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

Proceedings for Session I
Table of Contents

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 propoal 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 communitiy'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 communtiy-based management processes.

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

Mark Sagoff*

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 artilery 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 SHAARA, 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 Nordhaus[19] 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) [herinafter 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 & LAURAINE 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 them[113] 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/I2R?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't, 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]

[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 valuationSsomething we wouldn't necessarily expect economists to be good atSwith 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 methodsSmany outside the field of environmental economicsShave 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 speculatory nature of their work. They suggest that the usual economic valuation tools could be amongst the multiple criteria employed, though with an interesting twistSthey 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.

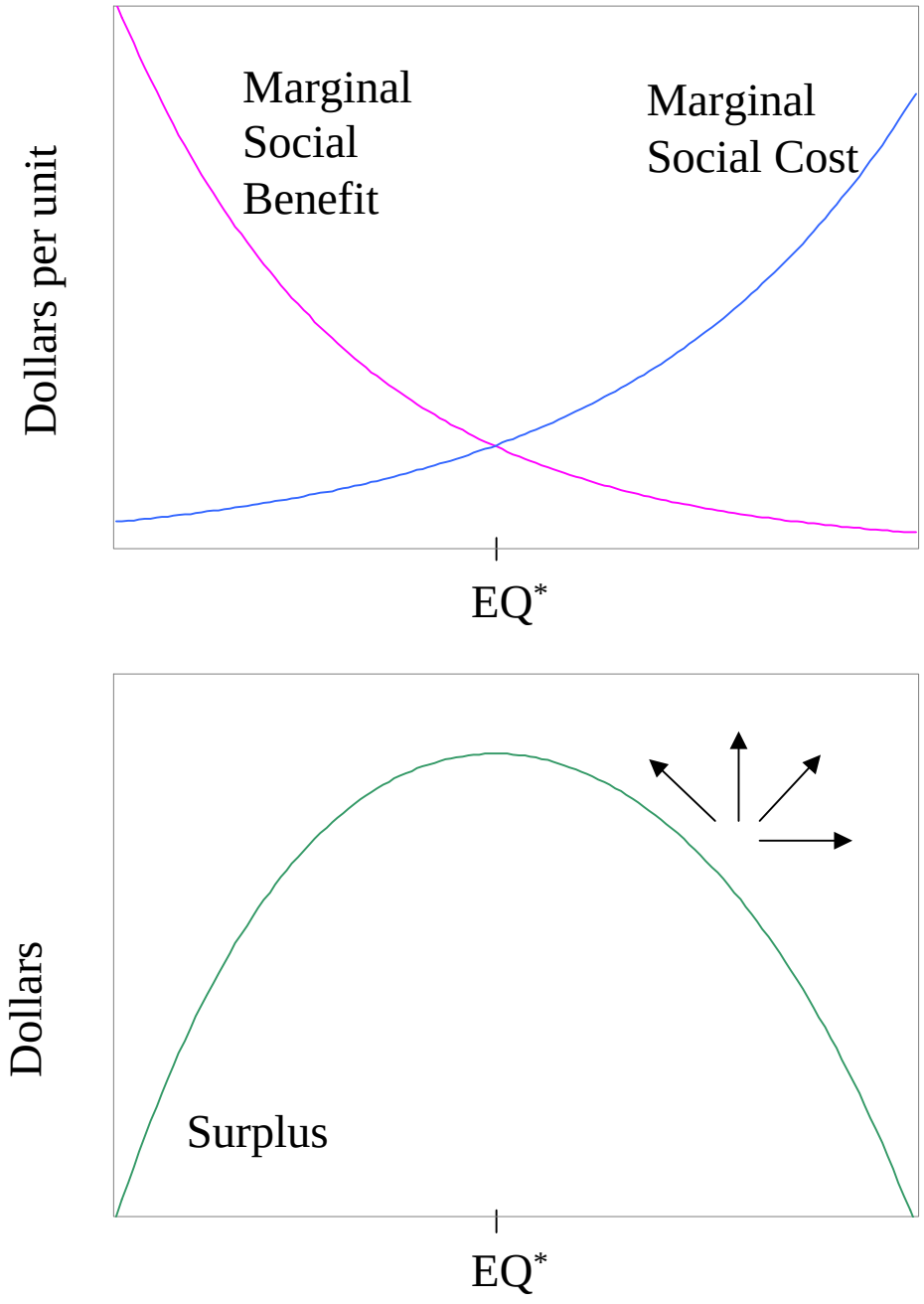
Some economists who have used this story theorize that government agencies are captured by the those with the same preferences as their perceived constituency: USDA by farm interests, DOD by defense contractors, EPA by environmentalists, etc. If that were the case, then we would wind up at the endpoint 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*Sjust 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.


Marginal
Social
Benefit
Marginal
Social Cost
Dollars per unit
EQ*
Dollars
Surplus
EQ*
Level of Environmental Quality

References

Sagoff, Mark. 1998a. AAggregation and deliberation in valuing environmental public goods: A look beyond contingent pricing,@ *Ecological Economics*, 24: 213-230.

Sagoff, Mark. 1998b. AEnvironmental 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 compatabilist 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 ream 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 curisity 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.

COMMUNITY BASED ENVIRONMENTAL DECISION MAKING

PROCEEDINGS

SESSION TWO

STAKEHOLDER PARTICIPATION AND DECISION MAKING

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 II
Table of Contents

Structured Decision Processes for Environmental Management: Linking Consultation and Analysis

Working Paper*

Presented by Robin Gregory, Decision Research

Co-authored with Tim McDaniels, University of British Columbia

*This is a working paper developed for the U.S. Environmental Protection Agency Office of Economy and Environment, National Center for Environmental Research and the National Science Foundation, Decision, Risk, and Management Science Program workshop, "Community Based Environmental Decision Making," held on May 9, 2000, at the National Rural Electric Cooperative Association Conference Center in Arlington, Virginia.

Structured Decision Processes for Environmental Management: Linking Consultation and Analysis

Robin Gregory and Tim McDaniels(1)

Introduction

Public involvement in environmental management decisions has increased substantially in recent years. One result is a growing interest on the part of agencies and researchers in the link between the amount and type of public participation and the quality and defensibility of the resulting policy recommendations. The relevant environmental management contexts are diverse, ranging from cleanup plans for estuaries to oil-spill contingency plans for sensitive coastlines and harvest options for old-growth forests. The public involvement contexts are equally diverse, including opinion polls, focus groups, town-hall meetings, open houses, stakeholder advisory committees, citizen juries, and a variety of socio- economic surveys. In many cases, these efforts strive to involve the key interested parties or stakeholders, including both technically-trained experts and community-based members of the public, in some kind of shared decision making process. Often the specific goal is to recommend a preferred environmental management initiative. Underlying this, the more fundamental goal is to improve the long-term welfare or quality of life of the relevant constituency.

Despite this enhanced interest, there remains a widespread dissatisfaction with the quality and meaningfulness of stakeholder input to many environmental and risk-management decisions. One concern is that decision makers often cast a wide net for hearing the views of diverse interests but then close ranks and rely on input from technically-trained experts to balance the conflicting views of participants and to recommend a single, presumably acceptable solution. Dissatisfaction with this closed-door approach, and (more generally) the recognition that extensive public involvement is not synonymous with meaningful public input, led to the 1996 publication of the influential National Research Council (NRC) report entitled Understanding Risk. At the heart of the NRC message is a two-part emphasis on structured deliberation, involving informed consultation with stakeholders, and targeted analysis, involving input from both the physical and social sciences.

Although the NRC report sets out an elegant philosophical argument for making this connection, there is little for the practitioner to build on in terms of descriptions of techniques for dealing with specific environmental management disputes. Some additional guidance is found in several recent publications: Renn (1999), for example, describes a "cooperative discourse" model for conducting analytic-deliberative processes in risk management, and Chess and Purcell (1999) present five useful "rules of thumb" based on their experience in environmental policy disputes. What appears to be missing, however, is an overall structure for organizing the dialogue with diverse stakeholders. The purpose of such a structure is to ensure that, by the time a recommendation or a decision is made, there is a high probability that it will incorporate the best available scientific knowledge, meet with broad-based approval, and be viewed by taxpayers and elected officials as a sensible way to spend scarce funds. These are difficult tasks. But they can be tackled with some success, if we draw on concepts and practice relevant to improving decision processes.

Foundations of a structured decision making process

The foundations of a basic structure for making better environmental management decisions can be drawn from behavioral decision research (BDR) and decision analysis (DA). Over the past several decades, this research has made important contributions to the theory and practice of environmental policy analysis, project evaluation, and the management of environmental risks. One side of this work takes a descriptive focus and investigates why, both in experimental findings and real-life situations, humans have been shown to be "quite bad at making complex, unaided decisions" (Slovic, Fischhoff and Lichtenstein, 1977). These results, largely drawn from the work of psychologists, show that individuals systematically employ cognitive shortcuts and appear to have little instinctive ability to structure decision tasks (Simon, 1990), clarify objectives (March, 1978), incorporate probabilistic information with accuracy (Kahneman, Slovic, and Tversky, 1982), or balance the dual goals of limiting effort and achieving a satisfactory level of judgmental accuracy (Payne, Bettman & Johnson, 1993).

The other side of work on decision making looks at how prescriptive techniques can be used to improve the quality of individual and group decision processes. This research, largely drawn from the work of decision analysts, includes value-structuring approaches drawn from multi-attribute utility theory (Keeney and Raiffa, 1993) that focus on ways to identify and measure stakeholder values, to develop information that characterizes the anticipated consequences of options, to establish tradeoffs across conflicting objectives, and to link these results to

support for specified alternatives. Stakeholder values are the key to this structured decision process because they identify what matters to participants and, in turn, highlight the consequences that require most careful attention and the tradeoffs that matter most.

Although responsiveness to each management context is essential, a structured decision approach to public involvement generally addresses five fundamental tasks:

1. Framing the decision: What are the key contextual elements of the decision situation and what is a reasonable goal of the consultation process?

2. Defining key objectives: How do people think they will be affected by the proposed action and what values matter the most to stakeholders?

3. *Establishing alternatives*: In light of the relevant constraints, what alternative actions might be undertaken?

4. *Identifying consequences*: What are the most important impacts that could affect stated objectives and how certain is their occurrence?

5. Clarifying tradeoffs: What are the important conflicts across desired objectives and how can this knowledge be used to create new and better alternatives?

These root ideas of a structured decision approach to public involvement reflect common sense and good judgment.(2) It is often worthwhile to quantify important concepts such as the probability of events, the desirability of consequences, or the timing of critical impacts. However, the application of a structured approach typically emphasizes qualitative guidance for how to think clearly and make smarter choices rather than quantitative analysis to make an optimum decision. This more qualitative orientation is particularly relevant in the context of stakeholder consultations, involving experts and community-based representatives, on complex environmental initiatives. The primary goal of such efforts should be to improve thinking and to sharpen communication about critical concerns and tradeoffs, rather than to assign numbers to options or to rely on the results of any summary mathematical analysis.

The importance of a structured approach is often demonstrated by its absence: public participation efforts routinely fail to give sufficient attention to developing the foundation for making a good decision. Once the right problem has been identified, the basis for future consultation is the structure provided by specifying the relevant objectives, agreeing on how they will be measured, and creating an initial set of alternatives for consideration. Informed by the findings of BDR and DA, the analyst or group facilitator needs to pay careful attention to the inappropriate use of cognitive shortcuts and to participants' reliance on

alternative-focused rather than value-focused thinking (Keeney, 1992).(3) When objectives or alternatives are incomplete or vague, the result will be a less well-informed decision. When objectives are clearly stated and the impacts of alternatives are linked to their effects on unambiguous value measures (or attributes), many decisions can be resolved without the need for further analysis because of the obvious merits of a dominant solution. In other cases, the objectives and alternatives will provide the foundation for resource managers or analysts to develop an appropriate quantitative model to provide additional insight that will help to guide the decision.

Consensus versus insight

Underlying many public involvement efforts are three assumptions. One is that community involvement through a collaborative stakeholder process will lead to improved environmental management prescriptions, because participants will have a better understanding of local concerns and conditions (Chess, 1999). A second assumption is that this involvement will increase the probability of reaching an agreement among participants and, with luck, arriving at at consensus solution,
which is considered to be one indicator of the quality of the process (Fiorino, 1990). A third assumption is that care must be taken to ensure that the quality of the underlying science is maintained, rather than eroded, as a result of the participation of diverse public and community-based interests.

The basis for much of this thinking and practice is drawn from “alternative dispute resolution” (ADR), in which negotiated decision processes are seen as an alternative to decisionmaking by the courts. This ADR orientation has resulted in environmental negotiation being widely seen as a process of resolving conflicts, rather than as one focused on fostering more informed and wise policies. For example, Peelle (1988) defines a successful citizen participation process as one that involves the public in a meaningful way and leads to “any outcome which reduces conflict between stakeholders and agency proponents and results in a legitimate and lasting decision.”

An extreme version of this viewpoint argues that a stakeholder group should be able to design its own decision process. The Canada National Round Table, for example, recently set forth a set of principles intended to encourage improved decision making to achieve a sustainable future for Canada. The principles call explicitly for “consensus” in “self-designed process” involving “all parties with a significant interest” as the prescription for improved decision making. Such an approach effectively gives every stakeholder participant a veto over the conduct

and content of every step in the planning and decision process as well as a veto over the choice of alternatives. English and her colleagues (1993) take a somewhat different approach to consensus, focusing instead on the need for a process that understands and speaks for the community's (rather than individuals') needs. She advocates "seeking to attain a normative consensus -- one in which stakeholders focus on the greater social good rather than simply on their individual stakes" and in which acknowledgment of the social good is not inconsistent with "divergent, passionately-held points of view."

Within this range of viewpoints there exists widespread endorsement of the notion that consensus is a goal that, while not always attainable, should be strived for and provides an indicator of the overall quality of a policy-oriented decision process. In his review of three influential public participation handbooks, Webler (1997) makes a similar observation, noting that despite many differences in the recommended practices there is universal agreement that "... consensus should be pursued as a matter of principle." This same sentiment is echoed in the National Research Council's extensive review of the Department of Energy's environmental remediation program, which underscores the importance of consensus among stakeholders and presents its conclusions in a publication titled "Building Consensus Through Risk Assessment and Management" (1994).

We have adopted a different approach in our own work, advocating the use of insights from behavioral decision research and decision analysis as the basis for guiding consultative processes by helping to achieve a clearer understanding of participants' preferences and their key value tradeoffs. Our central criticism of a consensus-driven process is the lack of explicit attention and thoughtful exploration typically given to the values and objectives of participants. Our concern is that a focus on consensus can shift, subtly or openly, key elements of the group decision making process. Issues may be selected in such a way that they offer a high potential for agreement, which has the result that less tractable issues may be ignored. Participants in focus-group sessions, project management committees, or community stakeholder forums may be selected more on the basis of their ability to get along and work well with others than on criteria relating to their expression of the diverse range of interests. Methodologies for impact analyses may be selected to the extent that they are relatively easy to explain and to document rather than on the basis of their ability to answer participants' questions fully or to lend insight to the decisionmaking process. And minority views within a group may be suppressed rather than explored, with conflict among group members being viewed as a problem to be overcome rather than as an opportunity for providing additional clarity regarding facts and values relevant to the decision at hand.

Overall, we believe that a preoccupation with consensus and dispute resolution in public involvement processes has three fundamental shortcomings for environmental decision making. First, government agencies are charged with making decisions that are in the broad public interest within established institutional structures. Yet achieving consensus based on dispute resolution involves creating a new ad hoc institutional structure, outside an electoral process, that is highly susceptible to the personalities of the participants. It seems at best awkward, and at worst illegitimate, for a resource-management agency to delegate policy responsibilities to a group of concerned, community-based parties who have direct (albeit conflicting) interests in the outcomes. One of our worries in this regard is that for any program or project charged with allocating fixed resources over multiple sites, it becomes difficult or impossible under a consensus-based approach for decisions to be responsive to the expectations of local concerns and, simultaneously, be responsive to programatic regional, state-wide, or national concerns.(4)

Second, the research on decision making shows that preferences for unfamiliar choices do not exist full blown in people's minds but instead are constructed during the decision process. This construction relies heavily on the available cues and the selected method of elicitation (Payne, Johnson & Bettman, 1992; Slovic, 1995). The phenomenon of preference reversals provides one of the best known examples of constructed preferences: Although object A is preferred over object B under one method of measurement, B is clearly preferred under a different, but formally equivalent, measurement procedure. Other evidence for constructed preferences comes from empirical studies demonstrating the striking effects of changes in how a question is framed (Tversky and Kahneman, 1981). The most important implication for community-based decision processes is that value-based information needs to be provided for helping people to construct their preferences and tradeoffs over time. Building this understanding requires an active process of learning about one's own values (and, of course, the values of others), just as factual information needs to be provided to help people think about the impacts of various options (Gregory, Lichtenstein & Slovic, 1993). If insight for decision-makers is the overall goal of the decision process, then creating the capacity for informed judgments by participants is an important means to this end.

In many policy circles, there appears to be a naive assumption that a cure for the shortcomings of unaided individual decision-making processes is to work with competent people as a group, thus ensuring that a wiser choice emerges from the group discussions. There is little support for this idea, however, either in

theory or experience; self-designed or semi-structured consensus decision processes are unlikely to develop responsible, well-informed approaches to clarifying complex policy choices.

Third, a dispute resolution process often involves substantial effort on procedural issues (how the process will be conducted) and relatively less effort on structuring the decision. Because of the lack of emphasis on the quality of the decision-making process, there is little in dispute-resolution approaches to distinguish between premature consensus (in which important technical issues or facts are ignored and important differences in values are suppressed) and the real thing. In addition, key issues related to the anticipated outcomes of a decision may be given only minimum attention; examples include understanding the uncertainty associated with alternative consequences, the sensitivity of impact predictions to specific assumptions, or clarification of the time dimension accompanying the costs and benefits of a choice.

Examples of structured decision processes

To remedy these concerns, we believe that the deliberative process for community based environmental decisions should focus on decision aiding, both for the participants and for the agency empowered to make the decision. By decision aiding, we mean that the process should seek to maximize the quality of the insights that can be gained by directly involving the stakeholders in the following five key steps:

1) characterize “what matters” to stakeholders in the form of objectives, some of which will be the same across many stakeholders and some of which will be unique to individual stakeholders

2) create a set of attractive alternatives based on these objectives

3) employ the best available technical information to characterize impacts of these alternatives, including the key sources of uncertainty

4) identify the tradeoffs that the alternatives entail, in terms that are familiar to participants and that facilitate the balancing of objectives (e.g., set up tasks that do not exceed the cognitive or affective capabilities of participants)

5) summarize the areas of agreement, disagreement and reasons for those views among the stakeholders.

Proponents of dispute resolution would perhaps argue that the points above closely resemble elements of a typical dispute-resolution process. We agree that there are some similarities, including a fundamental concern of both decision-aiding and dispute resolution processes with building trust and group cooperation through the open sharing of information, transparency of process, and respect for

participants. However, we believe that the differences in the two approaches are profound; two case study examples illustrate the use of a structured decision approach.

A first example is the case study of the Alouette River near Vancouver, Canada. This example involved changes in water flows at a hydroelectric generating facility (McDaniels, Gregory, and Fields, 1999). The authors' principal responsibilities on this project were to structure and facilitate discussions of a broad-based stakeholder committee. These tasks required providing technical guidance on clarifying members' objectives, using these values to create operating plan alternatives, fostering understanding by committee members of the pros and cons of selected alternatives, and leading the group toward making specific decisions about its recommendations to the provincial Water Comptroller. Five objectives for an operating plan were developed by the committee:

- avoid adverse effects from flooding
- promote recreational activities
- promote the health and biological productivity of the South Alouette River and Alouette Lake (including fisheries,
- avoid cost increases to provincial residents, and
- promote flexibility, learning, and adaptive management

These five objectives were used to create and assess the impacts of alternatives; the basis of comparison generally focused on whether the benefits from non-power objectives justified the potential reduction in power output (and increases in generation costs) associated with adopting the plan. After 15 meetings, the stakeholder committee reached agreement on all the major issues it was asked to address, and a preferred alternative was recommended that effectively met all the objectives established for the decision while allowing for adaptive learning over time to reduce uncertainties.

A second example is the case study of Tillamook Bay, Oregon. This project involved stakeholder input to a community-based plan for cleanup of the Tillamook estuary, under the auspices of the US EPA National Estuary Program (NEP) (Gregory, in press). The stated goal of the Tillamook Bay NEP was to develop a science-based, community-supported management plan for the watershed. Our efforts on this project began by holding a series of meetings with community leaders and members of the broadly-representative TBNEP management committee. These discussions resulted in the identification of six fundamental or ends objectives of the program, ranging from "promote biological health of Tillamook Bay" to "promote long-term management efforts" and

"promote public support of CCMP recommendations", along with mean objectives that were important in terms of helping to satisfy these ends.

Three critical yet highly controversial actions were chosen for in-depth study: limiting livestock access to streams (to decrease pollution and damage to riparian habitat), protect and restore tidal wetlands (to improve spawning and rearing habitat for salmon), and upgrade forest management roads (to reduce sedimentation in streams, thereby improving habitat and reducing flood risks). Coming up with actions to address these three critical areas was difficult for community residents because a cost seemed to offset every benefit. In response, we developed a workbook that presented groups of stakeholders with consequence tables, linking impacts and objectives, for several of the alternatives under consideration for inclusion as part of the TBNEP's Comprehensive Conservation and Management Plan. This workbook presented the pros and cons of alternative plans and allowed respondents an opportunity to "vote" directly for their most preferred alternatives and to explain their thinking, using both their pocketbooks (by stating their willingness to pay for an action) and words (by responding in writing to structured and open-ended questions). Overall, the structured decision process allowed stakeholders to work through these tradeoffs in a way that attempted to balance their competing objectives and interests and to facilitate an informed choice. As in many such cases, making the costs and benefits explicit allowed for adjustments to a proposed action that reduced its negative aspects while maintaining nearly all of the reasons why it was desired in the first place.

Conclusion

The goal of a structured decision approach to public involvement is to provide policy makers with improved insight about the decision at hand. This contrasts with the goal of a conventional economic analysis, to provide numbers for incorporation to a benefit-cost study, or the goal of a conventional public participation process, to achieve consensus. Providing additional insight requires an improved understanding of the concerns of stakeholders, an improved knowledge base for identifying the primary consequences of alternative actions on these objectives, and a transparent mechanism for focusing policy development of the most important tradeoffs. Accomplishing these objectives requires a close alignment of deliberation and analysis, with stakeholder judgments informed not just by factual information but also by an active exploration of their own values and, typically, an increased appreciation for the concerns of others.

