” of assets such as old growth forests and endangered species.

As philosopher Ronald Dworkin points out, many of us recognize an obligation to places and objects that reflects a moral judgment about what society should do, not a subjective expectation about what may benefit us.⁸⁶ He writes that many of us seek to protect objects or events—which could include endangered species, for example—for reasons that have nothing to do with our well-being. Many of us “think we should admire and protect them because they are important in themselves, and not just if or because we or others want or enjoy them.”⁸⁷ The idea of intrinsic worth depends on deeply held moral convictions and religious beliefs that underlie social policies for the environment, education, public health, and so on. Dworkin observes:

economic theory, e.g., that society should maximize net benefits. Is this a statement of principle or a reflection of social costs? If the former, why is this not true of every other opinion as well?

⁸⁴. R. Blamey et al., *Respondents to Contingent Valuation Surveys: Consumers or Citizens?*, 39 AUSTRALIAN J. AGRIC. ECON. 263, 285 (1995).

⁸⁵. Daniel A. Farber & Paul A. Hemmersbaugh, *The Shadow of the Future: Discount Rates, Later Generations, and the Environment*, 46 VAND. L. REV. 267, 301 (1993).

⁸⁶. See RONALD DWORKIN, *LIFE’S DOMINION: AN ARGUMENT ABOUT ABORTION, EUTHANASIA, AND INDIVIDUAL FREEDOM* 69–77 (1993).

⁸⁷. *Id.* at 71–72. See also *id.* at 75–77 (discussing the preservation of animal species).

Much of what we think about knowledge, experience, art, and nature, for example, presupposes that in different ways these are valuable in themselves and not just for their utility or for the pleasure or satisfaction they bring us. The idea of intrinsic value is commonplace, and it has a central place in our shared scheme of values and opinions.⁸⁸

Beliefs are not benefits. If economists believe that society should allocate resources to maximize welfare, they do not necessarily think this because they will be better off as a result. They are not simply trying to increase demand for their services. Similarly, as the evidence cited above suggests, people who believe that society should protect endangered species, old-growth forests, and other places with intrinsic value do not necessarily think that this will improve their well-being.⁸⁹ A person who wants the Park Service to respect hallowed ground may consider that policy justified by the historical qualities of the battlefield and not by the welfare consequences for her or him. It is hard to understand, then, how CV measures the non-market benefits of environmental goods.⁹⁰ If responses to CV surveys are based on moral beliefs or commitments, there would seem to be no relevant benefits to measure.

VII. DOES WTP MEASURE WELFARE?

A young man in the class referred back to the syllogism that remained on the blackboard. He asked whether the syllogism still would be sound if the term “existence value” were replaced by “willingness to pay.” He reasoned that if existence value, when based on moral commitment rather than self interest, has no necessary relation to welfare, this would be true of WTP as well. He asked what WTP measures and how that relates to well-being and thus to economic value.

To answer this question, I reminded the class of what economic value consists in, namely, something akin to human happiness. As R. Kerry Turner explains, “Positive economic value—a benefit—arises when people feel better off, and negative economic value—a cost—arises when they feel worse off.”⁹¹ As Goodstein points out, the “moral foundation underlying economic analysis, which has as its goal human happiness or utility, is known as utilitarianism.”⁹² Happiness, contentment, and feelings of satisfaction are psychological states which, arguably, have intrinsic value.⁹³ Insofar as economic value is ‘valuable,’ its value lies in or refers to subjective well-being or happiness.

Does WTP measure, correlate with, or have anything to do with happiness, well-being, or contentment? We can answer this question empirically by using income as a surrogate measure

⁸⁸. *Id.* at 69–70.

⁸⁹. Experiments show again and again that responses to CV questionnaires express what the individual believes to be good in general or good for society and not—as the CV methods seek to determine—what individuals believe is good for *them*. See, e.g., Thomas H. Stevens et al., *Measuring the Existence Value of Wildlife: What Do CVM Estimates Really Show?*, 67 LAND ECON. 390 (1991); Thomas H. Stevens et al., *Measuring the Existence Value of Wildlife: Reply*, 69 LAND ECON. 309 (1993).

⁹⁰. Some economists agree and write: “[I]t may be inappropriate to use the [contingent valuation methodology] as an input to [benefit cost analysis] studies, unless means can be found to extract information on consumer preferences from data predominantly generated by citizen judgments.” Blamey et al., *supra* note 85, at 285.

⁹¹. KERRY TURNER ET AL., ENVIRONMENTAL ECONOMICS: AN ELEMENTARY INTRODUCTION 38 (1993).

⁹². GOODSTEIN, *supra* note 55, at 24.

⁹³. In fact, these states per se lack intrinsic value. Their value inheres in their appropriateness to the circumstances in which they arise. The joy sadists take in the pain of others, for example, has no positive value, intrinsic or otherwise; it is bad, not good. The sadness one feels in sympathy with others, in contrast, although a pain, possesses intrinsic value. Pleasure and pain have value insofar as they function cognitively, that is, as ways of knowing the moral qualities of the world. Pleasure and pain are both valuable, then, insofar as ways of knowing—knowledge being the ultimate intrinsic good.

for WTP; after all, people with more money can obtain more of the things they want to buy. We can use perceived happiness or subjective well-being to measure how well off people are. To determine whether WTP relates to well-being, we can find out whether people who have more money are happier than those who have less. On this empirical question, a great deal of evidence exists.

Empirical research overwhelmingly shows that after basic needs are met, no correlation whatsoever holds between rising income and perceived happiness.⁹⁴ Researchers consistently find there is very little difference in the levels of reported happiness found in rich and very poor countries.⁹⁵ Although the buying power of Americans has doubled since the 1950s, reported happiness has remained almost unchanged.⁹⁶ Absolute levels of income seem not to affect happiness, although relative levels do. People may be less happy if they earn less than their peers.⁹⁷

The literature contains studies in which people report they become *less* happy as their income and purchasing power increases.⁹⁸ Studies relating wealth to perceived happiness find that “rising prosperity in the USA since 1957 has been accompanied by a falling level of satisfaction. Studies of satisfaction and changing economic conditions have found overall no stable relationship at all.”⁹⁹ One major survey states, “None of the respondents believed that money is a major source of happiness.”¹⁰⁰ That money does not buy happiness may be one of the best established findings of social science research.¹⁰¹

A great many reasons explain why no empirical relation holds between what people are willing to pay for something and the happiness they derive or expect to derive from it. Happiness seems to depend on the things money cannot buy, e.g., love, friendship, and faith, not on the extent of one’s possessions.¹⁰² Fred Hirsch, among others, argued persuasively that happiness correlates with status more than with wealth.¹⁰³ Even those who succeed at their “games” seem

⁹⁴. See Ed Diener et al., *The Relationship Between Income and Subjective Well-Being: Relative or Absolute?*, 28 SOC. INDICATORS RES. 253, 253–81 (1992) (finding that that people whose incomes went up, down, or stayed about the same over a 10-year period had approximately the same levels of subjective well being). See also Ruut Veenhoven, *Is Happiness Relative?*, 24 SOC. INDICATORS RES. 1, 1–32 (1991).

⁹⁵. See MICHAEL ARGYLE, *THE PSYCHOLOGY OF HAPPINESS* 102–06 (1987); Richard A. Easterlin, *Does Economic Growth Improve the Human Lot? Some Empirical Evidence*, in *NATIONS AND HOUSEHOLDS IN ECONOMIC GROWTH: ESSAYS IN HONOR OF MOSES ABRAMOVITZ* 89, 106 (Paul A. David & Melvin W. Reder eds., 1974). See also generally F.E. TRAINER, *ABANDON AFFLUENCE* (1985); PAUL WACHTEL, *THE POVERTY OF AFFLUENCE* (1989).

⁹⁶. See DAVID G. MYERS, *EXPLORING PSYCHOLOGY* 346–50 (3d ed. 1996). For all kinds of citations and charts, see *The Study of Happiness* (visited Mar. 26, 2000) <<http://www.hope.edu/academic/psychology/myerstxt/happy/happy2.html>>.

⁹⁷. See Michael Argyle & Maryanne Martin, *The Psychological Causes of Happiness*, in *SUBJECTIVE WELL-BEING: AN INTERDISCIPLINARY PERSPECTIVE* 77 (Fritz Strack et al. eds., 1989); Paul Krugman, *A Good Reason Growth Doesn’t Necessarily Make Us Happier*, *ARIZ. DAILY STAR*, Apr. 2, 2000, at F2.

⁹⁸. See generally P.D. Rickman et al., *Lottery Winners and Accident Victims: Is Happiness Relative?*, 36 J. PERSONALITY & SOC. PSYCH. 917 (1978); Mary Jordan, *Millions Don’t Turn Everything To Gold: Many Lottery Winners Keep Same Jobs, Cars*, *WASH. POST*, July 21, 1991, at A1.

⁹⁹. ARGYLE, *supra* note 95, at 144.

¹⁰⁰. Ed Diener et al., *Happiness of the Very Wealthy*, 16 SOC. INDICATORS RES. 263, 263 (1985).

¹⁰¹. See Krugman, *supra* note 97, at F2; Robert E. Lane, *Does Money Buy Happiness?*, *PUB. INTEREST*, Fall 1993, at 56–65.

¹⁰². For a general discussion, see JONATHAN FREEDMAN, *HAPPY PEOPLE: WHAT HAPPINESS IS, WHO HAS IT, AND WHY* (1978).

¹⁰³. See FRED HIRSCH, *SOCIAL LIMITS TO GROWTH* (1976). See also generally TIBOR SCITOVSKY, *THE JOYLESS ECONOMY* (1976); Robert H. Frank, *Frames of Reference and the Quality of Life*, 79 *AM. ECON. REV.* 80 (1989).

to be dissatisfied as their expectations climb. Michael Jordan has been quoted as saying, “I wish I came in first more often.”¹⁰⁴

Although economists invoke utilitarianism as a moral foundation, WTP and therefore economic value has no clear relation to happiness and, therefore, no basis in utilitarianism. As Richard Posner wrote, the “most important thing to bear in mind about the concept of value [in the economist’s sense] is that it is based on what people are willing to pay for something rather than the happiness they would derive from having it.”¹⁰⁵ If economic value is a function of what people are willing to pay for something rather than the happiness they would derive from having it, it is unsurprising that those willing to pay the most for goods derive the most economic value from them. The term “economic value” simply coincides with “WTP” and has no connection to anything else.

I asked the class how we get from “people are willing to pay more for *A* than *B*” to “*A* is better than *B*”? To answer this question, I referred to the syllogism on the board, which now read:

Major premise: The terms “economic value” and “welfare change” are equivalent.

Minor premise: WTP has no clear relation to welfare change.

Conclusion: Therefore, WTP value has no clear relation to economic value.

Environmental economists escape this syllogism, I proposed, by ingeniously defining “welfare change” or “benefit” in terms of willingness to pay. Freeman describes this crucial step. He explains that economic theory defines “the benefit of an environmental improvement as the sum of the monetary values assigned to these effects by all individuals directly or indirectly affected by that action.”¹⁰⁶ Tietenberg analyzes the connection between WTP and benefits in the same way. “Total willingness to pay is the concept we shall use to define total benefits,” he explains.¹⁰⁷ Economic theory uses WTP to measure net benefits or welfare change because it defines “benefit” and “welfare change” in terms of willingness to pay. The statement that WTP measures or correlates with well-being means no more than the empty identity, “*A* is equivalent to *A*.”

The central argument of environmental economics, then, comes to this—An allocation of resources to those willing to pay the most for them maximizes net benefits; net benefits, in turn, are measured in terms of the amount people are willing to pay for those resources. The central contention of environmental economics is logically equivalent to the claim that resources should go to those willing to pay the most for them, because they are willing to pay the most for those resources. In this tautology, the terms “welfare” or “well-being” simply drop out. These terms function only as stand-ins or as proxies for WTP and cannot logically be distinguished from it. The measuring rod of money—or WTP—correlates with or measures nothing but itself.

Environmental economics fails as a normative science because it cannot tell us why or in what sense an efficient allocation is better than a less efficient one. Lacking all normative content, terms like “utility,” “well-being,” or “welfare” fail to move environmental economics from the “is” of WTP to the “ought” of value or valuation.

¹⁰⁴ . Hey, *I’m Terrific*, NEWSWEEK, Feb. 17, 1992, at 46.

¹⁰⁵ . RICHARD POSNER, *THE ECONOMICS OF JUSTICE* 60 (1981).

¹⁰⁶ . FREEMAN, *supra* note 50, at 3.

¹⁰⁷ . TIETENBERG, *supra* note 76, at 20.

VIII. NAKED PREFERENCES

A young man in the class wondered aloud if this critique of environmental economics had gone too far. The CV method, after all, attributes enormous economic value to so-called “useless” species and to remote places that few people may visit. Instead of rejecting this technique, he suggested, we should be grateful for it. “To the extent that people are willing to pay for existence value—whether the protection of species and habitats, the functioning of ecosystems, or the dignity of Gettysburg—these intangibles are appropriately included in the overall calculus of benefit,” he said. He added that the CV method, because it aggregates WTP for policy preferences, provides valuable information to policymakers. This is true whether preferences reflect judgments about personal benefit or judgments about the goals or values of society.

The student suggested, then, that even if WTP and economic value are logically equivalent, environmental economics retains its usefulness as a policy science. He conceded that references to “welfare” or “well-being” could be dismissed as window-dressing. All that matters is WTP itself as an expression of preference. Preferences still matter whether or not they are based on self-interest or on moral or political judgment.

This view expresses what many economists believe. “The modern theory of social choice,” writes W. Michael Hanemann, “considers it immaterial whether preferences reflect selfish interest or moral judgment.”¹⁰⁸ This view goes back at least to Kenneth Arrow’s observation: “It is not assumed here that an individual’s attitude toward different social states is determined exclusively by commodity bundles which accrue to his lot under each.... [T]he individual orders all social states by whatever standards he deems relevant.”¹⁰⁹

Let us drop the reference to welfare or well-being, then, from the fundamental thesis of environmental economics. We are left, then, with the idea that preferences, as weighed or ranked by WTP, should be satisfied insofar as the resource base allows. “In this framework, preferences are treated as data of the most fundamental kind,” writes economist Alan Randall.¹¹⁰ “Value, in the economic sense, is ultimately derived from individual preferences.”¹¹¹

What sort of value can be derived from preferences? If we no longer refer to welfare or well-being, it is hard to understand why the satisfaction of preferences, weighed by WTP, matters. Plainly, individuals should have the greatest freedom possible, consistent with the like freedom of others, to try to satisfy their preferences, promote their beliefs, and vindicate their values both in markets and through democratic political processes. The statement that people should be free to pursue their own goals through social institutions that are equitable and open expresses a piety nobody denies.¹¹²

¹⁰⁸ . W. Michael Hanemann, *Contingent Valuation and Economics*, in ENVIRONMENTAL VALUATION: NEW PERSPECTIVES 79, 105 (K.G. Willis & J.T. Corkindale eds., 1995).