Implementation of a structured approach remains challenging. It requires a willingness on the part of policymakers to acknowledge stakeholder expressions of values and tradeoffs explicitly. It also requires a different focus for analysts; in particular, rather than shifting the focus away from the divergent views of participants in favor of consensus, a decision-structured approach looks to differences in the expressed values and objectives of stakeholders as the basis for reaching a broadly-acceptable agreement.

References

Chess, C. & Purcell, K. 1999. Public Participation and the Environment: Do We Know What Works? *Environmental Science and Technology*.

Fiorino, D. 1990. Public participation and environmental risk: A survey of institutional mechanisms. *Science, Technology & Human Values* 152: 226-243.
Gregory, R. In press. Using Stakeholder Values to Make Smarter Environmental Decisions. *Environment*.

Gregory, R., Lichtenstein, S. & Slovic, P. 1993. Valuing environmental resources: A constructive aproach. *Journal of Risk and Uncertainty* 7: 177-197.

Gregory, R., McDaniels, T. & Fields, D. 2000. Decision Aiding, Not Dispute Resolution: Insights Through Structured Environmental Decisions. Under editorial review.

Hammond, J., Keeney, R. & Raiffa, H. 1999. *Smart Choices*. Harvard Business School Press, Cambridge, Mass.

Kahneman, D., Slovic, P. & Tversky, A. 1982. *Judgment Under Uncertainty: Heuristics and Biases*. New York, Cambridge University Press.

Keeney, R. 1992. Value Focused Thinking: A Path to Creative Decision Making. Harvard University Press, Boston.

Keeney, R. & Raiffa, H. 1993. *Decisions with Multiple Objectives: Preferences and Value Tradeoffs*. Cambridge University Press, New York.

March, J. 1978. *Bounded Rationality, Ambiguity, and the Engineering of Choice. Bell* Journal of Economics, 587-608.

McDaniels, T., Gregory, R. & Fields, D. 1999. Democratizing risk management: Successful public involvement in local water management decisions. *Risk Analysis* 19: 497-510.

National Research Council. 1996. *Understanding Risk: Informing Decisions in a Democratic Society*. Washington, D.C., National Academy Press.

Payne, J., Bettman, J. & Johnson, E. 1992. Behavioral Decision Research: A Constructive Processing Perspective. *Annual Review of Psychology* 43: 87-131.
Payne, J., Bettman, J. & Johnson, E. 1993. *The Adaptive Decision Maker*. New York, Cambridge University Press.

Peelle, E. 1988. Beyond the NIMBY Impass II: Public Participation in an Age of Distrust. Spectrum 88. Proceedings Nuclear Hazardous Waste Management, Pasco, Washington, pp 571-582.

Renn, O. 1999. A Model for an Analytic-Deliberate Process in Risk Management. *Environmental Science and Technology* 33: 3049-3055.

Simon, H. 1990. Invariants of Human Behavior. *Annual Review of Psychology* 41: 1-19.

Slovic, P. 1995. The construction of preference. *American Psychologist* 50: 364-371.

Slovic, P., Fischhoff, B. & Lichtenstein, S. 1977. Behavioral Decision Theory. *Annual Review of Psychology* 28: 1-39.

Webler, 1997. Organizing Public Participation: A Critical Review of Three Handbooks. *Human Ecology Review* 3: 245-254.

Endnotes

1. Gregory is with Decision Research; McDaniels is with the School of Community and Regional Planning, University of British Columbia. Portions of this paper are based on other papers by these same authors, including McDaniels, Gregory & Fields, 1999; Gregory, in press; and Gregory, McDaniels & Fields, 2000.

2. These same five key steps are described in the excellent book, Smart Choices, written by John Hammond. Ralph Keeney, and Howard Raiffa. These authors refer to these steps using the acronym PrOACT, which stands for defining the Problem, clarifying

Objectives, creating Alternatives, investigating their Consequences, and assessing the relevant value Tradeoffs in light of these impacts.

3. The negotiations literature typically frames this as a battle between rigid positions and more flexible interests.

4. This problem is commonly known as the “taxpayer pays” problem. Only after all local interests have succeeded in defining what they want does the realization come that some body of people, such as the taxpayers or ratepayers within the state or nation, must pay the bill for this series of locally-negotiated decisions.

Factors influencing the participation of local governmental officials in the National Estuary Program

Working Paper*

Presented by Thomas Webler, Researcher, Social and Environmental Research Institute, Leverett, MA, and Core Faculty, Environmental Studies, Antioch New England Graduate School, Keene, NH

Co-authored with Seth Tuler, Researcher, Social and Environmental Research Institute, Leverett, MA, and Research Associate, George Perkins Marsh Institute, Clark University, Worcester, MA, Ingrid Shockey, Researcher, Social and Environmental Research Institute, Leverett, MA, and Paul C. Stern**,** Senior Staff Officer, Commission on Behavioral and Social Sciences and Education. National Research Council. Washington DC

Address correspondence to:
Seth Tuler
Social and Environmental Research Institute
PO Box 253
Leverett, MA 01054-0253

phone: 413-367-2451
fax: 530-348-7325
email: SPTuler@crocker.com

*This is a working paper developed for the U.S. Environmental Protection Agency Office of Economy and Environment, National Center for Environmental Research and the National Science Foundation, Decision, Risk, and Management Science Program workshop, "Community Based Environmental Decision Making," held on May 9, 2000, at the National Rural Electric Cooperative Association Conference Center in Arlington, Virginia.

Abstract

Participation by local governmental officials is not given the same attention in the literature as that of citizens, publics, technical experts, or stakeholders. Yet, local governments are often a keystone to successfully implementing and enforcing environmental policies. Qualitative analysis of open-ended interviews with local government officials from three national estuary program applications in New England revealed factors related to nine themes that shaped decisions to participate or not. Three categories of factors help to clarify the different types of influence agencies have over local government officials' decisions about whether or not to participate: factors associated with the character of individuals, with the context, and with the process. This taxonomy helps to clarify the kinds of opportunities available to project leadership to influence local government officials toward participating. An important finding is that project staff should listen and learn about the concerns of local government officials and then create a process that accommodates and overcomes barriers to their participation.

Keywords

Public participation, National Estuary Program, local government officials, coastal management

Introduction

Participation by local government officials in environmental policy making and implementation is recognized as essential to successful policy outcomes (Angel et al. 1995, Bacow and Milkey 1982, Berman 1996, Derthick 1987, Herzik and Mushkatel 1992, Julnes and Pindor 1994, Kearney and Smith 1994, Lake 1994, Lake and Disch 1992, Madore and Probst 1990, Plumlee et al. 1985). For example, an EPA official has noted that "It comes down to local government...It is essential that at the local level we all get involved to support the successful implementation of federal policies" (Witt 1988). Moreover, the importance of local government cooperation has been well established in the literature on facility siting and health policy.[1]

The participation of local government officials (LGOs) in national and regional policy processes is important for a number of reasons:

- they ensure that regulations and permitting procedures are implemented at the local level as part of state, regional, or national environmental policy regimes;

[1] See, for example, Heiman 1990, Herzik and Mushkatel 1992, Kasperson 1986, Kunreuther et al. 1993, Lake and Disch 1992, and Vari et al. 1993.

- they identify local needs, concerns, resources, and constraints that are relevant to the design and implementation of effective policies at the local level, and that may not be readily apparent to state and federal agency staff; and

- they play influential roles in the development or expression of community support *or* opposition to state and federal policies because of their status in the community, ability to forge alliances among local groups, coordinate funding, etc.

Surprisingly, there is little attention given by the academic literature to LGO participation in environmental decision making.[2] The disjunction between the treatment in the literature of local officials and their importance in successful environmental policy making and implementation points to a need for research on this topic. One important issue that we address in this article is: What factors influence the decision of LGOs to participate in regional EPA-sponsored environmental policy making and implementation efforts? Specifically, we explored the factors that shaped or influenced decisions of LGOs to participate in three National Estuary Program policy making processes in New England.

Selecting the Cases for Study

We selected for analysis three projects of the National Estuary Program: the Casco Bay Program in Maine (CBP), the Massachusetts Bays Program (MBP), and the New Hampshire Estuaries Program (NHEP). Casco Bay and Mass Bays were mature projects with vastly different approaches and experiences with involving local governmental officials in the planning process. Both were in their fifth year of the planning process and they had already produced their Comprehensive Conservation Management Plan (CCMP).[3] They were gearing up for the implementation phase. Meanwhile, New Hampshire was in its first year of its process and was just beginning to think about how to involve LGOs.

Local implementations of the NEP have a degree of autonomy and freedom in how they choose to design their participatory process. As a baseline EPA recommends adopting the Management Conference model as laid out in the *Primer* (EPA 1989). The Management Conference is really an assembly of four committees:

- A Management Committee comprised of individuals selected from the Policy Committee, a Citizen Advisory Committee and Technical Advisory Committee. Its membership includes EPA, other relevant federal agencies, state agencies and

---

2 Key sources that are published include: Herzik and Mushkatel 1992 and Plumlee et al. 1985.

3 The Comprehensive Conservation Management Plan (CCMP) is a blueprint for revitalizing an estuary and developing methods for protecting it from future harms. The CCMP documents the condition of the estuary, the cause and effect of point and nonpoint pollution sources, and a strategy for restoring and maintaining the estuary in good health. EPA requires 25% matching funds for a local project to be funded; usually these monies come from state governments. Thus, the specific course of each NEP depends on the direction given to it by the participants.

offices, local and regional governments or boards, as well as major stakeholder groups (e.g., industry, real estate development, environmentalists, natural resource-based occupations). The management committee puts together a workplan (technical analyses, public outreach, education, coalition building) and prepares a Management Plan.

- A Policy Committee made up of leadership from state governments and federal agencies. It sets priorities, ensures that the required matching funds are made available, and serves in an oversight capacity.

- A Citizen Advisory Committee (CAC) which advises the Management Committee on issues of public outreach. It also comments on drafts of the workplan and the CCMP. The CAC may design small programs to educate the public or to collect data. For example, voluntary water quality testing programs have been used in several instances.

- A Technical Advisory Committee which is responsible for undertaking technical analysis and providing technical support to the project. It is comprised of staff from the states' departments and agencies responsible for environmental protection. University scientists and technical staff from business or NGOs are also often included.

All three projects we studied adapted this design to suit their own needs:

Massachusetts Bays Program:

The Massachusetts Bays Program (MBP) retained the Policy and Management Committees as specified in the *Primer*, but it created five Local Government Committees (LGCs), out of an original CAC. While the CAC was supposed to provide a connection to the public, a feeling emerged among staff and other participants that it was not a place where issues specific to towns/municipalities could be addressed and that the CAC was trying to be all things to all people. The newly conceived LGCs' mission was to help develop the CCMP; advise the Management Committee about local issues and needs; facilitate communication and cooperation; generate a cross-fertilization of information and ideas, and; institutionalize the concept of embayment-based or natural resource-based planning to protect mutual resources. Five LGCs were established along the Massachusetts coastline. Intentionally, high level people were not asked to be on LGCs. Programs were tailored around those who were willing to be highly involved in the MBP. Staff felt that elected officials would either be too busy to devote the time and attention needed or would be uninterested in doing work that would not score them political points. At the same time, municipalities were asked to formally appoint their LGC representatives. Project staff wanted formal appointments to stress the importance of the work and the commitment expected of the members. Having representatives with official appointments improved communications, whereby individuals were empowered to speak with authority as an MBP representative in a community and to bring reliable information to the MBP. In fact, individuals appointed were often *not* local elected officials. According to MBP staff, town officials usually went to someone deeply involved with

coastal or fishery issues. LGC staff sometimes suggested names to municipal governments. Occasionally a person volunteered.

New Hampshire Estuaries Program:

The Management Committee of the New Hampshire Estuaries Program (NHEP) was assembled by the project director and several state leaders. While they made an effort to include local officials in the process, unlike the Massachusetts Bay Project no effort was made to obtain participation from all towns and cities directly. With a goal of keeping the Management Committee size limited to twenty-five, they decided not to include representatives from every coastal community. They dealt with the representation issue in two ways. First, they selected five communities to be directly represented, either because they were large population centers, they were very active in policy making, or because they had key interests.[4] Second, they relied on Regional Planning Agencies to represent all the other communities in the study region.[5] NHEP set up its Management Committee before any other committees. The NHEP did not have separate advisory committees for citizens and technical experts. A novel approach adopted by the NHEP for involving people was to structure participation opportunities around specific projects and activities. They created Project Teams on which both citizens and experts served. By appropriate choice of projects and tasks, NHEP leaders hoped to obtain and maintain participation of LGOs on project teams by appealing to local interests. LGO participation was focused on a few individuals committed to the goals of the estuary project**.** NHEP found it difficult to engage LGOs in a regular and reliable manner, although many did participate at key times and several individuals played central roles in drafting the yearly workplans.

Casco Bay Program:

The Casco Bay Project (CBP) initially followed the setup directives laid out in the EPA *Primer*, although within a fairly short time it became clear that this was not adequate for local conditions. Three local government staff served on the Management Committee, but the Local Government Committee structure was abandoned because of lack of participation. Instead, the project held special meetings, as scientific studies were completed or policies were being developed. They found this a more effective approach to gathering input from local officials (and staff) and keeping them informed of the project's activities. LGOs were involved at all levels of this project. The Management Committee was chaired by the City Manager for the town of South Portland. It included representatives from local governments, as well as those from businesses, the University of Maine, state government, and the EPA. The Local Government Committee chair was shared by three people, whose individual contributions were substantial throughout the project, including one person who coordinated a group of planners, conservation

---

4 New Hampshire has only a handful of communities on its Atlantic seaboard. Although, due to the presence of Great Bay, several other towns have coastlines with brackish water. At the kick-off meeting NHEP decided to focus on twenty municipalities in the portion of the watershed nearest the coast.

5 Communities pay money to support an RPA and in return they receive planning services. Large communities have their own planning department, and so do not buy into a Regional Planning Agency.

commissioners, and other resource commissioners who were engaged at the town level. The Implementation Subcommittee comprised a number of core participants, including representatives of local governments.

Methodology

For each case study we identified the population of all LGOs who had learned about the estuary project and were given the opportunity to become involved in it. These names usually came from the project's mailing list or sign-up lists from kick-off meetings of the projects. Federal and state officials who participated were also interviewed, as were estuary project directors and outreach coordinators. We relied on these interviews to reconstruct the manner in which the projects reached out to LGOs. One of our goals was to get beneath the rhetoric to discover the underlying attitudes these key individuals had toward public and LGO involvement. We supplemented our interview data with planning documents and other written materials associated with the Massachusetts, New Hampshire, and Maine projects.

To identify the factors influencing individuals' decisions to participate in the NEPs we interviewed LGOs in all three projects. Our aim was to interview six participating LGOs and six non-participating LGOs from each project. We met this goal in the NHEP case, but found that in Maine, the total number of LGOs that met our criteria was small and it was impossible to identify more than one non-participant. In Massachusetts, a huge number of LGOs were involved in one way or another and many who did not choose to participate also refused to be interviewed. Therefore, we selected people with a wide range of participation levels.

Table 1 summarizes our interview pool. Participants were not necessarily elected local government officials. For example, the Massachusetts Bays Project preferred to involve individuals who were not serving in elected positions in the communities. Interviewees represented a mix of elected officials, paid employees (e.g., planners), and volunteers who were formally appointed by the town to represent it on the estuary project. We define "local government officials" as any elected or officially appointed person charged to represent a municipality's interests in a local estuary project.

==========

INSERT TABLE 1 HERE

==========

Interviews followed a semi-standardized structure (Weiss 1994, Berg 1995, Merton et al. 1990) and typically lasted one hour. In most cases they were conducted face-to-face, but a few were done over the telephone. Interviews were designed with two parts. First we asked respondents to describe how they were approached to participate,

which messages they received regarding the project, and how these messages were delivered. In the second part we asked them to deconstruct the decision making process they used to decide whether to participate or not.

To analyze the interview transcripts we used the constant comparison approach (Glaser and Strauss 1967). This is an inductive approach in which important concepts *emerge* during the data analysis rather than in advance of the investigation. Data are categorized with respect to relevant similar characteristics in a process called coding. At first, a relatively large number of categories are developed. Then, through iteration these categories are grouped into more abstract categories according to their meaning and significance. Data and categories are grouped according to their relationships with each other.

Results: Factors motivating participation

Fifty four factors emerged from the interview transcripts with both active participants and non-participants. These are listed in Table 2. In this section we group these factors into descriptive categories that highlight the more salient themes emerging from the interviews.

==========

INSERT TABLE 2 HERE

==========

Efficacy and Progress

Many paid a great deal of attention to whether their participation would "make a difference," that their effort was needed and would not be wasted:

> Do I have insights and skills that are needed here?

"Making of a difference" did not always refer to achieving objectives of the estuary project, however. As these excerpts reveal, for some there was a strategic element:

> I was able to steer the LGC agenda so it was serving the purposes of the region and locality as I see it.

> We've been wildly successful in using the LGC mechanism to get stuff [money] for our community.

Others mentioned obstacles to feeling one's input ever mattered, especially how the scale of community could overwhelm and discourage people from participating:

> The communities are so large that people don't feel they have a real impact on what's going on. So they are not eager to serve either.

This comment came out of Massachusetts; it was not repeated in New Hampshire or Maine, where communities are much smaller and much less anonymous.

In sum, people who participated were doing so, in part, because they thought their efforts would be effective at bringing about a certain outcome, whether it be the estuary project's objectives or their own. One person aptly summed up the importance of a sense of progress to maintain participation:

> There [needs to be] a continuing sense that we are getting closer, every week, to our goal. People need to see that their work is paying off right now.

Preferences for a Participatory Experience

Another type of factor related to people's preferences and notions about a "good" decision making process. Some said they participated because they liked to learn new things or meet new people. Others were inclined to participate if they could use the setting to bring traditional adversaries together in search of common ground. Still others sought to avoid conflict and would participate only if group solidarity was high and the process was fun. Other factors grouped within this category included those related to the way individuals felt they were received the first time at meetings, the productivity of meetings, and convenience of meeting times and places.

Several people mentioned factors related to the relationships formed between them and the project or EPA staff. A key issue was respect -- people wanted to be informed ahead of time about meetings and other activities, they wanted to feel welcomed when they came, and they wanted to know that the leadership listened to them and valued their input. Several participants explicitly mentioned how they felt respected:

> This may have to do with showing respect -- that the estuary project bothered to really find out what people in the towns care about and then they thought how they could mesh their needs with community needs.

> During the planning phase there was a feeling of sincere respect by the agency staff and technical assistants. They made me feel that they were working with me and not that I was working for them. That is changing with the recent change in the structure of the Management Conference, for the Implementation Phase. I may leave now, its very frustrating.

> Each person contributes, and I think its unique because we're all respected for what we do contribute.

While for others, a lack of respect led to a feeling of being slighted, which resulted in non-participation for some individuals. For example, they asked:

> Did they do anything to try and accommodate my needs?
>
> Was I directly invited? Was I called? When I arrived, was I welcomed? Was my input valued? Was I respected?

Extending beyond the notion of respect, people showed that they had a general concern with and attended to the quality of their interactions with others, including how representative, productive, and enjoyable they were:

> What you need to know about the LGCs is that they listened.
>
> Face-to-face contact is important so people feel like you care about them, actually want them.
>
> [You are more likely to participate] If you know the individuals ahead of time and you like them.
>
> Is it a diverse group, representing all relevant positions?

Clear Objectives

The objectives of the estuary project arose in our results in two ways. First, people wanted to make sure that the objectives were consistent with their personal or professional agenda. For instance, NHEP has been called a "preventative NEP" because the estuary is not badly polluted as it is in Boston. Predictably, some people who did not see problems with the estuary did not have an objective of addressing estuary related issues. For example, one non-participant from New Hampshire stated during his interview:

> No obvious problem [with the estuary]. Why waste my time?

Second, people assessed the clarity of objectives, the strategy of the estuary project to achieve those objectives, and the ability of the project, given its resources, to actually achieve them. Some participants were discouraged by the lack of clarity and focus in the meetings. This was particularly problematic in the early years of the Casco Bay Project:

> I mean at the beginning, people said, "What's going on? What are we doing? Where are we going? And why are we doing it? And why are we spending so much time talking?" And it was just getting *grueling*.

Estuary Project Support and Resources

Those we interviewed often expressed concern for the ways that project staff supported the ability of people to participate. These concerns included the adequacy of staff support and the availability of funds.

For example, factors in this category were related to the organization and resources of the estuary project -- how many funds were available for pilot and demonstration projects and what types of technical resources were made available to participants. Statements that illustrate these factors include:

> Is it worth [the town's] time to go and spend seed money and planning time to put in for that grant?...Unless the grant has a minimal amount of administrative time on it and a large enough amount of money, it frankly isn't worth it.

> I think that changed some attitudes on what they could do, 'this was a great [GIS] tool and the estuary project assisted us.' And then you'd have councils attending some of those meetings.

Those we interviewed also cited concerns about the ways that staff provided support to participants to ensure that their participation was meaningful and efficient. In some cases these were reflected in concerns about the ways meetings were organized (e.g., locations, times, agendas) and the ways that enabled or constrained participation:

> Do I have to go through a lot of annoying red tape to participate?

In other cases concerns were expressed in terms of the support provided by project staff to facilitate participation:

> [staffperson] had exceptional communication skills, good staff, highly motivating. She generated a lot of enthusiasm and excitement over project activities and goals. This has been lost because of fight with CZM.

> Knowing how to get involved. Being able to vision the form and nature of one's participation. This was especially relevant to the grants program, where potential applicants had to know ahead of time what kinds of proposals the estuary project wanted to receive and also how to fill out and submit the proposal.

Personal Values

A variety of factors were related to expressed values of the participants and non-participants. Civic duty, environmental stewardship ethics, and the moral obligation represented by “If I don’t do it, who will?” (factor #4 in Table 2) were frequently mentioned. For example:

> I have a longtime personal commitment to the environment and love for nature. I have feelings of personal responsibility that makes me participate.

Other values more closely tied to individuals' interests were reported:

> Are they just looking for free labor, or will I get something from this?

> This was soon after I entered the aquaculture business...I put in a citizen's interest form and was appointed an alternate.

Individuals also revealed their consideration for non-human entities, including ecosystems, as this person expressed:

> The other thing which always made sense to me was you know we all live on this little mudball. And if the frogs and the bugs begin to die, our turn is somewhere's in that train of where we go.

Past Experiences

People's experiences played an important role in influencing their decision. Many had done something like this before, for better or worse:

> Did something like this before and it was hell.