¹⁰⁹ . KENNETH J. ARROW, SOCIAL CHOICE AND INDIVIDUAL VALUES 17 (2d ed. 1963).

¹¹⁰ . ALAN RANDALL, RESOURCE ECONOMICS: AN ECONOMIC APPROACH TO NATURAL RESOURCE AND ENVIRONMENTAL POLICY 156 (1981).

¹¹¹ . *Id.*

¹¹² . Notice that in denying that society should adopt preference-satisfaction as a goal of social policy, one implies nothing whatever about paternalism. A paternalistic policy would prevent individuals from making certain choices, e.g., with respect to the consumption of drugs. The argument offered here is consistent with the largest libertarian tolerance for this sort of choice. It extends only to social policy, to the goals the government pursues, not to anything the individual might do in his or her private life.

The thesis that social policy should aim at satisfying people's preferences, in contrast, expresses a dogma of welfare economics for which no good argument can be given. Having a preference may give the individual a reason to try to satisfy it, and he or she should have the greatest freedom to do so consistent with the like freedom of others. Absent a reference to a meaningful social goal such as welfare or well-being, however, what reason has society to try to satisfy that preference?

The idea that preferences should be satisfied just because or insofar as people are willing to pay to satisfy them¹¹³ creates two problems for economists. First, they must explain why their own policy preferences, e.g., for efficient outcomes, should not be assessed or evaluated on the same WTP basis as the judgments or beliefs of others. Economists would also have to show why the satisfaction of preferences, even those preferences having no relation to well-being, is a good thing. Why should preferences count on a WTP basis rather than, say, in relation to the reasons or purposes that underlie them or in relation to the consequences, e.g., for welfare, of their satisfaction?

Consider, first, the way society evaluates policy proposals put forward by economists. Economists expect public officials to consider these proposals on their merits. Why should these officials, however, treat the views economists defend any differently from those put forward by other citizens? If society uses WTP to evaluate the views or judgments of some citizens, it should apply the same measure to all. A CV study of economist WTP for efficiency in the allocation of resources might be needed to assess the validity of this proposal on the same basis as that of any other policy preference.

Consider, second, the idea that it is a good thing that people's preferences be satisfied on a WTP basis, no matter how they are formed or what is gained by satisfying them. To test this theory, let us suppose that a visitor to Gettysburg suggests that the Park Service rebuild the Stuckey's Restaurant with its parking lots in the middle of the area where Longstreet attacked. This citizen might argue that since Longstreet himself may have dined there, the restaurant should be restored as part of the original battlefield.

Odd notions of this sort are not uncommon. One visitor to Gettysburg expressed amazement "that so many important battles had occurred on Park Service land. Another visitor expressed skepticism about a guide's description of the fierce fighting because there are no bullet marks on the monuments."¹¹⁴ Silly ideas may lead people to propose silly policies. If the satisfaction of preference ranked by WTP is all that matters, then these proposals would be just as valid as those offered by Civil War historians. The WTP of those ignorant of history would be every bit as good as, possibly greater than, the WTP of those steeped in the lore of Gettysburg.

The idea that society use WTP as the standard by which to judge the merit of policy proposals defies common sense. We do not measure the worthiness of political candidates and their positions by toting up the campaign contributions they attract. On the contrary, those candidates able to raise the most money appear to be the most beholden to special interests. A recent survey revealed that about "half of young adults believe that separation of races is acceptable...."¹¹⁵ That individuals are willing to pay to segregate schools by race or to exclude

¹¹³. For discussion of this concept in the larger context of political theory, see generally Cass R. Sunstein, *Naked Preferences and the Constitution*, 84 COLUM. L. REV. 1689 (1984).

¹¹⁴. Will, *supra* note 2, at B7.

¹¹⁵. J. Balz, *Separation of Races Found OK by Many Young People*, L.A. TIMES, Aug. 17, 1999, at A10.

non-Christians from office, however, would not make those policies any better. It would only make those individuals worse.

Democracy relies on deliberative discourse in public to evaluate policy options. The point of political deliberation in a democracy is to separate, on the basis of argument and evidence, more reasonable from less reasonable policy proposals. The Park Service held public meetings (but did not commission CV studies) to reevaluate its plan for Gettysburg. It sought out the opinions of those who knew the history of the place. As a result, it located the new facility in an area where no soldier had fallen.¹¹⁶ The outcome of political and moral deliberation depends less on the addition of individual utilities than on the force of the better argument about the public interest.¹¹⁷

IX. DESIGNING FOR DILEMMAS

The students who attended the seminar cared about the environment. One student opined that society has an obligation to save old growth forests, which he thought intrinsically valuable. Another mentioned pollution in the Grand Canyon. She said we have a responsibility to keep the area pristine no matter who benefits from it. Another argued that even if a species had no economic use, it is wrong to cause its extinction. Another student proposed that the government should promote prosperity and try to give everyone an opportunity to share in a booming economy. She understood the importance of macroeconomic goals but saw no reason to apply microeconomic theory to social policy.

I framed this thought for the students in the following way. If an environmental agency tries to pursue an ethical goal, for example, to minimize pollution as a moral trespass, it may have to design for a particular kind of dilemma. It must pursue its moral mission only in ways that allow the economy to prosper.¹¹⁸ The agency would have to accommodate macroeconomic indicators of economic growth such as levels of employment. Full employment, unlike the microeconomic efficiencies about which environmental economists theorize, does affect human welfare and happiness.¹¹⁹

How might an agency balance its zeal to control pollution with its need to accommodate economic activity? To suggest an answer, I drew a graph in which the x-axis represented incremental pollution reduction and the y-axis represented the “misery index,” i.e., the sum of the current unemployment and inflation rates. One may argue that statutes like the Clean Air Act

¹¹⁶. See Elizabeth Stead Kaszubski, Letter to the Editor, *Park Plan Honors ‘Hallowed Ground’*, USA TODAY, June 24, 1999, at 14A (describing the events that transpired at the spot where the Park Service proposed to build its new Visitors’ Center).

¹¹⁷. See generally JÜRGEN HABERMAS, JUSTIFICATION AND APPLICATION: REMARKS ON DISCOURSE ETHICS (Ciaran Cronin trans., 1993).

¹¹⁸. A regulatory agency can take important macroeconomic indicators of prosperity into account while paying no attention to the concepts of microeconomics, such as marginal benefits and costs. The microeconomic concepts central to environmental economics—such as allocatory efficiency, net benefits, utility, and externality—have no clear relation, empirical or conceptual, to macroeconomic goals such as prosperity, full employment, and low inflation. Microeconomic efficiency has little or nothing to do with macroeconomic performance. See generally MICROECONOMIC EFFICIENCY AND MACROECONOMIC PERFORMANCE (David Shepherd et al. eds., 1983).