Past experiences also came into play when the personalities of other participants or the reputation of the governmental agencies were taken into account. In NHEP, for example, a major incentive for one LGO was that he liked the way the Director of the State Office of Planning ran meetings. Another cited negative stigma of collaborating with the EPA as a disincentive, although this factor was irrelevant for most other interviewees:

> I was pretty motivated to work in this area and to participate, because [EPA] has been so helpful to us [on a prior grant]. I thought that if that was an indication of the quality of the work, that it would be a benefit to the town.

Time

Often priorities were defined in terms of available time in one's professional or personal life. People have a limited budget of time that is, for many, already committed. Time by itself is an external constraint that we all have to live under. After all, there are only so many hours in a day. Although there may be external forces constraining the availability of time (e.g., family obligations, illness, other volunteer activities), when it comes to establishing priorities that is something determined by an individual's own values and preferences. Making room for something new meant something else had to be cut:

> He eventually petered out, because there were a few other things in his work that he had to deal with. But in the beginning he was extremely active and I was amazed that he was able to take that much time in this project.
>
> If I do this, it means something else doesn't get done. [...] Is the payback going to justify the [low] ranking of the other things [on my desk]?
>
> I think it's time for me to put my energy into something else that the town appears to need more right now. So it's a decision about serving the town in a slightly different capacity and I am sufficiently busy with my other duties that I cannot take on a new duty without giving up an old one.

Concerns about time arose from both individuals who were appointed by their towns to serve especially as representatives to their local NEP (e.g., in Massachusetts) and individuals who were serving on town boards or working as town employees. In the latter case, the requirements of participation could not necessarily be fit into time reserved for paid work or as a member of a volunteer board (e.g., Conservation Commission); reviewing documents, attending meetings, and the like could also require additional time outside of those that were part of "work."

In addition to factors relating to the amount of time committed, there were factors associated with timing.

> If the CAC meetings had been in the day time, it would have helped, Its a little tricky when you have to impose on your friends to stay over night every month...and it didn't help at all when the first coordinator changed the meeting from Wednesday when there was a 10 o'clock boat to Thursday when there's only a 9 o'clock boat...And I screamed about that, but it didn't do any good.

Often those we interviewed revealed a relationship between the two themes of time and estuary project support and resources. For example, a person in New Hampshire suggested that his concerns about time arose because of the ways that meetings were scheduled and publicized:

> Participation opportunities are presented with adequate notice -- not 2-3 days!

Municipal Support and Resources

We encountered several factors related to the resources and support available from the institutional, political, or social context within the town which the LGO represented. This category includes a commitment of a town to support one's participation as an aspect of doing one's job. For example, a paid employee in Maine was supported by his town to participate because:

> We're a supporter of going regional. We would like to see more municipalities working together in marine management, because we don't think the state's doing a good job.

Others had to work much harder to gain the support of municipal authorities to participate:

> When you point out that it's an important economic resource, then what we're talking about began to turn some heads and had wider acceptance among city councils. Because I did need their level of support to spend a bunch of time out of the office.

In other communities there were people who wanted to participate, but could not get the town's blessing. One interviewee raised this point in this way:

> Basically those governments put walls around their town. They're very suspicious of outsiders, especially outside governments. They are just basically closed communities. And they're very suspicious of outsiders and they said, "No." [...] But there are citizens in the towns that have these desires [to participate], but we couldn't get official representation.

Frequently we found that this lack of support for participation was related to issues of homerule:

> Interviewee: [Town] was one that never was involved up until six months ago.
>
> Interviewer: Why was that?
>
> Interviewee: Ask the head of their little fiefdom there. A guy by the name of XXX. XXX is someone [who] it sounds like anything that goes on in this town has to be individually blessed by this person. It's an absolute control within that town. And XXX said he didn't want to have anything to do with any state or community organization because he didn't want to be obligated or accountable for anything.

Obviously, a big consideration was the degree to which participation was part of a town employee's work. This concern reveals the relationship between the support a town (and its elected officials) gave to the estuary project and the time that a potential participant felt that she had for working on activities related to the project (i.e., "professional time"):

> I participate because it is helpful to my work and comes under my work tasks. I need to keep up to date about what is happening.
>
> Part of my job, my boss told me to go.

Socio-Political Context

A variety of factors were linked to larger socio-politico-economic factors that lie outside of a person's immediate town. For example, the length of LGO terms is set by law and is merely a feature of the political landscape in which an estuary project occurs. The duration of MBP and CBP was five years. This did not conveniently match the typical three year office terms of the elected LGOs. For example, the mayor of Portland, Maine was briefly involved and then sent a paid staffperson to take his place. The mayor felt that the upper level staffers would be better choices than himself, because the continuity of their positions were more dependable than the shorter term length of the Mayor.

Some local officials felt their communities were coerced by the EPA to participate in the estuary project:

> [person] did it...[town] had a lot of vested interests, because of their combined sewer overflow problems. So they were really interested in this...Those were the two communities that were under the EPA gun to do something.

> We had just been served with this consent agreement and at that point we hadn't finished negotiating. Neither city had finished negotiating how we were going to respond to this violation of the Clean Water Act. But everyone is like, "what else are they going to do? We'd better go find out." So we went to the table out of self defense.

In some instances, pre-established groups were re-directed in ways that led to collaboration with the estuary project. For example, in Massachusetts a unique characteristic of the socio-political setting was the existence of already established advisory boards and organizations that merged with the MBP by being transformed into Local Government Committees. These provided the project staff with an opportunity to gain the participation of local officials by gaining the support and participation of an existing group, rather than having to gain the participation one individual at a time. Staff took advantage of an existing institutional arrangement to facilitate participation:

> Interviewer: How did you get involved in the Massachusetts Bays Project?

> Interviewee: The easy answer is as a member of the Coastal Resources Committee. So I sort of smoked into the role. It became part of the Coastal Resources Committee commitment...Everyone became part of the LGC.

> Interviewer: Who made that happen? Staff?

> Interviewee: I believe it was the Massachusetts Bays Project who suggested it. [The Coastal Resources Committee] seemed to be a local group in place dealing with all those issues. A logical place to go...it just became another

part of our charge...there was some discussion about it. The group voted to sign on.

Discussion

Making Decisions

How do LGOs invoke these factors when making a decision about whether or not to participate in an estuary project? Individuals may not consider each and every factor that is relevant, but only those that are most relevant. And, they may not integrate into their decision process every bit of relevant information, but only what is readily accessible and seems most important to making the decision at hand. For instance, rather than consider every factor in Table 2, LGOs may base their decision on only a handful of factors. One person described his decision process in this way:

> [I] go through this sort of subconscious checklist. Is this something that I am interested in? Is this something that's important to the community? Is this something that will impact the community? How much time does it involve? Is it useful to either me or the community? And if those all sort of come up positive, then you seriously think about participating. If those for some reason don't come up positive -- of great [benefit] to you or the community government -- then you say, "No." Because you are paid to do a job, you don't get paid to go and do interesting things.

In fact, it is clear from our study that there was not complete agreement about the importance of any particular factor in initiating or maintaining participation among those we interviewed. What factors were included in the "package" for specific individuals, and how they weighed the relative importance of the various factors in the "package," differed. We identified two forms these differences took. First, there were occasions of outright differences of opinion about the relevance of a factor. Some individuals considered the opportunity to learn about coastal management issues as an incentive. Others did not see the ability to learn more as a benefit, because they were enticed to participate only by the opportunity to obtain financial benefits for their town.

Second, disagreements appeared when people agreed on the general relevance of factors, but interpreted or weighed them differently. This occurred when people differed on how large a grant needed to be to be worthwhile, or if the availability of grants were a benefit to a town or a liability by, for example, making them obligated to a federal agency. In addition, in Maine we found that some people interviewed thought that timing and location of meetings was a critical factor in their decision to participate, because of the time required to attend meetings. On the other hand, one individual from Maine thought that meeting locations were not that important a factor in influencing decisions to participate or not.

A taxonomy of factors to guide project design and implementation

What can be done to engage LGOs more readily in collaborative watershed planning? The diversity of themes emerging from our analysis suggests that a sponsoring organization can influence the decisions of LGOs to participate in many ways.[6] As well, there will be some factors that will be beyond the capacity of a sponsoring organization to influence in meaningful ways. Three categories of factors help to clarify the different types of influence agencies have over LGOs' decisions about whether or not to participate. These are shown in Table 3.

==========

INSERT TABLE 3 HERE

==========

Individual level factors are tied to people's dispositional or motivational orientations. For example, the meanings and saliency which an individual attaches to past experiences and feelings of obligation and interest are intimately associated with the individual him/herself. This category includes personal interests and values that motivate participation; personal priorities; whether an individual feels that his/her participation will make a difference; and perceptions of professional responsibilities and priorities. Characteristics of the individual are not usually something that EPA or state agency staff can affect directly. Generally, people "arrive" to the scene with an already developed environmental or civic ethic, for example. This highlights constraints on EPA's ability to exert direct influence over the decisions of specific individuals. It cannot change a person's need to feel part of a group. It cannot change a person's past experiences or present skills. It cannot alter an individual's environmental ethic.

On the other hand, the sponsoring organization, such as EPA, can understand and accommodate characteristics of the individuals they wish to have as participants in a process. It can "frame" invitations to participate to appeal to individuals' sense of civic duty and environmental stewardship, for example. Letters (or other messages of invitation) can be framed to appeal to potential participants' environmental ethic or civic duty.[7] Or, prospective participants can be shown a list of names of people already

---

6 In National Estuary Program projects the sponsoring organization is the EPA, with the assistance of state agencies (Coastal Zone Management Office in MA, the State Office of Planning in NH, and the Department of Environmental Protection in ME).

7 We caution that there is a danger of coming across as moralizing, which may produce just the opposite of the effect intended. There is no research that we know of into how letters of invitation are

participating as a way to take advantage of the personal familiarity factor. Moreover, it is important to recognize that participation in a process may influence a person. There are factors that influence decisions to continue participation over a longer term. For example, participation may help to develop skills that were not present, alter perceptions of the EPA, or lay the seeds for and create an environmental ethic. On the other hand, participation may cause the emergence of reasons to not participate further. In fact, we found such factors to play an important role in the decisions of some LGOs we interviewed about how long to stay involved in their local estuary projects.

A second category of factors are largely outside the immediate control of the individual or the estuary project, but are associated with its social, political, historical, institutional, or economic context. As in the case of characteristics of the individual, there may be little or nothing that the agency can do regarding characteristics of the institutional, political, or social context of the town which a (potential) participant represents. EPA cannot directly influence, for example, election cycles, terms of office in towns, and local political cultures that resent federal intrusions into local affairs. In Massachusetts, a unique characteristics of the socio-cultural setting was the existence of already established advisory boards and organizations that merged with the Massachusetts Bays Project, by being transformed into Local Government Committees.

This category includes the commitment of a town to support the participation of LGOs, especially where paid staff and elected officials are involved.[8] Many of the LGOs interviewed talked of being overworked, having inadequate time for all interesting and important tasks, and inadequate resources to address all the issues under their jurisdiction. Thus, gaining support from a town was often related to the degree to which participation was viewed as part of a town employee's work. For instance, one town employee in Massachusetts said her decision to not participate was related to "triage": with only two people in her department, there were too few resources and people were "stretched to thin" to make the project a priority. "Time" became a characteristic of the socio-cultural setting when it was related to how a person's superiors or constituencies influenced one's perceptions of whether or not participation in an NEP was a priority. This quote illustrates how some LGOs worked to point out to their superiors how protecting estuaries was in the municipality's interest:

> When you point out that it's an important economic resource, then what we're talking about began to turn some heads and had wider acceptance among city councils. Because I did need their level of support to spend a bunch of time out of the office.

---

interpreted by potential participants, although there is a substantial literature about the different ways that people can interpet texts and utterances.

[8] This was true for paid town employees and elected officials, including, for example, Conservation Commission, Board of Health, Planning Board, and Selectboard members. This was not a concern for those who were appointed especially to represent a town in their local LGC or NEP. This form of appointment only occured in Massachusetts.

For some people it was the lack of support from town officials that discouraged participation. One interviewee spoke of being approached by her selectboard to be a representative of the town in the process, but that the selectboard, ultimately, was only giving her and the project "lip service" and was not really committed. Other LGOs were prevented from participating:

> Basically those governments put walls around their town, they're very suspicious of outsiders, especially outside governments. They are just basically closed communities. And they're very suspicious of outsiders and they said no...But there are citizens in the towns that have these desires [to participate], but we couldn't get official representation.

As the case with individual characteristics, here too some of the factors will be beyond the capacity of a sponsoring organization, such as EPA, to influence. But, there will also be opportunities for a sponsoring organization to encourage the participation of LGOs by better understanding and accommodating contextual factors. For example, EPA could provide financial support to a town in order to "buy" the time of a town employee or board member. It can also provide other types of resources; the Casco Bay Project provided personal computers, GIS software, and training to towns as an incentive to participate. The Casco Bay Project also hired an outreach coordinator who personally traveled to the communities and engaged LGOs in watershed issues specifically of interest to their town. She also trained local planning staff in the use of the GIS software and made presentations to town boards, which helped to excite local officials,. In the view of one of the local officials involved, “The technology forced the discussion and promoted some understanding among local officials of land use planning and its impact on water quality.". This strategy functioned, as hoped, as an incentive to draw in towns and LGOs that might not have participated on committees.

A third group of factors relate to the watershed planning process itself. Control over these factors lies entirely with the sponsoring organization. For example, are the objectives clearly laid out? Is the process designed to be efficacious? What kinds of work did the project offer people to participate in doing? Other features of the participation opportunity can be used to motivate individuals by, for example, making attendance at meetings easier. It is the characteristics of the participation opportunity that provides the EPA with great influence in shifting the balance of an individual's weighing of the decision to participate or not. They provide managers with an opportunity to increase and maintain participation of local government officials in these processes.

In fact, estuary projects were creative about inventing ways to involve LGOs as this participant in Maine recalled:

> We got to a point where we wanted to get public input as to what the organizational structure would be in the implementation phase...And in those [public hearing] sessions elected officials would come. They were given a dinner out. So, they'd come, one shot deal, they were giving one night and go away. Taking their comments and going away, not signing on for another committee and

meeting every month. So, we found it more effective to hit them when we needed some advice and let staff work on it.

Project staff also tried to ensure that people's time would be well spent during meetings. Providing written materials to participants prior to meetings for review was one way that projects made efficient use of time:

> They gave us plenty of notice and forwarded any material that they may have that they wanted us to review for discussion...And you know it was such that if you had any questions, you could pick up the phone and call the [project] office and say 'hey, I've got this in the mail. What does it mean? What are we going to discuss at the meeting?

Conclusions

Participation of local government officials in regional environmental planning efforts is critical. This is especially true when it comes to policy implementation, particularly in New England, where home rule places many land-use regulatory decisions under the domain of cities and towns. This study provides an important contribution to the understanding of factors influencing participation of an under-studied, but important group by shedding light on the kinds of factors LGOs from Maine, Massachusetts, and New Hampshire considered when deciding to participate in a collaborative environmental planning process. We speculate that similar considerations will be made by LGOs outside of New England. For example, some of our interviewees in Massachusetts were concerned about how the scale of community could overwhelm and discourage people from participating; this may be even more relevant in other parts of the country where county governments play more important roles in regional planning efforts. A successful regional approach to watershed protection requires extensive collaboration among many independent communities.

EPA and estuary project management can benefit from considering what motivates LGOs to participate. Our data show that LGOs consider a number of factors in their decision about whether or not to become involved in the watershed planning process. Just because an LGO's work included coastal zone management did not guarantee that he or she would participate. Many other factors also came into play. While many of the factors are similar to those that motivate stakeholders generally, some appear to be more unique to this particular population.

For example, several of the themes that emerged from the interviews are related to principles that have been used to define "good" policy making processes and that motivate stakeholder participation (Tuler and Webler 1999, Moore 1996, Renn et al. 1995, Carnes et al. 1996, Smith et al. 1999). How they are related, however, is not completely clear. For example, we found that factors influencing the personal decisions of the LGOs were related to the quality of their (expected) interactions. Quality of interactions and relationships have emerged as an important element in definitions of

"good" process in prior studies (Moore 1996, Tuler and Webler 1999). On the other hand, the LGOs rarely mentioned power as a motivating factor in their decisions, although concerns about efficacy were related. In contrast we found that power to influence a process and its outcomes was an important component to the definition of a "good" process for participants in a forest policy process. Concerns about municipal resources and availability of "professional" time are factors that seem to be more unique to this population; frequently, LGOs we interviewed were concerned about tensions between their various roles as town employees or representatives.

Our taxonomy of three types of factors helps to clarify the kinds of opportunities available to project leadership to influence LGOs toward participating. Factors associated with the character of individuals cannot always be affected. However, projects can take note of them and accommodate them. Factors associated with the social-political context of the project are also largely outside the realm of influence by EPA and estuary projects. However EPA may use its regulatory carrots and sticks to persuade communities to participate. Of course, any agency should carefully consider the use of "sticks" because they raise the possibility that more conflict ad resistance will be created. A more positive strategy when establishing a partnership with a community might be, for example, to use “carrots,” such as the mini grants that were used so successfully by all three of the NEPs we studied.

EPA and estuary project management have great latitude in shaping the factors related to the watershed management planning process. Shaping goals and objectives is probably among the most important that projects can do to directly affect participation by LGOs. Project staff should take time to meet with communities to listen and learn what the local concerns are and then attempt to construct a shared definition of the problem that defines the estuary project in terms of local officials' needs and concerns.

References

Angel, D., Jonas, A., and Theyel, G. 1995. Constructing consensus: Environmental policy making in Massachusetts, *Urban Geography* 16(5):397-413.

Bacow, L. and Milkey, J. 1982. Overcoming local opposition to hazardous waste facilities: The Massachusetts Approach, *Harvard Environmental Law Review* 6:265-305.

Berg, B. 1995. Qualitative Research Methods for the Social Sciences. Boston: Allyn and Bacon.

Berman, E. M. 1996. Local government and community-based strategies: Evidence from a national survey of a social probelm, *American Review of Public Administration* 26(1):71-91.

Carnes, S. A., Schweitzer, M., Peelle, E. B., Wolfe, A. K., and Munro, J. F. 1996. Performance measures for evaluating public participation activities in DOEs Office of Environmental Management. Report No. ORNL-6905. Oak Ridge, TN: Oak Ridge National Laboratory.

Derthick, M. 1987. American federalism: Madison's middle ground in the 1980s, *Public Administration Review* 47:66-73.

Glaser, B. 1992. Basics of Grounded Theory. Mill Valley, CA: Sociology Press.

Glaser, B. and Strauss, A. 1967. The Discovery of Grounded Theory: Strategies for Qualitative Research. Chicago: Aldine.

Heiman, M. 1990. Using public authorities to site hazardous waste managment facilities: Problems and prospects, *Policy Studies Journal*, 18(4):974-985.

Herzik, E. B. and Mushkatel, A. H. 1992. Intergovernmental complexity in nuclear waste disposal policy: The indeterminate role of local government, *Policy Studies Review* 10(4):139-151.

Julnes, G. and Pindor, W. 1994. Determinants of local government support for alternative forms of regional coordination, *American Review of Public Administration* 24(4):xx

Kasperson, R. E. 1986. Hazardous waste facility siting: Community, firm, and governmental perspectives. In National Academy of Engineering, Hazards: Technology and fairness. Washington, DC: National Academy Press.

Kearney, R. C. and Smith, A. A. 1994. The low-level radioactive waste siting process in Connecticut: Anatomy of a failure, *Policy Studies Journal* 22(4):617-630.

Kunreuther, H., Fitzgerald, K. and Aarts, T. D. 1983. Siting noxious facilities: A test of the facility siting credo, *Risk Analysis* 13(3):301-315.

Lake, R. 1994. Central government limitations on local policy options for environmental protection, *Profesional Geographer* 46:236-242.

Lake, R. and Disch, L. 1992. Structural constraints and pluralist contradictions in hazardous waste regulation, *Environment and Planning A* 24:663-681.

Madore, C. and Probst, W. 1990. On-site representation and oversight. In the Proceedings of the First Annual Conference on High Level Radioactive Waste Management. La Grange Park, IL: American Nuclear Society.

Merton, R. K., Fiske, M., and Kendall, P. L. 1990. The Focused Interview. NY: The Free Press.

Moore, S. A. 1996. Defining 'successful' environmental dispute resolution: case studies from public land planning in the United States and Australia, *Environmental Impact Assesment Review* 16:151-169.

Plumlee, J. P., Starling, J. D., and Kramer, K. W. 1985. Citizen participation in water quality planning: A case study of perceived failure, *Administration and Society* 16(4):455-473.

Renn, O., Webler, T., and Wiedemann, P. (Editors) 1995. Fairness and Competence in Citizen Participation: Evaluating models for environmental discourse. Dordrecht: Kluwer Academic Press.

Smith, P., McDonough, M., and Mang, M. 1999. Ecosystem management and public participation: Lessons fromthe field, *Journal of Forestry* 97(10):32-38.

Tuler, S. and Webler, T. 1999. Voices from the forest: What participants expect of a public participation process. *Society and Natural Resources* 12:437-453.

Vari, A., Mumpower, J. L., and Reagan-Ciricione, P. 1993. Low-level radioactive waste disposal facility siting processes in the United States, Western Europe, and Canada. Albany, NY: Center for Policy Reserach, State University of New York.

DISCLAIMER

This material is in part based on work supported by the National Science Foundation under grant number 9613626. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect those of the National Science Foundation.

ACKNOWLEDGEMENTS

We would like to thank all of the local officials, volunteers, and project staff in the Casco Bay Project, Massachusetts Bays Project, and Hew Hampshire Estuary Project that participated in our study.

Table 1. Interviewee pool from the three case studies

	Maine	Massachusetts	New Hampshire
Directors	2	1	1
Other Project Staff	1	3[i]	1
Participating LGOs	9	10[ii]	6
Non-participating LGOs	1	2	6
EPA Staff	0	1	1
Total	13	17	15

Table notes:

i) In addition to staff working with the project at the time of the interviews, we also interviewed two others who had played key roles in establishing the MBP and the LGC, but were no longer active. They are not included in the totals listed in the Table.

ii) three of these ten participants in the Massachusetts Bays Project were, at the time of our interviews, considering to cease their participation. Within a year, two of them had stopped participating in the MBP.