¹¹⁹. According to research summarized at the Mining Company’s Economics web site, people’s reported happiness, as measured by the annual United States General Social Survey, correlates negatively with the misery index, the sum of inflation and unemployment rates. See *Economics and Happiness* (visited Mar. 26, 2000) <<http://economics.tqn.com/finance/economics/library/weekly/aa051498.htm>>.

mandate pollution control to the “knee of the curve.”¹²⁰ This is the area where the curve begins to go asymptotic because further reductions in pollution cause rapidly increasing increases in unemployment and inflation.¹²¹

The authors of the Clean Air Act may have hoped that technological innovation would continually push the “knee of the curve” farther out along the pollution-control axis.¹²² On this reading, the statute requires the EPA to minimize pollution (as a form of coercion), rather than to optimize it (as an external cost). The EPA may adopt the “knee of the curve” as a moral principle to balance two intrinsically valuable but competing goals. One is to make the environment cleaner; the other is to allow the economy to expand.¹²³

Environmental agencies can pursue their moral missions without invoking the tautologies of welfare economics. The Park Service, for example, did not commission a cost-benefit analysis to plan for Gettysburg. It assumed it had a duty to design the Visitor Center in a way that respects hallowed ground; within that mandate, it also has to provide for the education and basic needs of visitors. Similarly, the Fish and Wildlife Service has to collaborate with landowners to design Habitat Conservation Plans that protect species while allowing economic development to take place.¹²⁴ Sometimes, a collaborative group can find an inexpensive technical “fix,” for example, by relocating the endangered creature to another habitat where it can live in peace.¹²⁵ A deliberative body representing “stakeholders” can often deal with a particular problem better than a governmental agency located in Washington.¹²⁶ The Clinton Administration has called for initiatives to “reinvent regulation” by devolving decisionmaking to such groups.¹²⁷

¹²⁰ . Interpreted in this light, technology-forcing statutes, such as the Clean Air Act, attempt to achieve as much environmental improvement as possible without hobbling the performance of the economy. The EPA, since it has to defend its policies politically, must take costs into account, where “costs” are understood in macroeconomic terms, e.g., terms of inflation and unemployment. The agency would not consider “costs” in the microeconomic sense of changes in net welfare or utility. Plainly, people consider the performance of the economy, i.e., prosperity, important enough that agencies that threaten to undermine it are unlikely to succeed politically. This presents no reason, however, for an agency to bother with cost-benefit analysis. Microeconomic efficiency, which cost-benefit analysis measures, has never been shown to have any relation to macroeconomic performance. See Sidney A. Shapiro & Thomas O. McGarity, *Not So Paradoxical: The Rationale for Technology-Based Regulation*, 1991 DUKE L. J. 729, 741–42 (arguing that the “willingness to pay” criterion does not provide the context for understanding the economic rationality of health-based environmental standards).

¹²¹ . For a macroeconomic approach to assessing costs of environmental regulation, see Paul R. Portney, *Economics and the Clean Air Act*, reprinted in 136 CONG. REC. H12911.01, *H12916 (Oct. 26, 1990).

¹²² . See Nicholas A. Ashford, *Understanding Technological Responses of Industrial Firms to Environmental Problems: Implications for Government Policy*, in ENVIRONMENTAL STRATEGIES FOR INDUSTRY 282 (Kurt Fischer & Johan Schot eds., 1993).

¹²³ . See *American Trucking Ass’n v. EPA*, 175 F.3d 1027, 1035–39, 1051–53 (D.C. Cir. 1999), *modified on reh’g*, 195 F.3d 4 (D.C. Cir. 1999), *petition for cert. filed*, Feb. 28, 2000 (No. 99-1442).

¹²⁴ . See generally A. Dan Tarlock, *The Creation of New Risk Sharing Water Entitlement Regimes: The Case of the Truckee-Carson Settlement*, 25 ECOLOGY L.Q. 674 (1999) (discussing collateral habitat conservation plans); A. Dan Tarlock, *Biodiversity Federalism*, 54 MD. L. REV. 1315 (1995) (surveying place-based environmental decision making).

Courts have required that agencies open decision-making processes to public participation. See, e.g., *Scenic Hudson Preservation Conference v. Federal Power Comm’n*, 354 F.2d 608, 616 (2d Cir. 1965) (stating that the Federal Power Commission should solicit public comment on aesthetic, conservation, and recreational interests). For a critical view of participatory initiatives, see Jim Rossi, *Participation Run Amok: The Costs of Mass Participation for Deliberative Agency Decisionmaking*, 92 NW. U. L. REV. 173 (1997) (citing the vast literature on public participation in the regulatory process).

¹²⁵ . See, e.g., Les Line, *Microcosmic Captive Breeding Project Offers New Hope for Beleaguered Beetle*, ORANGE COUNTY REG., Sept. 28, 1996, at A14 (reporting that it cost less than \$10,000 to protect and restore the beetle).

¹²⁶ . For an excellent introduction, see generally Jody Freeman, *Collaborative Governance in the Administrative State*, 45 UCLA L. REV. 1 (1997). See also generally Richard H. Pildes & Cass R. Sunstein, *Reinventing the Regulatory State*, 62 U. CHI. L. REV. 1 (1995); Lawrence E. Susskind & Joshua Secunda, *The Risks and the Advantages of Agency Discretion: Evidence from EPA’s Project XL*, 17 UCLA J. ENVTL. L. & POL’Y 67 (1998–99). For theoretical commentary on collaborative rule-

Environmental agencies may find it difficult, however, to embrace an approach to regulation that relies on collaboration and deliberation rather than centralized science-based decisionmaking. The statutes under which these agencies operate, such as the Clean Air Act, tend to be so vague, so aspirational, and so precatory that they offer little or no guidance to an agency that has to answer the hard questions, such as how safe or clean or natural is enough.¹²⁸ The agency, in the absence of a meaningful political mandate, has to find some way to give its decisions legitimacy. It therefore cloaks its ethical determinations in the language of science. Environmental professionals, in their eagerness to speak truth to power, may encourage this reliance on their disciplines.

The problem, however, is that science has no moral truth to speak; it cannot say how safe, clean, or natural is safe, clean, or natural enough. Nevertheless, agencies defend moral and political decisions with arguments to the effect that, “The science made me do it.”¹²⁹ Environmental agencies, though they must adopt regulations that are ethical at bottom, rarely, if ever, offer a moral argument or principle for Congress to review and citizens to consider and debate. Instead, agencies tend to use the best available science to answer moral and political questions it cannot possibly answer. And the environmental sciences—strained in this way well beyond their limits—lose credibility as a result.¹³⁰

X. RETREAT FROM GETTYSBURG

After the seminar, I chose a route out of Gettysburg that avoided the battlefield and, with it, the ghosts of the past. But my path was full of portents of the future. At a 110-acre site southeast of the battleground, which had served as a staging area for Union troops, I saw

making, see Daniel Fiorino, *Toward a New System of Environmental Regulation: The Case for an Industry Sector Approach*, 26 ENVTL. L. 457 (1996); Douglas Michael, *Cooperative Implementation of Federal Regulations*, 13 YALE J. ON REG. 535, 574–89 (1996). For criticism, see Rena I. Steinzor, *Regulatory Reinvention and Project XL: Does the Emperor Have Any Clothes?*, 26 ENVTL. L. RPTR. 10527 (1996).

¹²⁷ See, e.g., William J. Clinton, *Memorandum, Regulatory Reinvention Initiative, Mar. 4, 1995*, (visited Jan. 27, 1999) <<http://www.pub.whitehouse.gov/urires/12R?urn:pdi://oma.eop.gov.us/1995/3/6/2.text.1>>. See also EPA *Emphasis on Stakeholder Process Exasperates Risk Experts*, RISK POLICY REP., Oct. 16, 1998, at 6–7; John S. Applegate, *Beyond the Usual Suspects: The Use of Citizen Advisory Boards in Environmental Decisionmaking*, 73 INDIANA L.J. 901, 901–57 (1998).

¹²⁸ Chief Justice William Rehnquist, reviewing the Occupational Safety and Health Act, described the phrase “to the extent feasible” as one of many examples of “Congress simply avoiding a choice which was both fundamental for purposes of the statute and yet politically so divisive that the necessary decision or compromise was difficult, if not impossible, to hammer out in the legislative forge.” *Industrial Union Dep., AFL-CIO v. American Petroleum Inst.*, 448 U.S. 607, 687 (1980) (Rehnquist, C.J., concurring). He implored the Court to invalidate the vague and precatory laws which support today’s regulatory state. These statutes, he said, “violate the doctrine against uncanalized delegations of legislative power.” *Id.* at 675. For discussion of the penchant of Congress to delegate hard choices to others, see for example John P. Dwyer, *The Pathology of Symbolic Legislation*, 17 ECOLOGY L.Q. 233 (1990).

¹²⁹ As Judge Williams remarked in *American Trucking*, “[I]t seems bizarre that a statute intended to improve human health would, as EPA claimed at argument, lock the agency into looking at only one half of a substance’s health effects in determining the maximum level for that substance.” *American Trucking Ass’n v. EPA*, 175 F.3d 1027, 1052 (D.C. Cir. 1999), *modified on reh’g*, 195 F.3d 4 (D.C. Cir. 1999), *petition for cert. filed*, Feb. 28, 2000 (No. 99-1442). The point here is that the EPA, by citing the “knee-of-the-curve” or any other moral basis for its decision, could meet the requirements that Judge Williams and democratic theory impose on them. Utterly mired in the progressive tradition, however, the EPA will not concede that it makes moral or political judgments but will hide these judgments behind a smokescreen of environmental science. Even the threat by the D.C. Circuit panel—that the EPA’s interpretation of the statute might be voided for overdelegation unless the agency acknowledges the ethical judgments it makes and must make—is unlikely to dislodge the agency from its scientism.

¹³⁰ For commentary, see SHEILA JASANOFF, *THE FIFTH BRANCH 1* (1990) (arguing that appeals to science should not “take the politics out of policymaking”); Bruce Bimber & David H. Guston, *Politics by the Same Means: Government and Science in the United States*, in HANDBOOK OF SCIENCE AND TECHNOLOGY STUDIES 554, 559 (Sheila Jasanoff et al. eds., 1995); Sheila Jasanoff, *Research Subpoenas and the Sociology of Knowledge*, LAW & CONTEMP. PROBS., Summer 1996, at 95, 98–100 (describing the deleterious effect of the expectations of law on the community of scientists).

equipment gathered to construct the massive mall the Park Service had decided not to build. The developer, the Boyle Group of Malvern, Pennsylvania, according to its promotional literature, promises to erect an “authentic village” containing seventy outlet stores, an eighty-room country inn, and a large restaurant. According to the flyer, visitors to Gettysburg will find the village a refuge from the drudgery of touring the battlefield and learning its history. “History is about the only thing these millions of tourists take home,” the promo states. “That’s because there is no serious shopping in Gettysburg.”¹³¹

Society can count on firms such as the Boyle Group to provide shopping as serious as anyone could want at Gettysburg and everywhere else. The nation does not have to elevate shopping and, with it, the allocation of goods and services to those willing to pay the most for them, to the status of legislation. Environmental laws state general moral principles or set overall goals that reflect choices we have made together. These principles and goals do not include the empty and futile redundancy of environmental economics—the rule that society should allocate resources to those willing to pay the most for them because they are willing to pay the most for those resources.

An agency, such as the Park Service, may engage in public deliberation to determine which rule to apply in the circumstances. The principle economists tout, net benefits maximization, is rarely if ever relevant or appropriate. At Gettysburg, the principle speaks for itself. “What gives meaning to the place is the land on which the battle was fought and the men who died there,” as longtime Gettysburg preservationist Robert Moore has said. “Keeping the place the same holy place, that’s what’s important.”¹³²

NOTE: THESE PAGES ARE TAKEN FROM GALLEY PROOFS. THE PUBLISHED ARTICLE MAY SHOW SLIGHT TYPOGRAPHICAL DIFFERENCES.

¹³¹ . Pound, *supra* note 7, at 4A.

¹³² . *Id.* (quoting Robert Moore).

Policy Discussion of Session 1

By Julie Hewitt, US EPA, Office of Economy and Environment

I have only fifteen minutes to discuss two provocative papers, and so I had better get to it. A quick compare and contrast effort suggests that the paper by Norton and Steinemann, though a complete paper, is more a work in progress, for they propose an approach to environmental decision making, but don't have a complete application of their approach to illustrate. This simply gives me less to talk about. The paper by Sagoff on the other hand is a complete work, and an enjoyable read at that. Both papers take a philosophical approach to valuation—something we wouldn't necessarily expect economists to be good at—with the former focusing more on the community valuation exercise and the latter on valuation in general, though the conclusions would no less apply to community valuation exercises. Both are somewhat critical of economic valuation methods, though neither relies on the same arguments that economists critical of certain methods—many outside the field of environmental economics—have made.

Let me quickly summarize Prof. Norton's paper with Prof. Steinemann. They seek to conflate adaptive management with a multi-criteria approach to evaluating environmental policies, in particular with respect to development. They suggest that their approach is more suited to localized environmental questions, because a similar problem in two similar locales may evolve differently in a Darwinian sense and thus deserve different policy treatments. Certainly, many of EPA's regulations, though apparently national in scope, are really aimed at local problems, although most of these regulations are aimed at situations with significant potential to migrate beyond their locales. At the same time, they admit the difficulties associated with multi-criteria evaluation systems which lead to the speculative nature of their work. They suggest that the usual economic valuation tools could be amongst the multiple criteria employed, though with an interesting twist—they suggest panel data valuation studies, to ameliorate the snapshot method usually employed to shed light on the possibility of changing preferences over time.

The recommendation that Norton and Steinemann make that I find most provocative is the call for a slate of straightforwardly measurable indicators, to make the information widely available in part (my interpretation) to increase accountability. This is the solution to many problems of asymmetric information (more on this in a moment). How does their proposal differ from traditional methods of economic valuation? In traditional valuation methods, economists ask individuals to monetarily value bundles of not-always-easily-measured attributes. The multi-attribute approach substitutes easily measured attributes, skips the valuation step, and moves directly to decision making. If it were this simple, why don't we already do this? I don't doubt that there are improvements to be made to decision making using their approach, but a discussion of the costs associated with their approach would be useful.

They make several interesting points that deserve further attention, I think. First, they note the potential for social learning when stakeholder groups are involved that further informs decision making. Secondly, they note that multi-criteria evaluation allows consideration of short and long run indicators simultaneously. While standard economic valuation methods can consider the long run as well as the short, this primarily occurs through discounting and existence values, two tools about which there is still as much discussion as consensus. On to the second paper.