Table 2. Factors that influenced LGOs' decisions

1. Acting on my environmental ethics
2. Being acquainted with the other participants
3. Being part of a group that works closely together
4. Benefits to my town from information sharing
5. Bringing traditional adversaries together to talk face to face
6. Clarity of participants' roles and responsibilities
7. Clear need for participation
8. Community support for my involvement
9. Dealing with conflict
10. Existence of water supply or quality problems in my town
11. Feeling that, when I speak, others are listening to what I say.
12. Fiscal benefits to my town
13. Fulfilling my sense of civic duty
14. How I will appear to others if I participate
15. If I don't who will?
16. Impacts on my town's influence in regional policy
17. Learning new things
18. Meeting new people
19. My ability to make a strong contribution
20. My earlier experiences with similar processes
21. My earlier experiences with these state and federal agencies
22. My interest in working on regional issues as opposed to purely local ones
23. My personal interests (Is this something I care about?)
24. Other voluntary activities I would have to give up to do this
25. Our ability to start to solve watershed problems right away
26. Participants are trained in consensus-building skills
27. Placement of the project in state government
28. Pre-existing tradition of (regional) cooperation
29. Producing tangible results
30. Productivity of meetings
31. Professional interests and responsibilities (Is this part of my job?)
32. Professional priorities (Is this something I can fit into my work life?)
33. Quality of the discussions with others
34. Receiving a personal invitation
35. Relevance and clarity of the project's objectives
36. Respectfulness of the invitation
37. Scope of the project
38. Support by my boss
39. The age and gender of the other participants
40. The capability of the project to accomplish its goals
41. The competence of the project leadership
42. The convenience of meeting times and places
43. The decision making power of the participants
44. The helpfulness and friendliness of the project staff

45. The kinds of interests represented
46. The need for participation
47. The process is fun and enjoyable
48. The stigma of working on an EPA sponsored project
49. The time that would come out of my personal life
50. The time that would come out of my professional life
51. The timing between my term of office and the process
52. The way I am received on my first visit
53. The way the group makes decisions.
54. There are ways to participate other than going to meetings

Table 3. Taxonomy of factors

1. Factors associated with the character of individuals
2. Factors associated with the context
3. Factors associated with the process

Policy Discussion for Session II by Claudia Walters, US EPA Office of Science Policy -- <u>Summarization</u>

Claudia Walters began her discussion by focusing on the relevance of Gregory's and Webler's papers to EPA's interests. She said that at EPA, CBEP(community based environmental protection) has a specific definition: it is a community driven process where the community makes decisions and EPA serves a support role. She stressed that the notion of public participation can mean a broad range of involvement. At one end of the spectrum is the use of a public education program, where education is provided to the community, but the community is not directly involved in the decision making process. At the other end is some form of community empowerment and collaborative decision making process, or CBEP. The two papers in this session represent different models within this spectrum. Walters emphasized that stakeholder input is extremely important to the decision making process and is crucial to a successful operation.

Next, Walters moved to discussing the individual papers. Gregory's paper focused on identifying stakeholder values and preferences to inform decision makers. Within the spectrum she layed out above, Gregory's is a specific type of model: an informative process that emphasizes stakeholder involvement. She commended Gregory for taking the step of using a theoretical idea (the importance of stakeholder involvement) and putting it to practice. She thought it was very helpful that he showed how you can extract community values and prioritizations from this process. Gregory contrasted his approach of consensus building with the approach of dispute resolution. Both approaches, Walters suggested, are good for certain situations. Dispute resolution is useful when you need to get agreement from different parties. Consensus building, however, often ends up at the lowest common denominator that everyone in the room can agree to.

Walters emphasized that stakeholders should not be left with the impression that they are the decision makers. Management must play a role. Stakeholders should be informed as to exactly what their role is. Are they making the decision or providing input to the decision making process?

A final point Walters made is about scale. Although Gregory's process identifies local, community issues, these issues must ultimately be integrated with larger, regional issues. She thought this would be an important area for future research.

Turning to the Webler paper, Walters expressed interest in learning about the factors that bring stakeholders to the table. She said that people at EPA are always scratching their heads, saying, "but I invited them, why didn't they come?" Many people at EPA are trained as scientists and don't fully understand that they have to worry about logistics and making involvement attractive to stakeholders. Walters challenged Webler to look further at his data, specifically, to look at the differences between the various watershed programs and how and why involvement differed. She also emphasized that we need to learn more about who the stakeholders are and whether they adequately represent the community.

Finally, Walters suggested that the onus falls on agencies to design a system that works for stakeholder participation. Webler's paper will help them understand which factors are most important for their specific programs.

Policy Discussion for Session II:

Shooting at Different Targets: Better Decisions, Conflict Resolution, and Implementation in Participatory Environmental Decisionmaking"
Tom Beierle, Resources for the Future

Discussant Comments for panel on:
"Stakeholder Participation and Decision Making"
Community Based Environmental Decision Making Workshops
Environmental Protection Agency, May 9 2000

The two papers discussed in this panel provide two interesting, and quite different, perspectives on the subject of stakeholder participation and decision-making. I will briefly summarize my reading of the two papers and suggest some of the common themes they raise. The themes, I hope, resonate with some of the larger issues in play in the field of participatory decision-making.

The article by Gregory and McDaniels describes their recommendations for a structured stakeholder decision-making process that emphasizes analysis and problem-solving. It is aimed at developing recommendations that are both responsive to participants' values and of high technical quality—what elsewhere have been called "wise" decisions. The authors contrast this approach with consensus-based processes, which, they argue, threaten to sacrifice quality for acceptability.

The article by Webler and all focuses on a much more specific issue: how to get local government officials involved in stakeholder processes, specifically in the National Estuary Program. The article focuses on the critical issue of incentives, highlighting what motivates local government officials to participate or not.

The two papers are quite different. One deals with the decision-making process and its outcomes, and the other deals more with questions of who participates and how decisions get implemented. One presents us with a framework for decision-making while the other reminds us of the day-to-day rewards, frustrations, and trade-offs that being involved in this kind of decision-making entails.

There are commonalities in the papers as well. The decision-making approach suggested by Gregory and McDaniels is quite consistent with, and in fact has been used in, the National Estuary Program on which Webler focuses. In fact, one of the arguments for encouraging the involvement of local government officials is that they have the kind of experience and knowledge that may make them effective problem-solvers in the kind of process suggested by Gregory and McDaniels.

One thing I'd like to do with this discussion is to look for further areas of commonality, if not in substance of the papers, at least in the issues they raise. Public involvement has

received a lot of attention of late and there are a number of unresolved issues that these papers may get us thinking about.

It is useful to describe where I am coming from here. Over the last three years we at Resources for the Future have been examining the role of public participation in environmental decision-making, most recently with a review of around 250 case studies of participation in various contexts—hazardous waste cleanup, resource management, etc. From the start, our research has been motivated by the question: "What is the purpose of public involvement?" Or, put another way, "If public participation is the solution, what is the problem?"

The papers suggest three answers to that question.

First, is the answer supported by Gregory and McDaniels that the purpose is to make better decisions through a problem-solving approach. That is, decisions that are both of high technical quality but also responsive to public values. They describe these as decisions that take the form of perhaps competing recommendations to public agencies, who retain ultimate decision-making power.

Second, is the answer suggested and criticized by the same paper, that participation should be seen as a way of resolving conflict by seeking consensus solutions to tough problems.

Third is the answer implicit in the paper by Webler and others, that participation should be a way to build motivation and capacity for implementation. The authors mention a number of justifications for including local government officials in NEP decision-making processes, but primary among these is that local governments, usually by their power over land-use decision-making, hold the key to implementing plans for restoring and maintaining the environmental quality of estuaries.

Ideally, we would be quite happy if public participation programs could do all of these things: produce high quality decisions to which all agree and which marshal the collective will and ability of stakeholders to implement. However, aiming at these various targets generally will involve some trade-offs in the three areas that I see as important themes of public involvement.

The first theme is representation—who should be involved in the decision-making? If what we want to do is reduce conflict, we should invite in those who are conflicting. If we want to make higher quality, more responsive decisions, we should involve those with the will and capacity to engage in analysis and problem-solving and make sure that all of the relevant value-orientations are adequately and fairly represented. If we are interested in implementation, we should invite in all of those who have the power to influence how money gets spent, programs are run, or priorities are set.

Generally, these are not going to be the same people. In the context of the Webler paper, for example, it is easy to justify extra effort to encourage the involvement of local

officials if we are interested in implementation. It is far less compelling to argue that their involvement will be critical to resolving typical economy vs. environment conflicts or that they embody a unique set of values that should be represented in decision-making.

The second theme is incentives—who is going to take the time to participate in decision-making? What struck me in reading the Webler and all paper was the complex mix of what might be called self-oriented and other-oriented motivations to participate. That is, local government officials were asking themselves both how they could contribute to the public interest in cleaning up the environment but also what they could get out of participating on a personal or institutional level.

This forces us to ask the question—what would participants get out of being involved in decision-making processes oriented toward the other two outcomes under consideration: conflict resolution and problem-solving? To me, a conflict resolution setting appeals more to the mix of self- and other-directed incentives discussed by Webler. Such processes can make progress on a gridlocked environmental issue, which appeals to the public interest, but also has the potential for various actors to get sought-after concessions, which appeals to their private interests.

It is not obvious to me that the problem-solving orientation suggested by the Gregory and McDaniels piece similarly appeals to the more selfish interests of potential participants. Indeed the authors suggest that one of the challenges of their approach is to encourage participants to focus on values, not on their more narrow interests ("alternatives-focused thinking"). What self-interested motivations, then, do they have to participate?

The last theme is one of evaluation—how do we know if these processes have accomplished what they were intended to do? Here lies one of the virtues of focusing on conflict resolution. It is quite easy to determine whether consensus has been reach—simply ask those involved. It is not terribly more difficult to look at whether conflict has been resolved over a longer term by looking at, for example, subsequent records of litigation as has been done for regulatory negotiations.

Evaluating programs based on the other two criteria is more challenging. While it is not terribly difficult to judge whether a program has been implemented, it is quite a bit more difficult to attribute implementation back to the participatory process that sought it. How do we know, for example, if the cleanup of an estuary was due to a stakeholder process or instead to the lucky alignment of political factors, matching, for example, local electoral politics with a windfall Congressional appropriation?

Evaluating the substantive quality of a decision produced out of the model suggested by Gregory and McDaniels may be even more challenging. What yardstick can we use to measure quality that is itself not based on the values of the evaluator? No common yardstick—such as risk reduction, cost-effectiveness or efficiency—is likely to meet this test. Even asking whether an outcome is scientifically justified is likely to be contested, except perhaps at the tails of the distribution. Rather than looking at the substantive quality of the decision, we are probably forced to look at the quality of the process that

produced it. This we will just have to take on faith, because without the ability to measure the quality of outcomes there is no independent corroboration that the process suggested is the best way to go.

To resolve some of these issues, I would not suggest that we seek a universal approach to stakeholder decision-making that can handle all of the tasks of problem-solving, conflict resolution, and implementation. Rather, we should recognize that different kinds of contexts and different kinds of decisions require different kinds of processes—or combinations of processes. The problem-solving model suggested by Gregory and McDaniels may be the most appropriate model for decisions about remedy selection at a relatively non-controversial Superfund site, for example. The conflict resolution model may be the most appropriate for a regulatory negotiation setting where the public interest is not in particular jeopardy from the outcomes. Finally, a process geared toward implementation may be most appropriate in settings where there is general agreement on a policy alternative but not on how to get there.

The question for researchers and practitioners alike, then, is to develop a framework for thinking through what the most appropriate approach to participation is for the particular problem under discussion. Such a framework needs to consider, among other things, the three themes discussed here--who should be represented, what motivations they have to participate, and what the measures of success are going to be.

Question and Answer Period for Session II

Deanna Donovan from the East-West Center expressed concern about the "cultural baggage" that researchers might be taking into the processes they describe. She wondered whether and how researchers prepare to understand the cultural-political dynamic of a community and its demographic profile before bringing people to the table.

Robin Gregory said that he has worked frequently with First Nations and foresters and has found it to be useful to know the demographics, but that he learns most when he goes in and talks directly to the people, especially in informal settings. He is often surprised to hear what their concerns are. They do not always match expectations. Gregory emphasized that cultural sensitivity is essential throughout these processes.

Anne Sergeant from EPA asked Gregory about his comment that facts come from experts and values come from stakeholders. She suggested that science is based in a set of values and wondered how to separate out these values when being presented with scientific "facts."

Gregory responded that residents often feel uncomfortable with the uncertainty inherent in these processes and are generally anxious to get through them quickly and go on with their lives. Scientists, on the other hand, are more comfortable with uncertainty and generally support the idea of doing more studies. It is often difficult to get these two sides to meet in the middle. Scientists often look at data as "truth." Gregory sees data as input to the decision making process. He sees utility in doing more studies only if it will inform the decision making process.

Thomas Webler suggested that values are woven into the social science process and that we need to find ways to accommodate that by, at times, breaking apart discourse into more value-oriented discourse and more fact-based discourse. The same people are involved in both sets of discussions, however, and we cannot break apart their own approaches.

Gregory followed up by saying that problems can be identified based on values, but once problems are identified, it is important to obtain the best information that is available.

Claudia Walters said that her office is trying to bridge the different values, languages and expectations that scientists, social scientists and communities have. They have been holding community assessment workshops to learn about community expectations and to inform communities about what science can and cannot do.

Mike Nechodom of the Forest Service expressed concern about public accountability for the costs of these processes.

Tom Beierle responded that it is a cost-benefit issue. Are the costs of the participatory process worth the benefits? What are you trying to achieve? Resources for the Future is conducting research to learn about the benefits side of this question.

Webler suggested that the "Cadillac" model, represented by the in-depth approaches that he and other presenters discussed at this workshop, is only for nonroutine, special situations. He stressed that the process allows learning so that adjustments can be made mid-way through, potentially saving both time and money.

Gregory responded that social science research is less expensive than natural science research. He felt that consensus-based processes are not worth the expense, since the agreements that often come out of such processes represent lowest common denominators. However, he suggested that if the problem is structured and defined properly upfront, so much money will be saved that the expense of public consultations will seem trivial.

Nicholson followed up by agreeing that problems need to be better structured. In his work, he felt that many problems given to him pre-defined.

Walters reminded the audience that EPA is a regulatory agency and can have trouble presenting themselves to communities as collaborators.

Steve Smutko from North Carolina State University asked whether stakeholder motivation might be different when stakeholders are get involved in a second, different process.

Webler responded that it would be nice to have some replication in his study. He also discussed a study of participants that looked at what they thought would be a good process and found that environmental groups, for example, expected a values-based process, timber harvesters expected a facts-based process and property rights groups thought the process was about power.

Hank Topper from EPA commented that EPA needs to mobilize people at the local level to get involved and asked how to do that.

Gregory gave an example of a process he is involved with in Tillamook Bay where two stakeholder groups are the dairy farmers and private foresters. He said that, initially, dairy farmers were totally against the process, but over time, became very supportive as they saw EPA staff incorporate the farmers' concerns in their studies. He said that these local people informally became spokespeople for the process and this was a necessary component of the project's success.

Barbara Kanninen of the University of Minnesota asked who stakeholders represent when they attend these processes. Do they represent extreme opinions or do they represent mainstream opinion? She also asked how these processes compare to survey-based approaches such as contingent valuation.

Gregory responded that, according to the literature, his process generally obtains values that are less than half the values obtained by CV studies. He cautioned against total

reliance on survey-based approaches where people do not necessarily fully understand what they are responding to. He felt it was better to allow a few people to learn about the problem in depth and make decisions based on their more informed positions.

Webler said that private citizens who are not alligned with the interest groups play a moderating role in the process.

Toddi Steelman from the University of Colorado at Denver asked about the use of Q methodology.

Webler responded that Q analysis is very useful for interpreting social science data and he uses it frequently.

Gregory said that we need a mix of methods and that there is no one cookbook approach for the structured decision making process.

COMMUNITY BASED ENVIRONMENTAL DECISION MAKING

PROCEEDINGS

SESSION THREE

COOPERATION IN ENVIRONMENTAL DECISION MAKING

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

Proceedings for Session III
Table of Contents

SURVEYING DIVERSE STAKEHOLDER GROUPS: METHODOLOGICAL CONSIDERATIONS

Working Paper*

Presented by Mark Nechodom, US Forest Service

Authored by
Bill Leach, Neil Pelkey and Paul Sabatier
Department of Environmental Science and Policy
University of California, Davis, CA 95616-8576
http://wpp.ucdavis.edu

Revised May 26, 2000

*This is a working paper developed for the U.S. Environmental Protection Agency Office of Economy and Environment, National Center for Environmental Research and the National Science Foundation, Decision, Risk, and Management Science Program workshop, "Community Based Environmental Decision Making," held on May 9, 2000, at the National Rural Electric Cooperative Association Conference Center in Arlington, Virginia.

We thank Matt Zafonte for suggestions on the data analysis, and Beth Cook, Jared Ficker, Erin Klaesius, Steven Kropp, and Martha Turner for carrying out much of the research. This paper was made possible in part by financial support from the National Science Foundation's Decision Making and Valuation for Environmental Policy program (grant #9815471), and by the U.S. Environmental Protection Agency's STAR Grant Program (#R82-7145).

Abstract: This paper addresses three common time-and-money-saving shortcuts used when studying multi-stakeholder resource management groups: 1) interviewing or surveying only the coordinator of the group, 2) interviewing or surveying only one category of stakeholder from the group, and 3) interviewing or surveying only participants in the group. Each shortcut led to significant biases when tested in a survey that was administered to 25 watershed partnerships in California. Surveying only the coordinator of the partnership led to a picture of the partnership that was more trusting, politically liberal, and successful than the median picture provided by the balance of the respondents. Surveying only one category of stakeholder was also problematic. Landowners, environmentalists, and/or agency staff held significantly different views on 11 of 12 issues regarding the partnership and general watershed management. In the case of surveying only participants (and excluding knowledgeable observers of the partnership), there wasn't a skew of opinion in any particular direction, but participants held more extreme views on 8 of the 12 issues, and half these differences were significant. The paper concludes that studies that fail to solicit responses from a broad group of stakeholders and knowledgeable observers may give a biased assessment of the ability of multi-stakeholder partnerships to resolve watershed management problems.

Introduction

When surveying stakeholder groups, the importance of obtaining a representative sample rises with the amount of diversity within the group, while the feasibility of obtaining a representative sample often decreases with the level of diversity and conflict among stakeholders. This essay illustrates several reasons why a representative sample is important, and then suggests techniques for overcoming the special obstacles to adequate sampling that arise for diverse groups of stakeholders.

The empirical analysis that follows underscores three major conclusions. First, it is dangerous to rely upon a single respondent to represent the group as a whole. In particular, although group coordinators are often quite willing to share their views, we find that they frequently make poor point-estimates of the "average" perceptions of the members of the group. Second, we find that, in diverse groups, the views of any particular category of stakeholder are likely to provide only an idiosyncratic window upon the group's activities, outputs, and dynamics. Therefore, it is important to try to survey each of the major categories within a group, such as landowners, environmentalists, and agency officials. Third, we note that knowledgeable observers of the group, who do not consider themselves group participants, may have distinct and valid perceptions. Excluding their views from the survey can generate a distorted impression of the actual condition of the group or the community in which the group operates.

To illustrate these points, we present interim results from a study of 25 watershed partnerships in California. The full study will ultimately consider 60 or more partnerships in California and Washington. Watershed partnerships are groups of stakeholders who periodically convene to discuss the management of streams, rivers, or watersheds. They typically involve 10 to 50 stakeholders including representatives from local, state, and federal government plus local landowners and environmentalists. By stakeholders, we mean people whose personal or professional welfare depends substantially upon the outcomes of the partnership. The ultimate goals of partnerships are to resolve conflict, and to craft and implement a watershed management plan, policy, or restoration project. Our study of partnerships is designed to uncover the factors that influence whether a partnership will be successful at achieving these goals. The discussion that follows should apply aptly to any type of group in which the stakes are high and the stakeholders' opinions diverge.

The central themes of this essay are consistent with the well-established notions that (1) large samples are preferable to small samples, and that (2) diversity ("variance" in statistical parlance) increases the size of the sample required to generate a reliable estimate of the mean of a population, for a given level of confidence. Although these ideas are not controversial, they bear repeating given the current, adolescent state of the field of watershed partnership research (Leach and Pelkey 2000). This is a growing area of scholarship dominated by very simple research designs involving small numbers of cases (often single case studies) and/or a low number of interviews or questionnaires per case.

Focusing on the latter issue, we consider in turn three tempting but compromised research designs. For each temptation, we list examples of published studies that use the design, followed by results from our own research to illustrate why the choice is a consequential one. The final section of the paper offers suggestions for how to achieve adequate response rates when attempting a full census of participants in high-conflict stakeholder groups.

Temptation 1: Surveying Only the Coordinator

Several published surveys of watershed partnerships or related groups solicited the views of only a single representative--often the designated group coordinator or facilitator (for example, Cook 2000; Yaffee et al. 1996; University of Colorado 1996; CTIC 1999). Other interview-based studies averaged one to three interviews per partnership (Huntington & Sommarstrom 2000; Gordon & Jones 1998; Rieke & Kenney 1997; Wondolleck & Yaffee 1994). When research funds are limited and the goal is to examine a relatively large number of partnerships, it is tempting to try to get by with only a single interview per partnership.

Interim results from the Watershed Partnerships Project at UC Davis demonstrate the substantial risks involved in this approach. We have compiled survey data for 25 partnerships in California. A total of 360 stakeholders responded to the survey, with an overall response rate of 66%. Coordinators have responded for 15 of the partnerships. Five of the partnerships have two responding coordinators, yielding a total of 20 coordinators in the sample. We examined three types of survey questions to determine whether the coordinators' views could serve as a decent approximation of the perceptions of the partnership participants as whole. For all three measures, the data in Table 1 indicate that coordinators are unreliable estimators of the median group perceptions.

[Insert Table 1 about here]

In published studies on watershed partnerships, coordinators are frequently asked to evaluate the progress of the partnership. Using a 7-point Likert scale, we asked respondents to agree or disagree with the following statement: "So far, the partnership hasn't achieved many of its stated goals." Of the 19 coordinators who responded to this question, 7 were statistical outliers ($p<.05$) based on the sign test, a non-parametric analogue of the one-sample t-test.[1] Overall, 11 coordinators rated the progress of their partnership more generously than did the median respondent (5 significantly so); 5 coordinators were less generous (2 significantly so); and 3 coordinators gave a median response.

For watershed partnerships, in which the primary task is to seek consensus on the appropriate balance of environmental protection and economic liberty, many perceptions related to the progress and dynamics of a partnership may be influenced by the respondent's political ideology. We asked five questions (see appendix) to gauge each respondent's views on deep-core (Sabatier and Jenkins-Smith 1993) deep-ecology (Devall 1980) issues, and five questions pertaining to fundamental socio-economic issues. Principal component analyses for each set of questions generated single, unrotated factors explaining 52% and 57% of the variance, respectively. We used the factor scores from each analysis to generate an "environmentalism" scale and a "conservatism" scale.