I must encourage you to read Prof. Sagoff's paper in these proceedings, if not in the recent issue of *Environmental Science & Technology*. The reason is that there is too much in this good read to adequately present in one half hour. Do not be put off by the paper appearing in a law journal, or by the military reference of his title (changed so that the workshop organizers wouldn't look like they didn't know what they were doing). The military reference is the backdrop for his story; he tells the history of environmental economics thought, and then gets to the central question of whether beliefs (I believe we should preserve the battlefields at Gettysburg to honor the Civil War dead) can be counted as benefits. He uses a syllogism to suggest that existence values (I believe we should preserve wolves in the lower 48 states though I don't want to be near them) are not economic values, and then presents evidence that contingent valuation (CV) studies measure beliefs, and therefore do not measure values. At about this point, the prospects for economics were quite depressing. But wait. Prof. Sagoff suggests that someone should conduct a CV study of economists' taste for efficiency over other rationales for choosing particular policies. I know of no such study.

While strictly speaking not the paper he discussed today, I wanted to mention another paper that Prof. Sagoff wrote as a result of his research grant. This is a paper that appeared in the journal, *Ecological Economics*, in 1998. That paper is also about the deliberation that takes place when values are elicited through a CV study. In that paper, Prof. Sagoff suggests that the only thing wrong with CV studies is that we allow for and record only individual answers, instead of a consensus result from public discussion. This suggests a future research agenda. If a consensus about what we should do with respect to the environment is not only possible, but perhaps the only valuable outcome of a CV study, then why not run a CV experiment consisting completely of focus groups, where the observations are the consensuses of the various groups rather than individual valuations. I know of no such study.

I would like to return to the information asymmetry point that I raised earlier and apply it to governmental decision making. The story I'm going to tell is highly stylized, but sheds some light on the decision making process. The story helps us understand EPA's mandate to do cost/benefit (C/B) analysis in light of Prof. Sagoff's point that such analysis is the wholesale version of a retail-like system of endless torts. Without suggesting precisely where they came from, I want to posit the existence of marginal social benefit (MSB) and marginal social cost (MSC) curves for something I'll vaguely call environmental quality or EQ (if you really think there are no benefits, call the former marginal social preferences, though this is sleight of hand, as the vertical axis is still denominated in dollars per unit), as shown in the figure.

From the standpoint of efficiency alone, the optimal point is where MSB and MSC cross, at EQ*, which is shown as the highest surplus level on the bottom graph. Why is the efficient point efficient? At any higher level of EQ, marginal benefits are lower than marginal costs and society is better off with a lower level of EQ. At any lower level of EQ, marginal benefits are higher than marginal costs and society is better off with a higher level of EQ. This argument abstracts from other concerns such as equity or environmental justice. Nonetheless, I want to point out that simply knowing where the EQ* point lies is not sufficient to get us there. Being a public good, EQ* can't be provided privately by markets, so there is some call for government intervention to get us to EQ*. Here's where the information asymmetry comes into play: those making the decisions regarding spending or desire to achieve some socially agreed upon level of

EQ (Congress) don't know what it takes to get there, and those who know what it takes to get there (EPA) don't have the expertise to make larger tradeoffs, say environment versus defense.

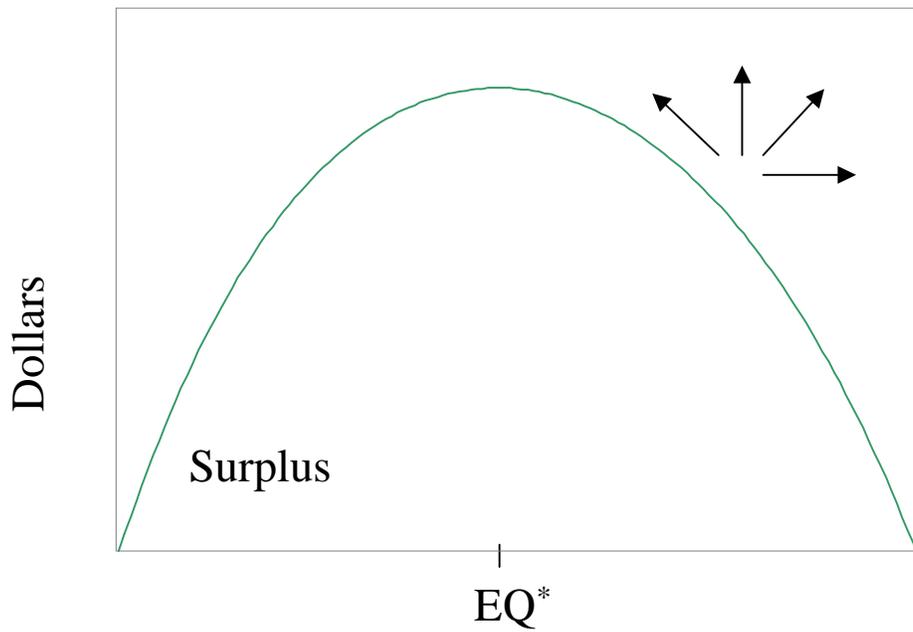
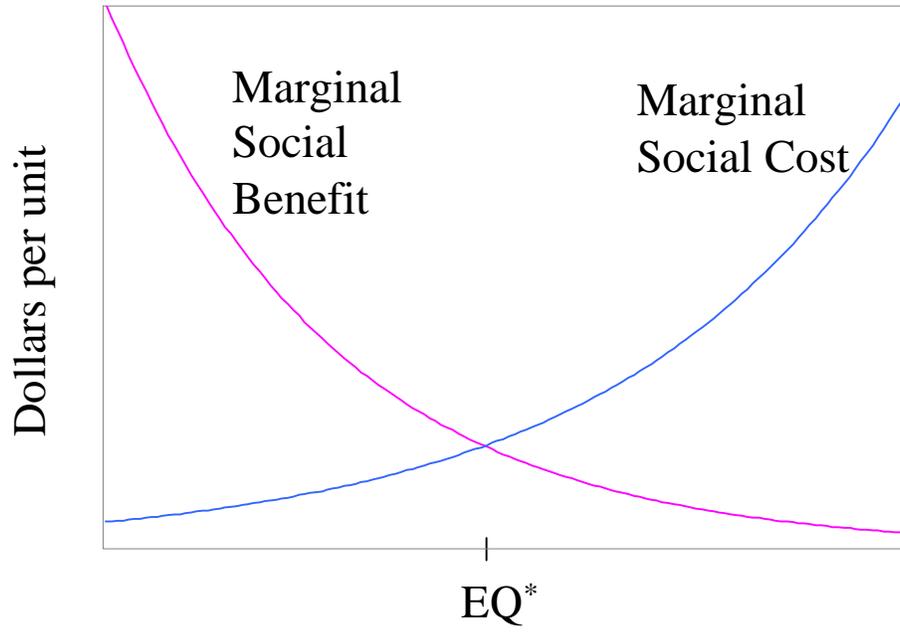
Some economists who have used this story theorize that government agencies are captured by the those with the same preferences as their perceived constituency: USDA by farm interests, DOD by defense contractors, EPA by environmentalists, etc. If that were the case, then we would wind up at the endpoint of the surplus curve with zero surplus and maximum EQ. For their hypothesis to hold, we must either overproduce all public goods and run budget deficits, or EPA staff must be the most powerful bureaucrats, and so I argue that we're not at that endpoint. The EPA chain of command includes political appointees at higher levels, and surely they indirectly hold civil servants accountable to society at large, being somewhat accountable themselves. Going through a C/B exercise does not guarantee we'll be at EQ* just that if we pick from three points along this function, C/B analysis can choose the one which is closest to EQ*.