For the environmentalism scale, 9 of the 20 coordinators were significantly different than the median respondent ($p<.05$). Fourteen coordinators displayed a stronger pro-environmental ideology than did the median respondent from their own partnership (7 significantly); and 6 were less pro-environment than the median (2 significantly).

For the conservatism scale, 8 of 20 coordinators were significantly different than the median respondent ($p<.05$). Thirteen coordinators were more liberal than the median respondent from their own partnership (8 significantly); and 6 were more conservative than the median (none significantly).

[1] The sign test is more conservative than the Wilcoxon test, which accounts for both the sign and magnitude of the differences between observed values and test values (Norman and Streiner 1986).

Another commonly measured partnership attribute (used both as an explanatory and dependent variable) is the degree of interpersonal trust. Using 6 questions, we asked respondents to evaluate the trustworthiness of their fellow partnership participants. Principal components analysis generated a single, unrotated factor explaining 62% of the variance in the 6 questions. We used the factor scores to generate a trust scale. Of the 20 responding coordinators, 13 were significantly different than the median respondent based on the sign test ($p<.05$). Fourteen coordinators were more trusting than average (11 significantly); 3 were less trusting than average (2 significantly); and three were average.

In sum, studies based on interviews or surveys of the partnership coordinator alone will, on average, provide a portrait that is more generous regarding interpersonal trust and partnership accomplishments, and that reflects liberal environmental and socio-economic perspectives.

Temptation 2: Surveying a Single Category of Stakeholders

Coordinators are not the only outliers. Different types of stakeholders may have strikingly different views. Therefore it is useful to survey all types. Watershed partnership studies that solicit responses from employees of only a single government agency (e.g. Manring 1998; Carr et al. 1998; Schuett, et al. 1997), are useful for honing in on issues within that agency, but are less reliable as guides to the overall functioning of the partnership.

To illustrate the risks entailed by this approach, we compared the perceptions of four broad categories of stakeholders across all 25 partnerships. The categories are 1) environmental advocates (n=45)—including recreational fishing or hunting advocates and other outdoor recreation interests; 2) landowners (n=46)—farmers, ranchers, and forest products companies; 3) local governments or special districts (n=77); and 4) state or federal agencies (n=94). We compared the four categories using 12 survey questions or scales (see appendix), which elicited respondents' views about the functioning of their own partnership, and about watershed management in general.

Table 2 shows that federal/state agencies[2] differed from local agencies for only two issues (environmentalism and conservatism). However, each of the other two-category comparisons displayed significant differences on at least half the issues. The greatest number of significant differences occurred for federal agencies vs. landowners, which differed on 10 of 12 issues.

[Insert Table 2 about here]

One of the most striking patterns in Table 2 is that the environmentalism and conservatism scales were significantly different for all six two-category comparisons. Examination of the means for each category reveals that, as expected, environmentalists were the most liberal on both scales, followed by state/federal agencies, then local agencies, then landowners.

Another visible pattern is that landowners were the most unique category—differing significantly from all three other categories for 7 of 12 issues. Landowners are least likely to favor consensus-based watershed management; they are least likely to judge their partnership's process as being fair; and they are least likely to view their partnership as being successful in terms of either stated goals or its ability to build capacity through new friendships or stakeholder education.

Employees of federal and state agencies are another frequently outlying category. More than any other category, they are likely to feel that all interests are effectively represented within

[2] Because federal and state agencies were found to differ significantly on only one issue, we treat them as a unit to simplify the discussion. Federal agencies are more likely to view their partnership's process as being fair.

the partnership. They are more trusting of other members of their partnership, and they are more likely to rate their partnership as being successful. Local agencies, by contrast, tend to lie in the middle on most issues.

Environmentalists are the staunchest supporters of a regulatory role for government agencies in watershed management. However, environmentalists are similar to landowners in that they both are unlikely to trust other members of their partnership, and they both tend to feel that their partnership's process is unfair.

In sum, surveys that solicit input from a single stakeholder category are not necessarily useful for characterizing the partnership as a whole. Different categories of stakeholders have different views, and over 50% of these differences were statistically significant in our sample of watershed partnerships in California.

Temptation 3: Surveying Only Participants

People who are knowledgeable observers of—but not members of—a group may have distinct and valid perceptions about the group. Not including their views can distort the overall portrait of the group and/or the surrounding community. None of the 3 dozen studies on watershed partnerships reviewed by Leach and Pelkey (2000) reported surveying non-participants. Although some of the studies sampled liberally using partnership mailing lists, and probably did reach several non-respondents (e.g. McGinnis et al. 1999; Woolley and McGinnis 1999), none of the studies explicitly distinguishes between participants and knowledgeable observers.

We examined whether participants (n=282) and knowledgeable observers (n=64) held distinct views regarding the same 12 issues used to compare different categories of stakeholders (see Table 3).[3] We found no significant differences between the average responses for participants and knowledgeable observers (Mann-Whitney $p<.05$). However, upon examining the proportion of extreme responses,[4] we found that participants held more extreme views than knowledgeable observers on most questions. For 8 of the 12 issues, participants were more likely to give an extreme response (and four of these proportional differences were statistically significant at $p<0.05$, Fisher's exact test). On three issues, observers held more extreme views, but none were statistically significant.

[Insert Table 3 about here]

These results are consistent with the idea that only the most highly motivated individuals will be willing to bear the costs of participating in collective-action groups such as watershed partnerships (Olson 1965). The results contradict the notion that "extremists" are less likely to pursue collaborative or consensus-based processes. This isn't to say that some extremists stay home or are excluded from partnerships partly as a result of their extreme views, but it does appear that a disproportionate number of people with extreme views populate the rosters of watershed partnerships. Failing to survey knowledgeable observers would result in an

[3] The names and addresses of participants and knowledgeable observers were obtained during in-person interviews with 3-5 key participants in each partnership. Both participants and observers included all four categories of stakeholders, however, knowledgeable observers included a higher proportion of city and county staff and elected officials (19% vs. 10% for participants).

[4] Extreme responses were defined as either “1” or “7” for the 7-point Likert questions. For the scales, responses greater than 1 or less than -1 were considered extreme. The scales are each distributed with mean = 0, and standard deviation = 1.

exaggerated view of the overall level of conflict in the larger community in which the partnership operates.

Redemption: Achieving an Adequate Response Rate

If one accepts the preceding argument—that surveys of diverse stakeholder groups call for representative samples of participants and knowledgeable observers—then the remaining task is to design and administer the survey in such a way to maximize the response rate. If non-respondents were generated at random, then even a quite low response rate would be adequate, assuming the total number of respondents was still relatively large. However, if non-respondents are peculiar, then the results of the survey will show a systematic bias. Although various methods have been devised to ascertain the probable representativeness of a limited sample (Dillman 2000), it is preferable to simply achieve a high response rate and forgo the need to speculate about unobserved non-respondents.

Stakeholder diversity and conflict can aggravate certain obstacles to achieving an acceptable response rate. For example, in high-conflict situations, many of the most interesting research questions may entail highly sensitive topics. Research on watershed partnerships may involve soliciting respondents' views on hot-button environmental issues, their evaluation of the trustworthiness of fellow participants, or their identification of allies and opponents within the partnership. In partnerships with pending legal cases, stakeholders may fear having their survey responses subpoenaed.

In diverse groups, researchers will also probably face one or more categories of stakeholders who harbor strong suspicions about the researchers' motives. For example, watershed partnerships often include many rural landowners who fear or disdain their state and federal government. This creates problems if the researchers or their funding agencies have government affiliations.

To help overcome respondents' suspicions, one can try to establish general credibility in the watershed. This can be done in several ways. If the survey is going to be administered by mail, phone, or internet, it can be helpful to precede the survey with in-person interviews of a few key participants representing each of the primary categories of stakeholders. Besides generating additional information about the group, and improving the design of the forthcoming questionnaire, the interviews can generate local visibility for the project. The survey's cover letter can list names of the people interviewed, so that potential survey respondents can then contact the interviewees, who hopefully would vouch for the researchers' sincerity and understanding of the issues. A second way to build credibility is to convene an advisory committee consisting of representatives from agencies, industries, and advocacy groups—again reflecting all major interests. For university-based research, receiving the endorsement of a prestigious committee of "real-world" practitioners can help dissipate lingering doubts about whether the ivory-tower academics are out-of-touch with the realities of the local situation.

A third approach to building credibility is to headquarter the research project within an organization that is as neutral as possible. Universities typically carry a reputation for impartial analysis, however departmental affiliations can also be important. In our case, UC Davis is a major center for agricultural research as well as the administrative hub for each of the UC system's locally-based "county" cooperative extension offices. This outreach function probably conferred upon our project an extra measure of credibility among the agricultural community,

which might otherwise be suspicious of faculty and graduate students from a "Department of *Environmental* Science and Policy."

Enticing stakeholders to candidly respond to a battery of sensitive questions requires careful attention to fundamental issues of good survey design. Respondents may be offered anonymity. Consistent with social exchange theory (Dillman 2000), one can offer to provide respondents with a copy of the results. One can also highlight the importance of the survey in a way that would probably strike a cord with most potential respondents. For example, do funding agencies plan to use the survey results to develop criteria for distributing funds to stakeholder groups?

To capitalize on the survey recipients' inherent interest in their group, and by extension the survey, the content of the questionnaire should be tailored to the group (for example, by referring to the group by name throughout the questionnaire). The questionnaire should be visually appealing, and the question format should vary from one page to the next. Finally, persistence can be a virtue, with up to half of all responses arriving after the second or third appeal (Dillman 2000).

Conclusions

All things considered, large samples are preferable to small samples, and the importance of sample size increases with the diversity of within-group perceptions. Surveying a single individual from a diverse, high-conflict stakeholder group is a poor way to gather data on attributes of the group as a whole. Group coordinators, in particular, are likely to have specific biases. In the case of watershed partnerships, the coordinators are more environmentally liberal, more trusting, and more generous in their assessments of the success of the partnership.

Surveying only a single category of participants also provides a skewed portrait of the group. Similarly, failing to survey knowledgeable observers as well as participants may render an off-color assessment of the group's actual condition. We found that participants in watershed partnerships hold more extreme views than do knowledgeable observers.

When attempting to survey a complete census of participants and knowledgeable observers regarding a stakeholders group, it is important to strive for a high response rate to ensure that all factions are proportionately represented. In this regard, diverse, high-conflict, stakeholder groups can be challenging because the issues are sensitive, and many stakeholders are likely to harbor doubts about confidentiality or about how the research results will be used. By addressing these challenges, it is possible to develop and administer an appealing questionnaire that attracts a high response rate.

References

Carr, D. S., Selin, S. W., and Schuett, M. A. (1998). "Managing public forests: Understanding the role of collaborative planning." *Environmental Management*, 22(5), 767-776.

Cook. (2000). "A General Ecology of Watershed Groups in California," master's thesis, University of California, Davis.

CTIC. (1999). "data." , Conservation Technology Information Center, Purdue University, West Lafayette, Indiana.

Devall, B. (1980). "The Deep Ecology Movement." *Natural Resources Journal*, 20, 299-322.

Dillman, D. A. (2000). *Mail and Internet Surveys: The Tailored Design Method*, J. Wiley & Sons, New York.

Gordon, J. A., and Jones, T. T. (1998). "Monitoring and Evaluation of Selected Rural Watershed Councils in the Continental United States." , Buffalo River Stewardship Foundation, Fayetteville, AR.

Huntington, C. W., and Sommarstrom, S. (2000). "An Evaluation of Selected Watershed Councils in the Pacific Northwest and Northern California." , Trout Unlimited and Pacific Rivers Council.

Manring, N. J. (1998). "Alternative dispute resolution and organizational incentives in the U.S. Forest Service." *Society and Natural Resources*, 11, 67-80.

McGinnis, M. V., Woolley, J., and Gamman, J. (1999). "Bioregional Conflict Resolution: Rebuilding Community in Watershed Planning and Organization." *Environmental Management*, 24(1), 1-12.

Norman, G. R., and Streiner, D. L. (1986). *PDQ Statistics*, B.C. Decker, Hamilton, Ontario.

Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*, Harvard University Press, Cambridge.

Rieke, B., and Kenney, D. (1997). "Resource Management at the Watershed Level: An Assessment of the Changing Federal Role in the Emerging Era of Community-Based Watershed Management. Report to the Western Water Policy Review Advisory Commission, Western Water Policy Review Advisory Commission, Denver, CO." , Natural Resources Law Center, University of Colorado School of Law, Boulder, CO.

Sabatier, P., and Jenkins-Smith, H. (1993). *Policy Change and Learning: An Advocacy Coalition Approach*, Westview Press, Boulder.

Schuett, M. A., Selin, S. W., and Carr, D. S. (1997). "Collaborative planning and national forest management: land manager perspectives." *Journal of Forestry*, 9(5), 25-28.

University of Colorado. (1996). "The Watershed Source Book: Watershed-based Solutions to Natural Resource Problems." , Natural Resources Law Center, University of Colorado School of Law, Boulder, CO.

Wondolleck, J. M., and Yaffee, S. L. (1994). “Building bridges across agency boundaries: In search of excellence in the United States Forest Service.” *Cooperative Agreement PNW 92-0215*, USDA Forest Service PNW Research Station.

Woolley, J. T., and McGinnis, M. V. (1999). “The Politics of Watershed Policymaking.” *Policy Studies Journal*, 27(3), 578-594.

Yafeee, S. L., Phillips, A. F., Frentz, I. C., Hardy, P. W., Maleki, S. M., and Thorpe, B. E. (1996). *Ecosysytem Management in the United States: An Assessment of Current Experiences*, Island Press, Washington, DC.

Appendix — Questionnaire items and scales

Unless otherwise noted, all the following items are 7-point Likert-scales where 1 = strong disagreement and 7= strong agreement. Cronbach's alpha indicates the reliability of each scale. Kendall's tau is a nonparametric measure of correlation between each survey question and its corresponding scale.

1. So far, the partnership hasn't achieved many of its stated goals.

2. The best strategies for resolving watershed issues include. . .

   a) consensus-based negotiations among stakeholders, including agencies.

   b) reliance on each agency's legal mandate and court review.

   c) reliance on tradable permits for water, fish catch, development, etc.

   d) allowing private property owners to manage their land as they see fit.

Environmentalism Scale (Cronbach's $\alpha = 0.77$)

1. People were intended to rule over the rest of nature. ($\tau = -0.60$)
2. One person's right to a clean environment is more important than another's right to gainful employment. ($\tau = 0.43$)
3. Plants and animals exist primarily for use by people. ($\tau = -0.64$)
4. All species have an inherent right to exist, quite apart from any instrumental use. ($\tau = 0.62$)
5. Environmental regulations should not be promulgated unless the proponents can prove that the monetary benefits will exceed the costs. ($\tau = -0.59$)

Conservatism Scale (Cronbach's $\alpha = 0.82$))

1. The best government is the one that governs the least. ($\tau = 0.85$)
2. A first consideration of any good political system is the protection of private property rights. ($\tau = 0.62$)
3. Government laws and regulations should primarily ensure the prosperity of business since the health of the nation is dependent upon the well-being of business. ($\tau = 0.61$)
4. Government planning almost inevitably results in the loss of essential liberties and freedoms. ($\tau = 0.62$)
5. Decisions about development are best left to the economic market. ($\tau = 0.56$)

Trust Scale (Cronbach's $\alpha = 0.89$)

How many of the participants… (5-point Likert scale: 1=none, 2=few, 3=half, 4=most, 5=all)

a) are honest, forthright, and true to their word? ($\tau = 0.65$)

b) have the same values and priorities that you do? ($\tau = 0.52$)

c) have reasonable motives and concerns? ($\tau = 0.64$)

d) are willing to listen, and sincerely try to understand other points of view? ($\tau = 0.72$)

e) reciprocate acts of good will or generosity? ($\tau = 0.71$)

f) propose solutions that are compatible with the needs of other members of the partnership? ($\tau = 0.71$)

Capacity-building Success Scale (Cronbach's $\alpha = 0.79$)

The partnership has given me:

a) new long-term friendships and/ or professional relationships. ($\tau = 0.72$)

b) a better understanding of other stakeholders' perspectives. ($\tau = 0.71$)

c) a better understanding of the physical or biological processes in the watershed. ($\tau = 0.66$)

Fair Process Scale (Cronbach's $\alpha = 0.67$)

1. The partnership process treats all parties fairly and consistently. ($\tau = 0.67$)
2. The partnership's discussions are civil, and marked by mutual recognition and respect. ($\tau = 0.53$)
3. The scientists and engineers frequently clash with non-technical stakeholders regarding the proper role of science and technology in managing our watershed. ($\tau = -0.19$)

Broad Representation Scale (Cronbach's $\alpha = 0.60$)

1. Some critical interests are not effectively represented in the partnership. ($\tau = -0.65$)
2. Government agencies have too much influence within the partnership. ($\tau = -0.51$)
3. The partnership represents the interests of most people in the local community. ($\tau = 0.59$)

Access to Information and Technology Scale (Cronbach's $\alpha = 0.60$)

1. The existing body of technical information about our watershed is inadequate. ($\tau = -0.52$)
2. The data and information that do exist are easily accessible to all stakeholders. ($\tau = 0.66$)

3. The partnership enjoys good access to people with sufficient training to evaluate scientific and technical information relevant to the partnership. ($\tau = 0.57$)

Table 1. Comparison of Partnership Coordinators with the Rest of Their Partnership

Questionnaire Item	Number (n) of coordinators whose responses were:	n	Significantly Different than the median (sign test p<.05)
Evaluation of Partnership Success	more positive than the median	11	5
	less positive than the median	5	2
	equal to the median	3	0
	total	19	7
Environmentalism (5-item scale)	more pro-environment than median	14	7
	less pro-environment than median	6	2
	equal to the median	0	0
	total	20	9
Conservatism (5-item scale)	more conservative than the median	6	0
	less conservative than the median	13	8
	equal to the median	1	0
	total	20	8
Trust of other members (6-item scale)	more trusting than median	14	11
	less trusting than median	3	2
	equal to the median	3	0
	total	20	13

Table 2. Mean responses for 4 categories of stakeholders, and one-way ANOVA multiple comparisons† for each survey question.

			CONSENSUS PROCESS	AGENCY REGULATION	TRADABLE PERMITS	PRIVATE ENTERPRISE	UNSUCCESSFUL	ENVIRONMENTALISM	CONSERVATALISM	TRUST	CAPACITY BUILDING	FAIR PROCESS	REPRESENTATION	INFO & TECHNOLOGY
MEANS	federal & state agencies	(n=95)	6.1	3.7	3.2	2.9	3.8	0.29	-0.23	0.18	0.15	0.15	0.26	-0.02
	local agencies	(n=77)	5.9	3.1	3.3	3.1	4.2	-0.23	0.19	0.12	-0.08	0.22	-0.06	0.08
	landowners	(n=46)	4.2	2.6	3.1	4.8	4.9	-0.75	0.83	-0.52	-0.49	-0.68	-0.33	-0.27
	enviros & recreation	(n=45)	5.8	4.4	2.4	1.7	4.5	0.62	-0.73	-0.36	0.06	-0.34	-0.13	0.11
ANOVA	federal-state vs. local		O	O	O	O	O	**	*	O	O	O	O	O
	fed-state vs. landowners		**	**	O	**	*	**	**	**	**	**	**	O
	federal-state vs. enviros		O	*	*	**	O	*	*	*	O	O	*	O
	local vs. landowners		**	O	O	**	O	*	**	**	*	**	O	O
	local vs. enviros		O	**	*	**	O	**	**	O	O	*	O	O
	enviros vs. landowners		**	**	O	**	O	**	**	O	*	*	O	O

The first five questions are Likert items where 1 = strong agreement and 7 = strong disagreement.

Scales are based on Likert questions, and are standardized with overall mean = 0 and standard deviation = 1.

†Kruskal-Wallis nonparametric Z tests for multiple comparisons: O not significant * $p < 0.05$ ** $p < 0.01$

Table 3. Proportion of Extreme Responses by Participants and Observers
(Participants held more extreme view on 8 of 12 issues.)

Questionnare items and scales	Participants %	Observers %	Fisher's Exact Test
option1: consensus-based processes	52	48	
option2: regulation by government agencies	21	19	
option3: tradable permits	19	17	
option4: private enterprise	40	39	
"partnership has not achieved its goals"	24	9	$p < 0.01$
environmentalism (scale)	34	36	
conservatism (scale)	30	34	
trust in partnership members (scale)	32	16	$p < 0.01$
capacity building success (scale)	35	39	
fair process (scale)	34	34	
broad representation (scale)	36	23	$p < 0.05$
adequate information and technology (scale)	38	25	$p < 0.05$

Attitudinal Support for Collective Action: Do Institutions Matter?

Working Paper[*]

Presented by Mark Lubell, Florida State University

[*]This is a working paper developed for the U.S. Environmental Protection Agency Office of Economy and Environment, National Center for Environmental Research and the National Science Foundation, Decision, Risk, and Management Science Program workshop, "Community Based Environmental Decision Making," held on May 9, 2000, at the National Rural Electric Cooperative Association Conference Center in Arlington, Virginia.

Attitudinal Support for Environmental Governance: Do Institutions Matter?

By Mark Lubell
Department of Political Science
Florida State University
Bellamy 542
Tallahassee, FL 32306-2230
mlubell@garnet.acns.fsu.edu

Paper prepared for presentation at the 2000 Midwest Political Science Association annual meeting. April 27-30, 2000.

In this paper, I present a theoretical framework for understanding the development of attitudinal support for democratic governing institutions, with a specific focus on public policy institutions for solving collective action problems. By attitudinal support, I am referring to political actors' general satisfaction with the institutional rules governing a particular policy arena. Since the 1950s, political science research has suggested an important link between attitudinal support for democratic rules and norms and the performance of democratic institutions (Easton 1953; Truman 1951). More contemporary research examines this relationship in narrower policy arenas. For example, Levi (1988) hypothesizes the ability of a tax system to collect revenues depends on "quasi-voluntary" compliance from citizens, while Scholz and Lubell (1998a, b) empirically demonstrate how institutional changes in the United States tax system that increase trust in government and civic duty lead to increased tax compliance behavior. In short, previous research suggests attitudinal support is a necessary condition for the viability of democratic governance.

My attitudinal support framework combines "transaction cost" theories of governance proposed by neoinstitutional political economy (Eggertsson 1990; Libecap 1989; North 1990; Weber 1998) with the Advocacy Coalition Framework's (Sabatier and Jenkins-Smith 1993) focus on stakeholders' subjective belief-systems. The transaction cost approach assumes attitudinal support should be linked to actors' beliefs about the efficacy of institutional rules for solving collective action problems. Institutions are effective when they are well suited to the attributes of the collective action problem at hand, and thus reduce the transaction costs of collective action. Hence, institutions that reduce transaction costs will increase attitudinal support.

However, a major disadvantage of the transaction cost approach is that it does not provide a realistic model of how individual stakeholders actually think in the context of a particular governing institution. Following the Advocacy Coalition Framework (ACF), my approach to understanding how institutions matter examines the effects of institutions on political actors' subjective belief-systems. I link the transaction cost approach to individual belief systems by arguing attitudinal support is a function of beliefs that reflect the benefits and transaction costs of solving a collective action problem (Libecap 1989; Ostrom 1990), perceived fairness of the governance institution (Tyler 1990), and exposure to "social capital" in the form of trust, policy networks, and political entrepreneurs (Putnam 1993, Coleman 1990, Schneider et al. 1997). In addition, attitudinal support is shaped by more basic value orientations regarding how policy should be made in particular policy arenas. In particular, I will demonstrate an interaction between institutional context and belief-systems: the influence of institutions depends on the structure of belief systems, and the structure of belief systems depends on institutional context. Institutions will increase attitudinal support only when they feature governance styles congruent with an individual's basic value orientations.

To give my theory a substantive setting, I examine collective action problems in the environmental policy domain, specifically those involved with the governance of estuaries. Estuaries are coastal ecosystems where a fresh water source enters a saltwater body, creating a set of hydrological, chemical, and biological conditions that foster one of the most valuable types of ecosystems in the world (Costanza et al. 1997). To understand the role of institutions, I compare attitudinal support in estuaries governed by traditional, *adversarial* models of

environmental governance to estuaries featuring new institutions that emphasize cooperation, collaborative planning, and adaptive ecosystem management. From my theoretical perspective, these new *consensual* institutions reduce the transaction costs of estuary governance because they are better suited to the attributes of estuary collective action problems than adversarial institutions. Hence, consensual institutions should increase levels of attitudinal support among estuary "stakeholders".[5]

A combined mail/telephone of 1198 stakeholders from 20 estuaries involved in the US Environmental Protection Agency's National Estuary Program (NEP) and 10 estuaries without the NEP provides the data to empirically test the attitudinal support framework. The NEP is one of the leading national examples of consensual institutions, and thus the NEP/non-NEP comparison constitutes a quasi-experiment for testing the effects of institutional change on levels of attitudinal support (Achen 1986). The survey measures the attitudes and social relationships of individual stakeholders, including multiple measures of attitudinal support for estuary policies.

In the next section I briefly discuss the transaction cost approach to governance and collective action and its application to estuary politics. I then introduce my theoretical framework for predicting attitudinal support and qualitatively derive testable hypotheses. Lastly, I present analyses that model attitudinal support as a function of stakeholder evaluations of the transaction costs and benefits of collective action, basic values about environmental policy, and the social and institutional context of the policy arena in which they are embedded.

A Transaction Cost Approach to Environmental Governance and Collective Action

As I alluded to in the introduction, the theoretical basis for my attitudinal support framework involves a comparative institutional analysis of estuaries with and without the National Estuary Program in terms of the transaction costs of environmental governance. The logic of the comparative institutional analysis is based on Williamson (1975, 1995), who shows how the transaction costs of economic exchange are reduced by institutions well suited to the attributes of the transaction at hand.

Institutional Change and Political Contracting

The first assumption required by a transaction approach to estuary governance is that environmental degradation in estuaries is caused by collective action problems. Because estuary resources are non-excludable, they are subject to the same collective dilemmas that plague other common-pool resources: overexploitation of ecosystem services (the flow problem), and under-investment in natural capital (the stock problem; see Ostrom 1990).[6] Additional economic losses are incurred as a result of conflict between stakeholders attempting to secure property rights to estuary resources (Libecap 1989). Hence, the welfare gains available from solving estuary

[5] By stakeholders, I mean the broad range of governmental and non-governmental actors swept into the "whirlpools" of a particular policy arena (Heclo 1978). Democratic governance depends not only the support of the governed, but also the willingness of government officials to implement the rules in a consistent, credible, and efficient manner (Weimer 1997). A broad focus of this type is justified because all of the actors involved in a particular policy arena have a stake in the outcome—public policy affects political as well as economic welfare. Following the vocabulary used in policy analysis, I will continue to use the term "stakeholders" throughout my analysis.

[6] Ecological economists identify two types of resources in estuaries (and ecosystems in general) that affect human welfare: natural capital and ecosystem services (Constanza et al. 1997). Natural capital is the stock of natural processes in the estuary such as hydrological dynamics, wildlife habitat, and energy exchange systems. Ecosystem services are the flows of resource units produced by natural capital, such as drinking water or fish, which people consume.

problems include both protecting natural resources and reducing the costs of stakeholder conflict (Cheung 1970; Gordon 1954; Ostrom 1990).

The second assumption is solving collective action problems requires changing the property rights structure governing the use of estuary resources. Property rights are the manifestation of the entire set of formal and informal rules governing behavior in a specific collective action arena (Schlager and Ostrom 1992), which Ostrom (1990) calls "operational rules".[7] Institutional change in the operational rules, however, does not occur magically. The transaction cost perspective views the structure of operational rules as the output of a *political contracting process* between stakeholders who stand to gain from solving a collective action problem. In the context of common-pool resources like estuaries, contracting for property rights "includes both private bargaining to assign or adjust informal ownership arrangements and lobby efforts among private claimants, politicians, and bureaucrats to define, administer, and modify more formal property institutions (Libecap 1989, 11)."

The main hypothesis is that institutional change will occur when the Pareto-benefits to participants outweigh the transaction costs of political contracting. The welfare gains available from solving the underlying collective action problem are the main benefits of political contracting (Libecap 1989). Political transaction costs include the costs of searching for more efficient policy solutions, bargaining over which of those policy solutions are chosen, and monitoring and enforcing the resulting agreement.

Describing Possible Estuary Governance Institutions

The third assumption of the transaction cost approach is that governance institutions well suited to the attributes of the collective dilemma at hand reduce the transaction costs of political contracting. Governance institutions are analogous to Ostrom's (1990) notion of "collective-choice institutions" as the set formal and informal rules that structure political contracting by defining how rules-in-use at the operational level can be changed. Like in an economic market, political transaction costs are reduced when there is good match between the structure of the collective choice arena and the attributes of the collective action problem.

In the context of US environmental policy, I argue governance institutions can be characterized along the three dimensions of institutional design shown in Table 1: inclusiveness, coercion, and specialization. The inclusiveness dimension is relevant to the search and bargaining stages of political contracting, and defines which actors are eligible to participate in the process of institutional innovation. Are all estuary stakeholders involved in the decision-making process, or only a limited subset? The coercion dimension is relevant to the *ex post* monitoring and enforcement stages, and refers to which stakeholders are subject to the terms of the contract. Does the contract apply only to those stakeholders who participate in the contracting process, or are the terms of the contract forced onto excluded stakeholders? The standardization dimension refers to the congruence between institutional rules and the idiosyncrasies of a particular collective action problem. Is the political contract specialized for a particular collective dilemma, or does it provide a generic blueprint for use across a range of

[7] Schlager and Ostrom (1992, 250) provide the clearest statement about the relationship between rules and property rights: "Clarity in analysis is enhanced by recognizing that 'rights' are the product of 'rules' and thus not equivalent to rules. 'Rights' refer to particular actions that are authorized. 'Rules' refer to the prescriptions that create authorizations. A property right is the authority to undertake particular actions related to a specific domain. For every right an individual holds, rules exist that authorize or require particular actions in exercising that property right."

problems? The governing style of a collective choice arena is defined by its placement along these three dimensions of institutional design.

[Table 1 about here]

I am concerned with two types of institutions in this paper: the traditional, or *adversarial* (called command-and-control by some observers) model of environmental decision-making, and the *consensual* model as practiced by the National Estuary Program. As depicted in Table 1, consensual institutions are inclusive, voluntary, and specialized, while adversarial institutions are exclusive, coercive, and standardized.

The NEP process meets the criteria of a consensual institution. States nominate estuaries for inclusion into the NEP. For those estuaries that meet EPA criteria, the EPA signs an agreement with the nominating states that authorizes the formation of a Management Conference consisting of private and public stakeholders from all levels of the federal system. The Management Conference is a policy planning process that brings all these actors together to produce a Comprehensive Conservation Management Plan (CCMP), which delineates the rights and responsibilities for estuary management. The NEP is specialized because local stakeholders design the structure of the Management Conference, and the policies embodied in the CCMP are designed to solve problems in an individual estuary. It is inclusive because the EPA explicitly encourages broad stakeholder participation, in particular integrating non-governmental interests in local estuary communities who were previously excluded from decision-making or only participated through litigation or other coercive tools. The CCMP is a voluntary political contract that relies on incentives instead of penalties; hence implementation of the terms of the agreement depends on stakeholder cooperation.

Bringing the argument to a close requires describing how consensual institutions are better suited to estuary governance than the adversarial system. Several attributes of estuaries create high transaction costs for adversarial institutions: complex ecological processes mask cause and effect relationships, multiple-use of ecosystem resources breeds conflict between competing user groups, and ecosystem boundaries, which cross existing administrative and political jurisdictions, create fragmented rule systems. Furthermore, many estuary problems are caused by the resource use decisions of large number of spatially diffuse actors, which significantly increases the monitoring and enforcement costs of standardized, coercive rules. For example, the sources of non-point source pollution from urban and agricultural runoff are difficult to identify and involve virtually all estuary actors. Given these characteristics, both environmental and economic interests are dissatisfied with the uncertainty, fragmentation, and conflict that characterize the traditional policy system (Marsh and Lallas 1995; Rabe 1986; Weber 1998).

The NEP's combination of inclusive, voluntary, and specialized rules helps reduce the transaction costs of estuary governance. Because many of the problems involve diffuse actors and feuding interest groups, the inclusive, consensus-based decision process of the NEP reduces information asymmetries, builds trust, and increases the legitimacy of the resulting management plan. By using positive incentives like grants and land acquisition to supplement existing regulations, NEP policies encourage environmentally sustainable behavior. Finally, because no estuary faces an identical set of problems, the specialized nature of the management plan helps funnel resources to those problems identified by stakeholders as the priorities for their estuary. Hence, to the extent attitudinal support reflects stakeholders' experiences with the costs and

benefits of environmental governance, it should be higher in estuaries where the NEP introduces a new collective choice arena. In other words, the

The Attitudinal Support Model and Estuary Governance

In the previous section, I hypothesized the NEP will directly increase levels of attitudinal support because it reduces the transaction costs of estuary governance relative to adversarial institutions. The problem with this approach is that it looks only at the *structure* of the action arena, and not the micro-foundations of collective action at the individual level. Attitudinal support develops within the belief-systems of individual people, and thus requires looking into the minds of individual stakeholders. How do people think when participating in estuary politics? I argue attitudinal support is a function of four factors: 1) attitudes and beliefs that reflect the benefits and transaction costs of collective action; 2) stakeholders' beliefs about the fairness of the collective choice arena; 3) the congruence between stakeholders' basic value orientations and the governing style of the institution in which they participate; and 4) stakeholders' access to transaction resources in the form of policy networks and political entrepreneurs. I next lay out the details of each of these components.

Beliefs Related to the Benefits and Transaction Costs of Collective Action

Most economists would assume attitudinal support is a function of explicit cost-benefit calculations by individual stakeholders. Many researchers have serious doubts about the validity of this assumption, and argue the ability of humans to achieve goals is "bounded" by limited cognitive and information processing capacities (Simon 1975; 1979). Bounded rationality shifts the analytic focus onto the subjective representation of the task environment, and assumes proximate causes of behavior are contained in the internal world of the decision-maker and cannot be directly inferred by analyses of external constraints.

The trick is to translate this analytic shift to the internal world of the decision-maker into the context of collective action and institutional analysis, without abandoning the system-level conjecture that collective action is more likely when benefits outweigh transaction costs. To integrate the attitudinal model into the transaction cost framework, I argue institutional support is a function of subjective beliefs about attributes of the collective action arena related to the benefits and transaction costs of political contracting.[8] In other words, stakeholders use those beliefs that *reflect* benefits and transaction costs as cues for collective action decision-making. This leads to my first hypothesis about attitudinal support:

Hypothesis 1: Attitudinal support for estuary governance institutions increases with perceptions related to the benefits of collective action, and decreases with perceptions related to the transaction costs of collective action.

[8] Note that many economists might argue that measures of stakeholder perceptions are not direct measures of benefits or transaction costs, and that I am therefore not testing my theory. However, as Furubotn and Richter (1991) note, the measurement of transaction costs has always been problematic. I follow Williamson's (1985) indirect method of measuring transaction costs by assuming they are a function of the attributes of a particular transaction or institutional structure. The indirect method of measurement simply requires making assumptions about the relationship between measurable characteristics of the collective choice situation, in my case the attitudes of stakeholders, and the level of transaction costs. In my case, I am assuming that certain attitudes and beliefs increase or decrease in response to the benefits and transaction costs inherent in a particular estuary.

Several strands of research support my argument that people use beliefs fine-tuned to the critical parameters of a collective action problem as decision cues. Scholz (1998; see also Scholz and Lubell 1998a,b) proposes an "adaptive attitudes" model, which argues people use affect-laden political attitudes like trust and duty as heuristics for collective action decision-making. Scholz and Lubell (1998a) demonstrate how these adaptive political attitudes increase with the benefits and decrease with the costs of cooperation in the tax-paying arena. In other words, the attitudes instrumentally adjust to features of the collective choice situation—they "track" the critical features of the collective choice situation that affect benefits and transaction costs. Learning and evolutionary psychology provide a second a justification for the tracking capacity of adaptive political attitudes. Those individuals who learn or inherit belief-systems sensitive to the critical parameters of a collective choice situation have a higher probability of gaining the rewards of collective action, and therefore gain an evolutionary advantage.[9] The idea of policy learning proposed by the Sabatier and Jenkin-Smith's (1993) advocacy coalition framework can be conceptualized as the evolution of a belief system fine-tuned to the structure of a particular policy environment.

To make empirical predictions, the task of the analyst is to identify those attitudes and beliefs that are the most important reflections of benefits and transaction costs. The rest of this section describes beliefs about estuary conditions and the institutional context that are relevant to the benefits and transaction costs of estuary governance.

Beliefs about Benefits: Problem Severity and Conflict Resolution

The NEP program has documented an extensive list of environmental problems in estuaries (EPA Office of Water 1998), which I argue are similar to typical common-pool resource problems. The key question from the perspective of attitudinal support for estuary policies is stakeholder beliefs about problem severity. In general, people are not willing to support an institution designed to solve a collective action problem if they do not think there is a problem in the first place:

Hypothesis 1(a): Attitudinal support will be higher among stakeholders who believe the environmental problems in their estuary are severe.

In addition to solving environmental problems, the benefits of successful governance include resolving conflict between competing advocacy coalitions, where each advocacy coalition prefers the institutional arrangement that provides them the highest share of the gains from collective action. Libecap (1989, 13) notes in the context of contracting for property rights, that "to maintain claims to valuable assets or to wrest control from others through the use of force, competing claimants have incentive to divert labor and capital inputs from socially valued production to predatory and defensive activities." In environmental policy, the opportunity costs of legal and other forms of combat between competing advocacy coalitions are high; every dollar spent in the legal arena could be put towards acquisition of sensitive lands by environmental

[9] The evolution of adaptive belief-systems is an individual-level parallel to Alchian's (1950) argument about the evolution of institutional structures, where survival of the fittest favors efficient institutional forms. Over time then, people who are better able to formulate belief systems that accurately track the costs and benefits of a particular action with low cognitive processing costs will have a better chance of survival in whatever task environment is under consideration.

interests or improvements in production technology by economic interests (Weber 1998). Furthermore, once conflicts enter the legal arena, generalist judges with little expertise in environmental policy often decide them. The likelihood of a court decision that pleases both environmental and economic interests is thus fairly low. Hence, stakeholders are more likely to support estuary policies if they believe conflicts can be resolved within the structure of the collective choice arena:

Hypothesis 1(b): Attitudinal support will be higher among stakeholders who believe estuary policies do an adequate job of internal conflict resolution.

Beliefs about Transaction Costs: Scientific Knowledge, Problem Diffusion, and External Decisions

One of the main assumptions of neoinstitutional economics is that transaction costs are rooted in uncertainty, which in turn is related to the costliness of obtaining information about the attributes of goods being exchanged and the performance of agents. Complexity and information costs play a parallel role in the political market--uncertainty at any stage of the political contracting process increases the transaction costs of agreement (Heckathorn and Maser 1987). Libecap (1989) shows how consensus about the costs and benefits of institutional change is hampered by disagreements over the economic value of existing and proposed property rights arrangements. Information also plays a critical role in sustaining cooperation. Calvert (1995) demonstrates the sensitivity of cooperative and coordination equilibria to the availability of communication and the costs of information. Bendor (1987) shows the evolutionary advantage of reciprocal strategies is reduced by implementation errors, which could be attributed to incomplete information.

Information problems and uncertainty are substantial in the environmental policy arena. Stakeholders are uncertain about the causes, sources, and consequences of environmental problems, especially in ecosystems characterized by complex, interconnected natural processes. For this reason, scientific research from almost every discipline is a critical ingredient for successful policies. The NEP explicitly acknowledges the importance of science by integrating technical advisory committees into the Management Conference. These committees consist of university scientists and consultants who apply sophisticated techniques like species population simulations and hydrodynamic models to estuary problems. These studies not only help document the extent and causes of estuary problems, they also help stakeholders predict the future consequences of alternative management scenarios. The success of the NEP depends to a large extent on its ability to construct a scientific record that reduces the uncertainty associated with various policy alternatives. This leads to a third hypothesis about bounded rationality with relation to transaction costs:

Hypothesis 1(c): Attitudinal support will be higher among stakeholders who believe the amount of scientific knowledge about estuary problems is adequate.

The complexity of an environmental problem is often related to the diffusion of actors involved with accessing ecosystem resources. As I mentioned above, many estuary problems are the product of many small decisions spread across a wide geographic area, and identifying the marginal contribution of any single source is exceedingly difficult. Diffuse problems create

transaction costs in ways similar to how mobile fish populations increase the difficulties of fisheries governance (Schlaeger, Blomquist, and Tang 1994). Advocates of consensual institutions argue the NEP enjoys a comparative advantage in controlling diffuse problems because it uses incentives and educational programs to encourage cooperation among multiple individuals as opposed to coercion. Hence, stakeholders who believe problems are diffuse will view the NEP as a positive supplement to existing, adversarial governance arrangements. Conversely, people who believe problems are not diffuse may prefer the traditional structure. For example, some stakeholders believe all estuary problems are related to point source discharges from sewage treatment plants and factories, which could be efficiently controlled through existing permit systems. This suggests an interaction between the institutional context and beliefs about problem diffusion, which reflects the comparative advantage of consensual institutions:

Hypothesis 1(d): Attitudinal support will be higher among NEP stakeholders who believe estuary problems are diffuse, but lower among NEP stakeholders who belief estuary problems are not diffuse. Conversely, attitudinal support will be higher among non-NEP stakeholders who believe problems are not diffuse and lower among non-NEP stakeholders who believe problem are diffuse.

Finally, the transaction costs of governance are higher when stakeholders believe policy decisions relevant to the estuary are being made outside the estuary action arena. Rules made outside the estuary are more likely to be standardized and less likely to take into account the idiosyncrasies of the particular ecosystem, therefore creating uncertainty about their applicability to particular estuary situations. Local actors often believe they have superior knowledge about estuary problems in comparison to outsiders, and will resist outside decisions in which they do not participate (Ostrom 1990). Local actors not only include producer groups like fishers and agriculture, but also local government officials, regional environmental groups, and personnel from state and Federal agencies assigned to a particular location. The inclusive and specialized nature of the NEP is designed to include these actors in the collective choice process, in order to produce a specialized institution viewed as legitimate by those actors who are most affected. This leads to my final bounded rationality hypothesis:

Hypothesis 1(e): Attitudinal support will be higher among those actors who believe estuary decisions are being made within the local estuary action arena.

Fairness Evaluations

Lind and Tyler (1988) and Tyler (1990) argue persuasively that perceptions of distributive and procedural fairness are critical for citizen cooperation with laws and broader support for social and political institutions. Unfortunately, there is a good deal of uncertainty about the concepts of both distributive and procedural fairness. With respect to distributive fairness, Hardin (1980) argues that in cases where stakeholders receive different benefits from solving the collective action problem and also incur different costs of cooperation, there is no cost-sharing rule that represents a prominent solution to the fairness question.[10] A prominent

[10] Hardin (1980) considers four cost-sharing rules: equal cost sharing, proportional benefits taxation, marginal rate of substitution taxation, and proportional incremental benefits taxation. The problems of distributive fairness

solution is a unique cost-sharing scheme that all stakeholders mutually recognize as providing an equitable distribution of costs and benefits (Schelling 1960).

The meaning of procedural fairness is even less clear. Lind and Tyler (1988) note a variety of factors that affect citizen perceptions of procedural fairness, including control over the decision process, interest representation, and outcome satisfaction. The structure of estuary institutions makes it difficult to ascertain the values of these variables. Does the institution provide stakeholders with adequate control over the process, or do administrators or special interests control the agenda? Are all interests equally represented, or are some excluded or marginalized?

Regardless of which aspect of fairness stakeholders are considering, the critical question is who controls the process and outcome of the political contracting process (Thibaut and Walker 1975; Tyler 1990). If stakeholders believe a particular advocacy coalition has undue control over either aspect of the contracting process, they are less likely to believe it is fair. Perceptions of fairness reflect self-interest and are linked to stakeholders' overall evaluations of the benefits of collective action. Stakeholders' will believe the political contracting process is fair when they think they are receiving benefits proportional to their contribution. This leads to my second broad hypothesis:

Hypothesis 2: Stakeholders who believe estuary policies are fair will have higher levels of attitudinal support for the estuary policies.

Policy-Oriented Belief Systems

Up to this point of the analysis, I have examined beliefs that are directly related to the attributes of the collective dilemma and the institutional context. However, following Sabatier and Jenkin-Smith's Advocacy Coalition Framework (ACF), I argue stakeholder attitudes and beliefs are integrated into a structured set of abstract and concrete idea elements called a "policy-oriented belief system". Policy-oriented belief systems are hierarchically organized into three levels (Hurwitz and Peffley 1987). The first level consists of deep core beliefs, or "fundamental normative and ontological axioms"(Sabatier and Jenkins-Smith 1993:31). Deep core beliefs refer to socially constructed ideas about human nature (e.g. evil vs. socially redeemable), ultimate human values (e.g. freedom), and distributive justice. The second level consists of policy-core beliefs, which are fundamental policy positions developed within a specific policy domain, for example environmental or health policy (e.g., environment vs. economic development). Secondary beliefs form the third level of policy-oriented beliefs, and represent perceptions of specific external conditions and evaluative attitudes towards the policy instruments and institutions involved with a specific policy problem within a particular domain (e.g., should we update the discharge permit for sewage treatment plant X?). The beliefs about benefits and transaction costs discussed above constitute secondary beliefs.