Collective choice is really about choosing the direction of increasing social welfare in this graph with examples given by the arrows in the bottom of the figure: is welfare increased by moving upward (only surplus matters), rightward (only EQ matters) or even leftward (regulation is bad)? Or, as is more likely, is our collective choice some combination of these, resulting in a somewhat northeasterly direction denoting improvement? Perhaps this little story explains the real world pretty well but is also another view of community based decision making. The trend of involving stakeholders in decision-making suggests that the collective choice arrow points in a direction more likely to reflect the views of society as a whole. Note that society's preference for this public good may be inconsistent with efficiency.

There is a term in economics to describe the costs associated with not winding up at the efficient point, EQ*, and that term is agency costs (lowercase A, not EPA): the forgone surplus we would have been able to allocate elsewhere; this cost comes from the fact that agents (here, the government) make decisions on society's behalf but are not one and the same as society. In economics, the presence of agency costs is often taken as a sign of failure to achieve the optimal solution, but I will suggest another interpretation. Perhaps agency costs are simply the price society is willing to pay to not have every citizen involved in making decisions on environmental quality. [This is a point that Nicholas Ashford of MIT has made in a report that will be available soon through the web page of the Superfund office.] If we are indeed willing to pay agency costs to have agents make the decisions for us, then perhaps we should pay CV subjects not only for the time they devote to answering the survey, but also for their share of the burden of asking them to make decisions for the rest of society.

If time permits: I find it curious that so much of the debate is about benefits and less about costs. In a sense, all resources are scarce. Costs are simply the flip side of the benefits coin: things with high cost have high costs because they have value or benefit in other uses. Cost effectiveness studies do seem to survive the criticisms offered here of the measurement of benefits.

In short, these papers have some critical things to say about economic valuation, but offer a research agenda that applies to valuation. Thank-you.



Level of Environmental Quality

References

- Sagoff, Mark. 1998a. Aggregation and deliberation in valuing environmental public goods: A look beyond contingent pricing, @ *Ecological Economics*, 24: 213-230.
- Sagoff, Mark. 1998b. Environmental Economics and the Conflation of Value and Benefit, @ *Environmental Science & Technology*, 34(8): 1426-1432.

Policy Discussion for Session I
by Rachelle Hollander, National Science Foundation Decision, Risk and
Management Science Program

Integrating Valuation and Decision Making for Environmental Policy
NSF/EPA Community Based Environmental Decision Making Workshop

This response focuses on the policy implications of the two opening presentations. It tries also to respond somewhat to the substantive issues they raise, insofar as the substantive issues are related to policy considerations.

One major policy issue for this workshop on community based environmental decision making concerns the program that NSF and EPA sponsor, called Decision Making and Valuation for Environmental Policy. It is under that aegis that these presentations are being made. This is an opportune time to consider that program, because the agencies are thinking about their future efforts in this area. NSF and EPA recently pulled together a group of experts for what was called an “interim assessment” of the program; by chance, the April meeting fell on the days of the protests in DC about the WTO. This challenge is not unrelated to questions about the role of expertise in democratic societies with which we are dealing here. EPA is preparing a report based on the discussion at that meeting, and that report is likely to be congruent with these remarks.

One policy-related suggestion is to emphasize in future program announcements research that would integrate valuation with decision making approaches for environmental policy. Doing this integration requires thinking about what research and research approaches would be required in light of the challenges of the Sagoff paper and the recommendations of the Norton/Steinemann paper. Investigators would need to think carefully about valuation techniques and uses, and the nature and role of ecological or environmental economics. They would need to think carefully about expertise in decision making, and values in decision making, and politics in decision making, and participation in decision making. They would need to structure and give priority to research that can help to improve procedures and results from environmental policy measures and exercises. This cannot be easy.

The brief time here might best be used to point to some research that might help in understanding the nature of the situations concerning environmental policy which face U.S. communities and the directions that research might take that would help to improve those situations. To do this requires a little historical context. Mary Beth Deily, an economist working at NSF this year, with the economics program, points to a set of papers on contingent valuation from the *Journal of Economic Perspectives*, Fall 1994, that helps to provide this contextualization. In his introduction “The Contingent Valuation Debate: Why Economists Should Care,” Paul Portney provides a history of the origins of contingent valuation. The next two papers in the issue provide a positive and a negative view of its merits.

For the purposes of this response, the most important section of Portney's paper is that titled "Moving to the Policy Arena." Here, Portney reports about federal laws, agency regulations, and court actions that required taking non-use or existence values into account, and the consequent empaneling by NOAA in 1994 of a group of experts to assist it in determining whether contingent valuation would be a reliable method for use in natural resource damage assessments. The panel reported that it could be, but set numerous constraints on its application. Both proponents and opponents of its use were made happy and unhappy by the panel's conclusions. Despite the lack of formal standing of this panel, NOAA has relied heavily on its recommendations. Portney also points out that Executive Orders under presidents Carter, Reagan, and Clinton require all federal regulatory agencies to "make an effort to quantify as many of the benefits and costs of their proposed actions as possible."

Given the numerous problems that beset this kind of endeavor, why do we persist? Theodore Porter, in his book *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*, tries to answer that question. He points out that this pursuit has a long and valiant, if not valorized, history in the United States. Porter's chapter seven is titled "U.S. Army Engineers and the Rise of Cost-Benefit Analysis." Claims for the merits of and the need for improvements in quantitative methods, that would provide results that would settle issues of public policy, go back to the turn of the 20th century and mark the beginning of the rise of cost-benefit analysis. Porter notes that this political strategy, the pursuit of numbers, tries to (a) respond to a lack of trust by minimizing the exercise of judgment and maximizing the use of mechanistic rules, and (b) limit the role of politics in situations of bureaucratic conflict in contexts of distrust. Porter views this strategy as growing from scientific or professional weakness, in response to outside pressures, rather than from a strong, autonomous scientific community, and notes that it can't settle public issues in conditions of pervasive distrust. But it also creates a pressure for openness and public demonstration and accountability. It creates pressure for scientific development and innovation. As other researchers in the field of science and technology studies, particularly Sheila Jasanoff, have noted, these kinds of demands – for combinations of scientific and social innovations, require a blend of science and politics in the interests of developing "serviceable truths."

Porter's research shows us that the quest for numbers will not soon or easily disappear from U.S. policy contexts. Helpful would be research to identify what and how serviceable truths, that will incorporate these requirements in various ways, evolve in particular policy contexts.

To understand the different perceptions of values and how they interact in policy contexts, it's still useful to refer to a typology developed by William H. Aiken, in the chapter "On Evaluating Agricultural Research," in *New Directions for Agriculture and Agricultural Research*, 1986. Aiken indicates that well informed and well intentioned people have major disagreements about results from agricultural research and asks what can account for this. He responds by pointing out that people have very different views about how values are related and classifies them into four types: the priority view, the trade-off view, the constraint view, and the holistic view.

The priority view lists goals in a hierarchy from most to least important. Once ranked, the top goal is pursued come what may to the others. The trade-off view doesn't see values as ranked; it uses a balancing method in which negatives, or costs, are weighed against positives, or benefits. The right decision gives the most positive balance, overall. On the constraints view, values divide into two types: goods and constraints. Goods, which can be ranked or traded off, should operate within the boundaries set by the constraints. The holistic view derives values contextually by examining systems to determine what will help their functioning and what will hinder them. On this view, effects, like fire in a forest, should not be labelled "costs" when they are necessary to the whole.

Aiken points out shortcomings and difficulties in the conceptualization and application of each of these views. He notes that understanding their variety is essential to overcoming simplistic appeals to one or the other view as a way to settle a dispute. He also points out that it is unlikely that an appeal to one view will provide an effective political solution.

It may not be possible to develop a "supertheory" that will resolve conflicts between the views, but it may nonetheless be possible to work things out in practice, if space can be made for all views to be heard. There may be policies acceptable to all four views, just as there may be policies that would be acceptable to none. Certain problems may lend themselves to adopting a particular view, or each perspective may have particular arenas in which it believes its view should dominate, while it would be willing to concede other domains to other views. Working through problems taking the views into account might allow for the development of criteria which all might agree could serve as guidelines for judging when a particular perspective is most suitable, Aiken says. Working through problems might also provide criteria which all might agree could be used to judge appropriate policy parameters for all views.

Aiken's compatibilist approach resembles one among those that Michael Pritchard calls looking for "creative middle ways" to handle or resolve ethical problems. In *Engineering Ethics: Concepts and Cases*, authors Harris, Pritchard, and Rabins commend this approach to engineers who may be faced with disparate views about what forms and directions a project should take. It's a useful idea for economists and bureaucrats to keep in mind too, and one that resembles Jasanoff's idea of "serviceable truth."

The previous talks and current social contexts make it clear that the resolution of environmental controversies and issues will continue to engage interested parties, concerned citizens, professionals of various stripes ranging from biologists to engineers to economists to psychologists, bureaucrats, and even philosophers. Encouraging the development, application, and evaluation of a variety of techniques from both the social and behavioral sciences, in a variety of environmental policy contexts in which citizens want to be engaged, has the potential to improve both the processes in and outcomes from the interactions. It is perhaps past time for us to concentrate research on examining these complex systems via integrative efforts.

Aiken, William H. On Evaluating Agricultural Research. *New Directions for Agriculture and Agricultural Research: Neglected Dimensions and Emerging Alternatives*. New Jersey: Roman and Allanheld. 1986, pp. 31-41.

Harris, Jr., Charles E., M.S. Pritchard, M.J. Rabins, *Engineering Ethics: Concepts and Cases*. 2nd edition, California: Wadsworth. 2000.

Jasanoff, Sheila S. *The Fifth Branch: Science Advisors as Policymakers*. Cambridge, MA: Harvard University Press. 1990.

Porter, Theodore M. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life*. New Jersey: Princeton University Press. 1995.

Portney, Paul R. The Contingent Valuation Debate: Why Economists Should Care. *Journal of Economic Perspectives* 8:4, Fall 1994, pp. 3-17.

Question and Answer Period for Session I

Cynthia Warrick from Howard University found Norton's demand model to be applicable to issues of environmental justice, but felt that scientists involved in these processes are often limited by their agencies' missions and constrained by their resources. She suggested that there is a need for a team of scientists to work directly with social scientists and stakeholders to develop translation functions to inform scientific decision makers about the mental models of the stakeholders and help the decision makers see the problems through the stakeholders' eyes.

Norton's coauthor, Anne Steinemann agreed with the comment and suggested that this is a process of mutual adaptation where the supply and demand models have to inform each other.

Robin Gregory from Decision Research asked Sagoff about his use of the terms "value" and "preferences." Sagoff had cited the literatures in economics and ecology to discuss these concepts. Gregory suggested that there is a rich literature in psychology that has advanced our understanding of structured preferences, context, and other aspects of preference formation.

Sagoff responded that he had purposely limited his discussion of these concepts because he is not an expert in them, and that he expected others on the agenda to take up these topics later in the day.

Fred Butterfield from the Department of Energy referred to the decision making process as a recursive process where there is deliberation between stakeholders and scientists that informs the analytical process, and the analytical process in turn frames the deliberative process. He said that Steinemann's earlier comments sounded as if the scientists know the problem and have to explain it to stakeholders. He referred to the Department of Energy's environmental cleanup cases where local advisory boards often know better what the problems are than the scientists, and in some cases have saved the Department millions of dollars by clarifying the needs of the community.

Steinemann clarified her position, saying that stakeholders are equally expert and that the two sides must inform each other.

Roger Pulwarty from NOAA asked what role humility plays in adaptive management.

Norton responded that the whole idea of adaptive management is based on humility. When you start a process, you do not know where you are going and you cannot expect to get to a point of having a list of values, a clear definition of the problem, and scientific model to crank out the exact solution. The process is iterative, on-going and dynamic.

Clay Ogg from EPA asked about Sagoff's use of the term "institutional analysis." He suggested that an institutional analysis would identify a problem, such as nitrate loading, look at different types of policies and compare costs. With this approach, you might find

a way to reduce costs compared to the current practice. Ogg feels that this type of analysis is losing ground within EPA in favor of more quantitative approaches such as contingent valuation.

Sagoff responded that in many cases, the solution should be to go to the “knee of the curve,” or the place where costs begin to climb drastically, and no further. We should try to develop technology to push that knee further out. This is a type of moral principle that does not rely on an efficiency analysis or comparison of curves that are hard to estimate. Sagoff argued that EPA needs to adopt such moral principles rather than relying on a “tyranny of numbers.”

Elise Weaver from the University of Albany noted that good science requires replicability and asked how we might deal with this requirement in the types of processes discussed here.

Norton responded that science serves more than one function. One is the curiosity driven search for “truth.” He finds, however, that this type of science fails to address interdisciplinary issues such as environmental issues. Norton suggested that we need two different standards of science with one recognizing that we have to act on less than ideal information. If we require scientific rigor before applying scientific results, scientists will be left sitting on the sidelines of policy debates. We need to play both games at once and let each side learn from the other.

Sagoff discussed the example of a national forest that has a network of different groups of trustees with various types of expertises. When they get together, they benchmark and compare information and learn from each other.

Dale Thurston of EPA asked about a joke Sagoff told about what seemed to be an economically irrational beggar. He pointed out that the beggar was indeed acting rationally since he was basically guaranteeing himself a stream of fifty cent payments from economics graduate students as opposed to a one-time payment of one dollar.

Sagoff responded that there are so many different reasons people might want or need particular payments (for example, someone needs a quarter for a parking meter) that it is impossible to construct preferences in the aggregate.

Molly Anderson from Tufts University asked both speakers how to train future environmental scientists and policy makers to operate effectively in the type of arenas they are advocating for environmental decision making.

Norton responded that students should have a broad, pragmatic education. He suggested that we want to teach people how to learn. Most of the technical information they will learn in school will be irrelevant within two or three years. We want people who are able to continue learning over their lifetimes.

Sagoff echoed this response and concluded that policy makers must be open to knowledge.

Julie Hewitt of EPA, formerly of Montana State University, suggested that, since students frequently substitute questions of their own choosing for those that are asked of them, perhaps we should set students loose and allow them to pursue their own questions in a guided environment.