Following Azjen and Fishbein (1980; see also Eagly and Chaiken 1993, Chapter 4), the ACF argues actors judge the desirability of particular actions in terms of both their expected utility and relationship to the broader core values of an individual's reference group. Translated into the context of institutions, I argue that stakeholders will have higher levels of attitudinal

---

become even more severe when utility is non-transferable (i.e., individual welfare cannot be measured using a common currency), as is the case with many environmental problems (e.g., business evaluates policy implications using monetary consequences, while environmentalists use difficult to measure non-monetary criteria).

support when their policy-core beliefs are congruent with the governing style of the institution in which they are participating.[11] By governing style, I mean specifically how the institution is characterized in terms of inclusion, coercion, and specialization. This leads to the following "congruence" hypothesis about the relationship between policy-core beliefs and the institutional context:

Hypothesis 3 (Congruence Hypothesis): Attitudinal support will be higher among stakeholders whose policy-core beliefs are congruent with the governing style of the operative institution in an estuary.

The congruence hypothesis suggests the possibility of interaction effects between the governing style of the operative institution and policy-core beliefs with respect to how each factor influences attitudinal support. The interaction can be looked at in two ways. First, the effect of the NEP on attitudinal support will be conditional on the congruence between policy-core beliefs and the governing style of the NEP. Second, the effects of policy-core beliefs on attitudinal support will be conditional on the institutional context. As I will show in the analysis, both ways of looking at the congruence hypothesis have intriguing implications.

Sabatier and his colleagues have identified several policy-core beliefs relevant to environmental policy; I will focus on three that frequently appear and hypothesize about how their relationship to attitudinal support might differ depending on the presence of the NEP. First, the most commonly analyzed scale is what Sabatier and Zafonte (1997) call the "neo-classical conservatism" scale, which focuses on the tensions between government regulations and private property rights in environmental policy.[12] This tension is highly salient to many economic groups, industries, and private landholders who argue that government regulations violate Constitutional protection of private rights (Kayden 1996).

Most analyses argue the threat to property rights embodied in environmental policies should reduce support for estuary policies among property-rights advocates. Indeed, I hypothesize that conservatives are less likely to support environmental policies in non-NEP estuaries. But one of the hallmarks of the NEP is the use of incentives to increase voluntary compliance--carrots instead of sticks. As part of the broader movement to reinvent and decentralize government, the NEP is supposed to be user-friendly and bring businesses to the decision-making table. Thus, contrary to traditional analyses, I expect property rights advocates to actually express higher levels of support for the NEP because the governing style of consensual institutions is more congruent with their policy-core beliefs.

The second most commonly analyzed policy-core value is environmentalism. Sabatier and Zafonte (1997) find two measures of environmentalism are positively related to support for

[11] This hypothesis extends to deep-core as well as policy-core values. I focus on policy-core values because that is the level of values most likely captured by our survey.

[12] Whether or not this belief is classified as a "deep core" or "policy-core" value depends on which writing the concept appears in. In older works like Sabatier and Jenkins-Smith (1993), neo-classical conservatism is a policy-core belief associated with the proper role of governments versus markets in allocating natural resources. In more recent works, however, neo-classical conservatism is a more general deep-core belief that can span multiple policy areas (Sabatier and Zafonte 1997; Zafonte and Sabatier 1998). For my analysis, I will refer to "neo-classical conservatism" as a policy-core belief that applies more narrowly to the domain of environmental policy. This is especially justified because the survey questions I use to measure the belief are framed in terms of environmental policy.

San Francisco Bay-Delta protection policies. However, many environmentalists dislike adversarial policies at the ecosystem level because they fail to take into account ecological relationships, while praising the NEP for its ecosystem management philosophy. Thus, I expect the NEP to have a positive effect on attitudinal support among environmentalists and a negative effect among non-environmentalists. Conversely, I expect environmentalism to negatively affect attitudinal support within non-NEP estuaries, and have a positive effect within NEP estuaries. Before moving on, notice the combined importance of the role of neo-classical conservatism and environmentalism in relation to NEP support. The general focus of the ACF on conflict would predict opposing directions for these two core beliefs. That is because these core beliefs are generally diametrically opposed in adversarial institutions. Within the NEP, however, environmentalism and conservatism may work in the same direction because the inclusive nature of consensual institutions represents a collective choice mechanism that bridges traditional lines of conflict.

A third important belief concerns the role of public participation in the policy process, which is directly relevant to the inclusiveness of consensual institutions. Many scholars reject the "managerial discourse" of the Progressive Era, which argues technically complex policy decisions like those in environmental policy should be made by rational experts (Williams and Matheny 1995). Instead, these scholars argue the key to solving environmental problems is to merge the managerial discourse with a communitarian discourse focusing on the importance of building support among citizens and other local actors. The inclusive nature of the NEP implicitly accepts the idea of community building as a necessary component of estuary politics, because solving diffuse environmental problems requires local participation. Hence, I argue the NEP will have a positive effect among people who believe environmental policy should be inclusive, and a negative effect among those who subscribe to an exclusive model. Conversely, the policy-core belief of inclusiveness should have a positive effect on attitudinal support within the NEP and negative effect outside the NEP.

Exposure to Social Capital

The final component of the attitudinal model considers stakeholders' exposure to social capital within the context of the estuary action arena. Following Putnam (1993) and Coleman (1990), I argue social capital in form of norms of reciprocity, networks of civic engagement, and trust between stakeholders is a critical resource for building cooperation. From the transaction cost perspective, social capital decreases the costs of monitoring and enforcing cooperative agreements. Generalized norms of reciprocity and trust create expectations of cooperation, and networks of civic engagement facilitate the spread of information about the behavior of others.

The Advocacy Coalition Framework has developed the idea of networks to the greatest extent within the policy literature. Within a particular action arena, networks of social relationships develop between stakeholders that share similar belief systems. By networks of social relationships I mean patterns of interpersonal interaction and social exchange between individual stakeholders. Heclo (1978) calls these networks of actors "issue networks"[13]. The focus on issue networks reflects the recent integration of Granovetter's (1985) principle of "embeddedness" into theories of economic behavior. Granovetter criticizes the atomized actors

[13] My usage of issue networks varies somewhat from Heclo's (1978) original usage, which is very similar to the term advocacy coalition. As mentioned earlier, I use issue networks to very specifically refer to concrete social relationships between stakeholders.

of both neoclassical and neoinstitutional economics as unrealistic. Instead, actors are embedded in a network of concrete personal relations, which exert an independent influence on individual behavior and belief-systems (Coleman 1990). Granovetter focuses especially on the role of networks in "generating trust, establishing expectations, and in creating and enforcing norms" that facilitate economic transactions.

Extending this reasoning, I argue that issue networks are an important source of social capital in the policy arena, which facilitates the success of estuary policies in three ways. First, issue networks create "shadow communities" of stakeholders with common goals that bridge administrative, geographic, and political boundaries (John 1994). Second, issue networks facilitate the transmission of information between these stakeholders, and are used instrumentally by stakeholders to solve problems and achieve goals (Coleman 1990; Lin 1982). Third, issue networks engender the norms of reciprocity and trust that are essential to the smooth functioning of democratic governance (Putnam 1993). The social networks in which stakeholders are embedded thus exert independent influences on attitudinal support for consensual institutions.

In addition to social networks, a range of public entrepreneurs may also populate the social context of the estuary.[14] In private markets, entrepreneurs are individuals who engage in acts of creative discovery, reorganizing factors of production into more efficient configurations and reaping the subsequent increase in profits (Casson 1982; Kirzner 1985; Ricketts 1987; Schneider and Teske 1995). Political entrepreneurs perform similar functions in estuary politics. Existing institutions contain a range of policy tools that are applied in an uncoordinated manner; that is one of the reasons traditional policies fail at the ecosystem level. These failures create a niche for public entrepreneurs who can focus existing resources on a common problem. In their study of public entrepreneurs in local government, Schneider and Teske (1995) search for single individuals in local governments who are pushing policy innovations. Leadership in a particular estuary, however, often comes from multiple sources. Many political entrepreneurs are agency officials who step outside of their traditional job description to reach out to other agencies and citizen groups. Leaders of local environmental groups that have long-standing interests in estuary management are also entrepreneurs, as well as business leaders wary of impending coercive regulations. Of particular importance are the leadership capabilities of NEP directors and staff, who have the difficult job of managing the planning process. Regardless of the structural location of entrepreneurs, stakeholders who are exposed to effective leadership are more likely to support estuary policies.

Hence, the social capital hypothesis is stated as follows:

Hypothesis 4: Attitudinal support will be higher among stakeholders with access to social capital in the form of issue networks, trust, and political entrepreneurs.

[14] Most scholars maintain a conceptual distinction between political entrepreneurs and other forms of social capital, and I am not attempting to make a forceful argument about the appropriateness of this distinction. The main reason for lumping political entrepreneurs with social capital is organizational; discussing the fine points of political entrepreneurs is beyond the scope of this paper. However, I would argue that traditional forms of social capital and political entrepreneurs are both parts of the social context in which stakeholders are embedded, and therefore should be distinguished from the other attitudes I consider.

Empirical Tests of Attitudinal Support

The remainder of the paper is devoted to testing the propositions of the attitudinal support model. In this section I will discuss the survey design, the measurement of the dependent and independent variables, and the statistical analyses.

Survey Design

The survey data comes from respondents in 20 NEP estuaries and 10 non-NEP estuaries. The NEP data combines a mail survey sent to a sample of 1668 estuary stakeholders, and a follow-up telephone survey of 796 mail survey non-respondents from 12 of the original 20 NEP sites. The mail survey generated 501 usable responses (30% response rate) for a response rate of 30% and the follow-up telephone survey generated 405 responses (50% response rate), for a combined mail/phone total of 906 NEP respondents (54% response rate for initial sample of 1668).[15] The non-NEP data consists of interviews from a sample of 466 estuary stakeholders, which generated 312 usable interviews for a response rate of 67%.[16]

I generated the NEP sample universe by combining lists of contacts provided by EPA's Office of Wetlands, Oceans, and Watersheds with lists of stakeholders provided by individual NEP directors. The NEP stakeholders were generally individuals directly involved with the Management Conference. Generating contacts in non-NEP estuaries was considerably more difficult because there were no existing lists of stakeholders. Hence, I generated my own lists by searching the Internet for active projects and interest groups in the particular estuary and using the National Wildlife Federation's *1998 Conservation Directory* to find additional stakeholders. I then called the initial list of contacts generated by the search process and asked them to identify additional stakeholders active in the estuary, for a total baseline sample population of 340 contacts. The telephone survey company then used a snowball procedure, which asked the original 340 contacts for more names, to generate 126 more potential respondents, for a total of 446 potential non-NEP respondents.

While strictly speaking this is a non-probability sample, the statistical tests are suited for inferences about the population of "active policy stakeholders" in each particular estuary. To demonstrate the survey respondents are representative of a wide range of estuary stakeholders, Table 2 presents a cross-tabulation of respondents according to stakeholder types and location in the federal system. As can be seen, 56% of the sample are government representatives (mostly from administrative agencies), 12% environmental groups, 10% business groups, 7% research, and 16% other types such as citizens-at-large and consultants.[17] Clearly, estuary politics is

---

[15] The combination of mail and telephone surveys raises the possibility of instrumentation bias. Fortunately, the means for most of the variables are no different for telephone and mail respondents, so there is little evidence of instrumentation bias. The one variable that did exhibit a problem is the *allies* network question; mail respondents were much more likely to mention allies than phone respondents. Perhaps phone respondents feel uncomfortable providing contact information via telephone. This problem throws some doubt on the validity of the hypothesis tests regarding policy networks.

[16] There was some variance in response rates across the 20 NEP estuaries. For the mail survey, the response rate ranged from 17% in Peconic Bays, NY to 41% in Narragansett Bay, RI. For the telephone survey, the response rate ranged from X to X in NEP estuaries and X to X in non-NEP estuaries. Overall, the response rate compares favorably to surveys of watershed partnerships conducted by other researchers: 51% by Wooley and McGinnis (1999), 41% by Johnson and Cambell (1999), and 42% by Cook (2000).

[17] The budget for the telephone survey required me to collapse the number of categories used to identify stakeholder types and position within the federal system. Results from the NEP mail survey present a more detailed picture: 60% government officials (mostly from administrative agencies), 11% environmental groups, 7% marine

heavily devoted to intergovernmental coordination, but interest groups from both sides of the environment/economy debate and researchers are involved as well. The small proportion of non-governmental actors does not mean they are unimportant; although they constitute a minority of the sample, many individuals represent much larger groups.

[Table 2 about here]

Estuary politics also involves stakeholders from all Federal levels. Overall, state (33%) and local (26%) stakeholders are the most active players. This makes sense given the central role of state agencies in the NEP process, and the overall role of states in protecting ecosystems within their boundaries. Similarly, local government actors always play an important role in estuary politics because they control land-use, are usually the main operators of drinking, storm, and wastewater treatment facilities, and are always on the lookout for environmental funding from higher levels of the federal system. However, the Federal government is also represented, reflecting the fact that the NEP is an EPA initiative, and the many different Federal agencies with jurisdiction over different aspects of estuarine systems. Environmental and business groups are also likely to come from lower levels of the Federal system because estuary politics involve primarily local issues.

Measuring Attitudinal Support

The main dependent variable in the analysis is attitudinal support for estuary policies. I use two survey questions to measure different aspects of attitudinal support: overall policy effectiveness and perceived levels of cooperation (see Appendix for question wording). The *effectiveness* question focuses on the ability of current estuary policies to actually improve environmental conditions. In terms of policy stages, *effectiveness* is the best measure of stakeholders' beliefs about policy outcomes.

The *cooperation* question measures the perceived level of teamwork and communication between estuary stakeholders. In contrast to the *effectiveness* measure, *cooperation* focuses on the process of policymaking and the development of social interaction between stakeholders. In general, the most visible short-term results of watershed partnerships are changes in the nature of stakeholder relationships; actual changes in policy outputs and outcomes are a longer-term and less certain outcome. Hence, from a conceptual standpoint it is important to analyze these variables separately. Empirically, however, the variables are positively correlated (correlation=.42) and probably related to a common underlying dimension of attitudinal support. Taken together then, the analysis is looking at two aspects of the broader idea of attitudinal support that I have argued is a necessary component of successful governance institutions.[18]

---

recreation/fisheries/forestry/agriculture, 5% business and real estate, 9.5% university/education, and 7.5% other. For levels of the federal system, there were 17% national, 10% subnational, 28% state, 17% substate, and 28% local (county, municipality, special district). Similarly, there is little variation in response rate across stakeholder type, with the exception of environmental groups, who are slightly more likely to respond. Overall, the more detailed data confirms my evaluation that the sample population is a good representation of the stakeholders active in estuary policy-making. Whether or not the representation of actor types is "fair" from a normative standpoint is beyond the scope of this paper, although the approximately equal balance of environmental groups and business groups seems promising.

[18] One immediate criticism of my measures of attitudinal support is they are not capturing the "right" attitudes. Again, the costs of the telephone survey required me to reduce the number of questions used to measure attitudinal support. The mail survey contained multiple measures of both policy satisfaction and perceived cooperation, allowing me to create reliable scales. In addition to problem improvement, the *satisfy* scale included questions about general policy satisfaction and likelihood of policy implementation (Cronbach's alpha= .82). In addition to

Independent Variables

During this discussion, I will indicate the hypothesized direction of influence of each independent variable in parentheses. Stakeholder beliefs about the benefits of collective action are measured by perceptions of problem *severity* (+) and the *conflict resolution* (+) capabilities of estuary governance institutions. Beliefs about transaction costs are measured using questions regarding the adequacy of *scientific knowledge* (+), *problem diffusion* (+ in NEP, - in non-NEP) in terms of the number of people involved in the problem, and the extent to which policy decisions are made *external* to the estuary. *Procedural fairness* (+) is measured with a 2-item scale (Cronbach's alpha= .76) consisting of stakeholders' perceptions of the overall fairness of the decision-making process to all stakeholders, and the adequacy of representation for the individual respondent. *Administrative* (-) and *economic domination* (-) measure perceptions of whether or not administrative experts or economic interest groups control the policy decision process. Policy-core values are captured by three variables: *environmentalism* (+ NEP, - non-NEP), *government role* (2-item scale, Cronbach's alpha= .70; +NEP, -non-NEP), and *inclusiveness* (+NEP, -non-NEP).

Stakeholders' exposure to social capital is measured with a combination of attitudinal and social network questions. *Trust* (+), the attitudinal aspect of social capital that is associated with issue networks, is measured by asking respondents whether or not they trust other stakeholders to fulfill their commitments made in the context of the management plan. In the network battery, respondents can report the presence of a political entrepreneur and a maximum of three "allies". *Entrepreneur* (+) is coded as a dummy variable equal to 1 if the stakeholder mentioned the presence of a stakeholder who is displaying effective leadership. *Allies* (+) is a raw count of the number of allies mentioned by a respondent, providing one measure of the size of issue networks.

Lastly, given the number of government actors in the sample, I include a dummy variable to separate the effects for *government actors* (+). Government actors, especially administrative officials, may express higher levels of attitudinal support because they have a vested professional and political interest in keeping environmental issues on the policy agenda. Indeed, the NEP may have less of an effect on government officials if they think of it as one of many possible tools for securing budgetary resources. On the other hand, the NEP may have a larger effect on non-governmental actors because its inclusive governing style is designed to bring non-governmental actors into a collective choice arena formerly dominated by administrative officials. The change in governing style might be more obvious to political actors who had been attempting to gain access to the estuary decision-making arena.

Methodology: Missing Data Imputation and Treatment Effects Model

Two important methodological issues might bias hypothesis testing. First, item non-response common in surveys produced missing data. The average rate of missing data for all variables was 4.4%, and ranged from a high of 10% for the *conflict resolution* variable to 2% for *cooperation*. To avoid the "evils" of listwise deletion (King et al. 1999), I replaced the missing data using Schafer's (1999) NORM software for multiple imputation of missing data under a normal model. The multiple imputation procedure assumes all data in the imputation model is

---

teamwork, the *cooperate* scale included questions about changing levels of cooperation, perceptions of consensus, and communication among stakeholders (Cronbach's alpha= .74). The concept of attitudinal support clearly captures many attitudes important to policy scholars.

missing at random and jointly normally distributed. Based on these assumptions, the procedure uses iterative Markov Chain Monte Carlo procedures to produce multiple data sets, where missing data is replaced by simulated imputations. I included all attitudinal questions in the imputation model, which converged after 55 iterations and produced five imputed datasets. All statistical results reported in this paper combine the estimates from each of the imputed data sets into a single result using Rubin's (1987) rules for scalar estimands, which take uncertainty into account by using the variance both within and between imputed datasets to compute standard errors for the model coefficients.

Second, non-random NEP designation process raises a causality question: Does the NEP facilitate collective action, or does collective action lead to the NEP designation? Because the NEP designation requires a state-level nomination and federal approval, there is reason to believe the conditions for successful collective action, such as attitudinal support, are already in place before the NEP designation. On the other hand, the effects of non-random selection might be small because the nomination process generally includes a smaller subset of stakeholders. The inclusion of a broad range of stakeholders does not really take place until the Management Conference is convened and the planning process begins.

If non-random selection was not an issue, I could estimate the influence of the NEP using the following outcome equation:

$$Attitudinal\ Support_i = \hat{\mathbf{a}}'\mathbf{x}_i + dNEP_i + e_i$$

However, if attitudinal support were systematically higher in estuaries prior to their selection into the NEP, a positive slope coefficient (δ) for the NEP dummy would overestimate the influence of the NEP (Achen 1986). To control for the potential selection bias, I estimate a treatment effects model described by Greene (2000, see also Maddala 1983), which models the NEP dummy variable as endogenous. The presence of the NEP is modeled as a probit selection equation, where the NEP is observed if some underlying latent variable representing the capacity for collective action (C_i) is greater than zero:

$$C_i^* = \tilde{\mathbf{a}}'\mathbf{w}_i + u_i$$

$$NEP_i = 1 \text{ if } C_i^* > 0, 0 \text{ otherwise}$$

When ε_i and u_i are correlated (ρ in the results table), there is a spurious relationship between attitudinal support and the NEP due to unmeasured factors that predict both the level of attitudinal support and the presence of the NEP. To remedy the problem, the treatment effects model includes the appropriate selectivity correction (λ_i) term for both NEP and non-NEP participants. I use maximum likelihood to simultaneously estimate the coefficients of both the outcome and the selection equation.

The independent variables in the outcome equation represent tests of the hypothesis of the attitudinal model at the individual level, as outlined earlier. The variables in the selection equation are at the estuary level; each individual respondent is associated with a particular set of estuary characteristics. The selection equation includes independent variables found by Lubell et al. (1999) to be predictors of the presence of watershed partnerships: 1980 population density (per 1000 miles^2), total area (1000 miles^2), % farmland, % rangeland, and % agricultural land. In addition, three variables represent attitudes that predict attitudinal support and might also affect the presence of the NEP: mean level of trust, mean level of scientific knowledge, and mean level

of external decision-making.[19] Although the variables in the selection equation have substantive meaning, they primarily control for non-random selection.

Results: Predicting Attitudinal Support

Tables 3 and 4 present treatment effects models for *effectiveness* and *cooperation*, respectively. The second column in each table reports the results including interactions between policy beliefs and the NEP, and the third column excludes the NEP x Policy-belief interactions. Unless otherwise noted, I will confine my discussion of the results to the models that include the NEP x Policy-belief interactions because they represent direct tests of the congruence hypothesis (Hypothesis 3). The coefficients for the probit selection equation are presented in the bottom section of each table. All measures of beliefs and attitudes, including the dependent variables, are linearly transformed to the [0,1] range. Hence, when multiplied by 100, the coefficients for the belief variables in the outcome equation are interpreted as the percentage point change in the mean of the attitudinal support measures moving across the entire range of the explanatory variable.

[Tables 3 and 4 about here]

Hypothesis 1 regarding perceptions of benefits and transaction costs receives support in both models. *Conflict resolution* appears to be the most important benefit of collective action in estuaries, increasing *effectiveness* by 6% points, although the effect is not significant for perceptions of *cooperation*. The ability to solve environmental problems is clearly linked to the capacity of the estuary institutions to resolve conflict and alleviate policy gridlock. Problem severity does not have a significant effect in any model. This null finding is particularly interesting given the environmental policy literature's emphasis on the relationship between perceptions of problem severity and general support for environmental policy (Ellis and Thompson 1997; Mohai 1985; Samdahl and Robertson 1989). When asking political actors to assess environmental policy institutions, it appears conflict resolution is receives a higher priority than perceptions of environmental quality.

For both measures of attitudinal support, the most important beliefs relating to transaction costs are the quality of scientific knowledge and external decision-making. Moving across the range of the scientific knowledge variable leads to a large 17% point increase in *effectiveness*, and smaller 7% point increase in perceptions of *cooperation*. Estuary stakeholders strongly believe good science is necessary to improving environmental outcomes, and science also plays a role in facilitating cooperation among stakeholders. Similarly, perceptions of external decisions increase *effectiveness* by 9% points and *cooperation* by 4% points. Decisions made outside the estuary increase the transaction costs of solving specialized estuary problems, and also decrease cooperation among stakeholders, who might consider external decision-makers a threat to the credibility of local agreements. Lastly, perceptions of problem diffusion have a significant effect on both *effectiveness* and *cooperation*, although the significant NEP x Problem diffusion interaction shows the effect of problem diffusion is conditional on the presence of the NEP. I will examine these conditional effects in more detail in the next section.

Fairness evaluations have the largest effect on attitudinal support. Perceptions of procedural fairness increase *effectiveness* by 24% points and *cooperation* by 44% points. Keeping in mind how the measure of procedural fairness is related to self-interest, stakeholders obviously place a high value on the adequacy of their representation in the decision-making

[19] Averages computed using all respondents in a particular estuary.

process. This is because gaining access to the benefits of collective action requires representation in the decision-making process. Similarly, stakeholders who believe business dominates estuary decision-making have a lower level of attitudinal support, although the effect of business domination is much smaller (6.6% point decrease for *effectiveness* and 5.1% point decrease for *cooperation)* than overall procedural fairness.

Exposure to social capital, in particular trust, also increases attitudinal support. Moving across the range of the trust variable increases *effectiveness* by 12% points and *cooperation* by 24% points. Exposure to social capital appears to have a greater effect on perceptions of cooperation, as corroborated by the larger trust coefficient and the significant effect of leader presence (2.9% point increase) on cooperation, but not on effectiveness. Number of allies mentioned has no effect on either measure, perhaps reflecting difficulties in measuring networks with the telephone instrument.[20] The strong effect of trust on attitudinal support reflects its theoretical importance as an aspect of the social environment that decreases the transaction costs of collective action.

Notice the interesting asymmetry between the cooperation and effectiveness measures of attitudinal support. Overall, beliefs about transaction costs related to the structural/technical aspects of the action arena, like scientific knowledge and external decision-making, have a stronger effect on satisfaction with policy outcomes. Conversely, measures related to the social aspects of stakeholder interactions, like fairness, trust, and leadership, have a stronger influence on cooperation. Perhaps this reflects the fact that environmental outcomes are more immediately related to the technical aspects of decision-making, while stakeholder cooperation implicates the human dimension of policy-making. The social and technical dimensions of collective action are both necessary to the overall success of environmental policy, but are sensitive to different components of the action arena.

Do Institutions Matter? Policy Beliefs and the NEP

The baseline hypothesis of the transaction cost approach suggests the NEP should directly increase attitudinal support because consensual institutions reduce the transaction costs of estuary governance relative to adversarial institutions. The positive and significant coefficients on the NEP dummy variable reported in the third columns (i.e., the models without the belief interactions) of Tables 3 and 4 support this hypothesis. However, the significant interaction with the government actor indicator shows the effect of the NEP on attitudinal support is different for governmental and non-governmental actors. For non-governmental actors, the NEP increases *effectiveness* by 10% points, with a smaller effect of 6% points on *cooperation*. Being a government actor moderates the effect of the NEP to 4% points for *effectiveness* and 3% points for *cooperation*. Overall, the influence of the NEP on attitudinal support is higher among non-governmental actors, highlighting how the NEP expands the boundaries of the collective choice arena. The NEP represents an improvement for government actors, but they probably make a smaller distinction between the NEP and the host of other environmental policies they are involved in as part of their overall job profiles.

However, Hypothesis 1(d) and especially the congruence hypothesis (Hypothesis 3) suggest the influence of the NEP on attitudinal support is conditional on stakeholders' policy

[20] Lubell (1999) found a significant positive effect of number of allies on attitudinal support when looking only at the NEP mail respondents.

beliefs, and conversely the effects of policy beliefs are conditional on the institutional context.[21] Hence, because government actors also have policy beliefs, the story in the previous paragraph is too simple.

The coefficient estimates for the interaction terms in the *effectiveness* model (Table 3, column 2) provide strong support for the congruence hypothesis and problem diffusion hypothesis. The interaction terms for environmentalism, inclusiveness, and problem diffusion are all positive and significant. As predicted by Hypothesis 1(d), the NEP has a more positive effect on attitudinal support among stakeholders who believe environmental problems are diffuse. The NEP*Problem Diffusion interaction is also significant in the *cooperation* model. This robust finding reflects the comparative advantage of the NEP over adversarial institutions for dealing with the complex problems of ecosystem governance. As predicted by the congruence hypothesis, the effect of the NEP on policy *effectiveness* is larger among environmentalists and stakeholders who support inclusive environmental decision-making. However, policy-core beliefs are not significant in the cooperation model, which is interesting given the importance of policy-core beliefs for shaping secondary beliefs in uncertain decision contexts (Lubell 2000). Perceived policy effectiveness is strongly correlated with beliefs about environmental outcomes, which intuition suggests are more uncertain (especially given the time frame of ecological processes) than beliefs about cooperation derived directly from stakeholders' immediate social experience.

To better understand the conditional effects of the NEP institution, Figure 1 graphs the marginal effects of the NEP on perceived policy *effectiveness* as a function of environmentalism, inclusiveness, and problem diffusion.[22] The x-axis shows the marginal effects moving across the range of the environmentalism scale, the solid and dashed lines represent the maximum and minimum of the problem diffusion scale respectively, and the squares and triangles represent the maximum and minimum of the inclusiveness scale respectively. For example, the NEP has the largest positive effect (24% points) when environmentalism, problem diffusion, and inclusiveness are at their maximums. In other words, the NEP increases attitudinal support among those stakeholders whose policy beliefs are most congruent with the governing style of the NEP. Conversely, the NEP has a large negative effect on attitudinal support (-33% points) among those stakeholders whose policy beliefs are not congruent with the NEP: non-environmentalists who believe problems are caused by a small number of actors and environmental decision-making should be exclusive.

Figure 1 suggests two other important substantive points. First, environmentalists are not unwavering supporters of the NEP. The NEP actually decreases support among environmentalists who believe public participation should be minimized and problems are concentrated among a few actors. Environmentalists of this type equate consensus building with compromise to economic development interests, and prefer tougher implementation of existing environmental laws through the adversarial process. Second, the interaction effect is largest for problem diffusion (26% points, the distance between the solid and dashed lines), followed

[21] Note the insignificance of policy-core beliefs and problem diffusion without the interaction terms in column 3 of Table 3. Without the interaction terms, the negative and positive effects of these beliefs cancel out, leading to the erroneous conclusion that policy-core beliefs and secondary beliefs about problem diffusion have no effect on attitudinal support.

[22] The estimates were derived by differentiating the results of the treatment effects model in Table 2 with respect to the NEP dummy variable, holding government role at the mean level in the sample and collapsing across types of government actors.

closely by inclusiveness (17%, the distance between the square and triangle lines), and smaller for environmentalism (13%, the slope of the lines). Hence, the most important effect is related to the comparative advantage of the NEP for reducing the transaction costs of governing diffuse ecosystem problems, while the congruence between the inclusiveness of the NEP and policy-core beliefs is more important than a general environmental orientation.

Figure 2 presents the interaction effects from the reverse perspective, and graphs the marginal effects of policy beliefs and actor type conditional on institutional context. As can be clearly seen, the relationship between policy core beliefs changes drastically in different institutional contexts, reinforcing the congruence hypothesis. In non-NEP estuaries, inclusiveness, environmentalism, and problem diffusion all have a negative effect on attitudinal support. Environmentalists who are worried about ecosystem-scale problems and who believe in inclusive decision-making are unhappy in the context of adversarial institutions. On the other hand, these same values lead to increasing levels of support in the context of the NEP. The effects of stakeholders' values on attitudinal support depend on the type of institution they are being asked to evaluate. Furthermore, the difference between governmental and non-governmental actors is reduced within the NEP. This is a sign that the consensus building process is bridging differences between governmental and non-governmental actors in terms of their belief-systems, which is exactly what proponents of the NEP claim should happen.

Indirect Effects of the NEP

In addition to directly increasing attitudinal support, the NEP may indirectly affect attitudinal support by changing beliefs related to the benefits and transaction costs of collective action. EPA's stated goals for the NEP include changing estuary policies in ways that will theoretically reduce the transaction costs of collective choice. At the technical level, the NEP encourages applied scientific research on specific estuary problems and the development of management plans with specialized sets of rules and projects. At the political level, consensual institutions are thought to improve the fairness of collective decision-making, resolve conflict, and increase trust among stakeholders with many different interests and values. As I demonstrated above, stakeholders' beliefs about these same aspects of the estuary action arena are important predictors of attitudinal support, and hence may indirectly register the effects of institutional change.

To assess this possibility, Table 5 presents the results of bivariate regressions of those beliefs found to be important predictors of attitudinal support in the previous analysis, using the NEP dummy as the exclusive explanatory variable.[23] The second column in Table 5 shows the regression coefficients, while the third and fourth columns show the indirect effects of the NEP on *satisfy* and *cooperate*, respectively, as filtered through different elements of the stakeholders' belief systems on which the NEP has a significant influence.[24]

[Table 5 about here]

Table 5 suggests the NEP improves several of the beliefs that reflect benefits and transaction costs. In comparison to non-NEP stakeholders, NEP stakeholders think the policies of consensual institutions are better at conflict resolution, are fairer, increase scientific

[23] I assume the NEP is exogenous in the bivariate regressions. The lack of evidence for selection bias effects in the treatment effects models provides the justification for this assumption.

[24] The indirect effects are found by multiplying the coefficient for each bivariate regression times the coefficient for that particular belief in the treatment effects model.

knowledge, and foster higher levels of stakeholder trust. Interestingly, perceptions of problem diffusion also increase, which is probably due to the NEP's emphasis on educating people about non-point source pollution. Similar to the treatment effects models, the NEP has the largest direct effects on conflict resolution and fairness. This reinforces my earlier point about how the NEP's influence on factors related to political decision-making are equally important if not more important than factors related to the technical characteristics of environmental problems.

The combined indirect effects of the NEP are almost equal in magnitude to the largest direct effects discussed above. Taken together, the NEP has a total indirect effect of 23% points on *effectiveness* and 15% points on perceived *cooperation*. The most important indirect effect is on beliefs about problem diffusion. This is due to the interaction between problem diffusion and the NEP dummy in the treatment effects model, which boosts the indirect effect of changes in beliefs about problem diffusion. People who think problems are diffuse like the NEP better, so the NEP can actually increase attitudinal support by convincing people everybody in the estuary needs to change to solve environmental problems. Hence, education about non-point source pollution can actually serve as a strategic policy tool for increasing political support for the NEP among estuary stakeholders. The importance of fairness evaluations also shows up in the relatively large indirect effects, especially on *cooperation*. Overall, these analyses suggest the NEP not only directly increases attitudinal support among those stakeholders with congruent belief systems, but also indirectly increases attitudinal support by changing beliefs regarding the benefits and transaction costs of collective action.

Conclusion

The findings in this paper advance the study of collective action and governance in three ways. First, I demonstrate the utility of a transaction cost approach to governance by showing how policy stakeholders' beliefs about the benefits and costs of collective action are related to overall levels of attitudinal support. For environmental governance, the most important belief about benefits is the ability of the collective choice institution to resolve stakeholder conflict, and the most important belief reflecting transaction costs is the ability to effectively integrate science into the policy decisions. Fairness considerations are also critical for attitudinal support; stakeholders who believe their interests are fairly represented have confidence they will receive some benefits of collective action. These findings emphasize the political aspects of consensual institutions. Ecosystem management within the NEP is not just about changing the technical and scientific basis for policy decisions, it is about changing the governing style of collective choice institutions to be more inclusive, voluntary, and specialized.

Second, I show how institutions matter with respect to their influence on stakeholders' subjective belief systems. Consistent with the hypothesis that consensual institutions reduce the transaction costs of estuary governance, the NEP appears to directly increase levels of attitudinal support, especially among non-governmental actors who are enjoying a more substantial role in environmental decision-making than in adversarial institutions. More interesting, however, is how the effects of the NEP are conditional on the basic policy-core beliefs of stakeholders. The NEP has a positive effect on stakeholders whose policy-core beliefs are congruent with the governing style of consensual institutions and the environmental goals of the NEP, but has a negative effect on those stakeholders who prefer the governance style of adversarial institutions. From the reverse perspective, the relationship between the policy-core and secondary elements of stakeholders' beliefs systems is conditional on the institutional context in which they

participate. In other words, beliefs systems are not independent of the social and institutional context in which political actors are making decisions. Institutions evolve to reflect a certain pattern of policy-core beliefs, and actors are unhappy when institutional changes violate those beliefs.

Furthermore, the NEP changes beliefs related to the benefits and transaction costs of collective action, and thus indirectly affects attitudinal support. To the extent these beliefs accurately track the benefits and transaction costs of collective action, the positive change in these beliefs provides additional evidence that the NEP is in fact reducing transaction costs. While this paper does not objectively measure transaction costs, governing institutions that reduce transaction costs by providing a good fit to the attributes of ecosystem collective action problems should change stakeholders' beliefs in the manner I observe.

Finally, the importance of the belief system-institution interactions and indirect effects points to the utility of merging the transaction cost approach's focus on the "objective" characteristics of economic and political situations with a focus on political actors' subjective representation of the task environment and the structure of belief systems. Due to bounded rationality, peoples' belief systems do not always correspond in obvious ways to political and economic analyses of the structure of the policy environment. However, people's beliefs about the task environment are the proximate causes of political behavior. At the very least, this discrepancy increases the noisiness of empirical models based on the rational actor assumption, and in some cases leads to political behavior that appears irrational from the analyst's perspective. Hence, further studies should explore the relationships between the structural aspects of a political action arena and the belief systems of political actors, in an effort to understand how the heuristics people use translate information from the environment into specific attitudes and behaviors.

References

Achen, Christopher H. 1996. *The Statistical Analysis of Quasi-Experiments*. Berkeley, CA: University of California Press.

Alchian, Armen A. 1950. "Uncertainty, Evolution, and Economic Theory." *Journal of Political Economy* 58: 211-221.

Alchian, Armen A., and Harold Demsetz. 1973. "Property Rights Paradigm." *Journal of Economic History* 33: 16-27.

Azjen, Icek, and Martin Fishbien. 1980. *Understanding Attitudes and Predicting Social Behavior*. Englewood Cliffs, NJ: Prentice-Hall.

Bendor, Jonathon. 1987. "In Good Times and Bad—Reciprocity in an Uncertain World." *American Journal of Political Science* 31: 531-558.

Calvert, Randall L. 1995. "The Rational Choice Theory of Social Institutions: Cooperation, Coordination, and Communication." In *Modern Political Economy: Old Topics, New Directions*, ed. Jeffrey S. Banks and Eric A. Hanushek. New York, NY: Cambridge University Press.

Casson, Mark. 1982. *The Entrepreneur: An Economic Theory*. Totowa, NJ: Barnes and Noble Books.

Cheung, Steven N.S. 1970. "The Structure of a Contract and the Theory of a Non-Exclusive Resource." *Journal of Law and Economics 3*: 1-44.

Coleman, James. 1990. *Foundations of Social Theory*. Cambridge, MA: Harvard University Press.

Cornes, Richard, and Todd Sandler. 1996. *The Theory of Externalities, Public Goods, and Club Goods 2nd ed*. New York, NY: Cambridge University Press.

Costanza, Robert, Ralph d'Arge, Rodolf de Groot, Stephen Farber, Monica Grasso, Bruce Hannon, Karin Limburg, Shahid Naeem, Robert V. O'Neill, Jose Paruelo, Robert G. Raskin, Paul Sutton, and Marjan van den Belt. 1997. "The Value of the World's Ecosystem Services and Natural Capital." *Nature* 387:253-260.

Demsetz, Harold. 1964. "The Exchange and Enforcement of Property Rights." *Journal of Law and Economics* 3: 1-44.

--1967. "Toward a Theory of Property Rights." *American Economic Review* 57: 347-59.

Easton, David. 1953. *The Political System: An Inquiry into the State of Political Science*. New York, NY: Knopf.

Ellis, Richard J. and Fred Thompson. 1997. "Culture and Environment in the Pacific Northwest." *American Political Science Review* 91: 885-897.

Furubotn, Eirik G. and Rudolf Richter. 1991. "The New Institutional Economics: An Assessment." In *The New Institutional Economics*, ed. by Eirik G. Furubotn and Rudolf Richter. College Station, TX: Texas A&M University Press.

Gordon, H.S. 1954. "The Economic Theory of a Common-Property Resource." *Journal of Political Economy* 62: 124-42.

Granovetter, Mark. 1985. "Economic Action and Social Structure: The Problem of Embeddedness." *American Journal of Sociology* 91: 481-510.

Greene, William H. 2000. *Econometric Analysis, 4th Edition*. Upper Saddle River, NJ: Prentice-Hall.

Hardin, Russell. 1982. *Collective Action*. Baltimore, MD: John Hopkins University Press.

Heckathorn, Douglas D., and Steven M. Maser. 1987. "Bargaining and the Sources of Transaction Costs: The Case of Government Regulation." *Journal of Law, Economics, and Organization* 3: 69-98.

Heclo, Hugh. 1978. "Issue Networks and the Executive Establishment." In *The New American Political System,* ed. A. King. Washington, D.C.: American Enterprise Institute.

Huriwitz, Jon, and Mark Peffley. 1987. "How are Foreign Policy Attitudes Structured? A Hierarchical Model." *American Political Science Review* 81: 1099-1120

John, DeWitt. 1994. *Civic Environmentalism*. Washington, DC: Congressional Quarterly Press.

Johnson, Bart R., and Ronald Campbell. 1999. "Ecology and Participation in Landscape-Based Planning Within the Pacific Northwest." *Policy Studies Journal* 27: 502-529.

Kayden, Jerold S. 1996. "Private Property Rights, Government Regulation, and the Constitution: Searching for a Balance." In *Land Use in America*, ed. by Henry L. Diamond and Patrick F. Noonan. Washington, D.C.: Island Press.

Kenney, Doug. 1997. *Resource Management at the Watershed Level: An Assessment of the Changing Federal Role in the Emerging Era of Community-Based Environmental Management*. Boulder, CO: University of Colorado Natural Resources Law Center.

King, Gary, James Honaker, Anne Joseph, and Kenneth Scheve. 1999. "Analyzing Incomplete Political Science Data: An Alternative Algorithm for Multiple Imputation." Electronic preprint, http://gking.harvard.edu/preprints.shtml.

Kirzner, Israel. 1985. *Discoveries and the Capitalist Process*. Chicago, IL: University of Chicago Press.

Levi, Margaret. 1988. *Of Rule and Revenue*. Berkeley, CA: University of California Press.

Lin, Nan. 1982. "Social Resources and Instrumental Action." In *Social Structure and Network Analysis*, ed. by Nan Lin and Peter A. Mardsen. Beverly Hills, CA: Sage Publications.

Lind, E. Allan, and Tom R. Tyler. 1988. *The Social Psychology of Procedural Justice*. New York, NY: Plenum Press.

Lubell, Mark. 1999. *Cooperation and Institutional Innovation: The Case of Watershed Partnerships*. Ph.D. dissertation, State University of New York at Stony Brook.

Lubell, Mark, Mihriye Mete, Mark Schneider, and John T. Scholz. 1998. "Cooperation, Transaction Costs, and Community-Based Environmental Protection." Paper presented at the 1998 Annual Meeting of the American Political Science Association, Boston, MA.

Maddala, G. 1983. *Limited Dependent and Qualitative Variables in Econometrics*. New York, NY: Cambridge University Press.

Marsh, Lindell L. and Peter L. Lallas. 1995. "Focused, Special-Area Conservation Planning: An Approach to Reconciling Development and Environmental Protection." In *Collaborative Planning for Wetlands and Wildlife: Issues and Examples*, ed. Douglas R. Porter and David A. Salvesen. Washington, DC.: Island Press.

Miller, Gary. 1992. *Managerial Dilemmas: The Political Economy of Hierarchy*. New York, NY: Cambridge University Press.

Mohai, Paul. 1985. "Public Concern and Elite Involvement in Environmental Conservation Issues." *Social Science Quarterly* 66: 820-838.

North, Douglass C. 1990. *Institutions, Institutional Change, and Economic Performance*. New York, NY: Cambridge University Press.

Ostrom, Elinor. 1990. *Governing the Commons*. New York, NY: Cambridge University Press.

Putnam, Robert. 1993. *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton, NJ: Princeton University Press.
Rabe, Barry G. 1986. *Fragmentation and Integration in State Environmental Management*. Washington, DC: Conservation Foundation.
Riker, William H., and Itai Sened. 1991. "A Political Theory of the Origins of Property Rights: Airport Slots." *American Journal of Political Science* 35: 951-69.
Rubin, Donald. 1987. *Multiple Imputation for Nonresponse in Surveys*. New York, NY: Wiley.
Sabatier, Paul, and Hank Jenkins-Smith ed. 1993. *Policy Change and Learning: An Advocacy Coalition Approach*. Boulder, CO: Westview Press.
Sabatier, Paul and Matthew Zafonte. 1997. "Are Bureaucrats and Scientists Members of Advocacy Coalitions? Evidence from an Intergovernmental Water Policy Subsystem." Typescript.
Samdahl, Diane M., and Robert Robertson. 1989. "Social Determinants of Environmental Concern." *Environment and Behavior* 21: 57-81.
Schelling, Thomas C. 1960. *The Strategy of Conflict*. Cambridge, MA: Harvard University Press.
Scholz, John T. 1998. "Trust, Taxes, and Compliance." In *Trust and Governance*, ed. by Valerie Braithwaite and Margaret Levi. New York, NY: Russell Sage Foundation.
Scholz, John T. and Mark Lubell. 1998a. "Adaptive Political Attitudes: Duty, Trust, and Fear as Monitors of Tax Policy." *American Journal of Political Science* 42: 903-920.
--1998b. "Trust and Taxpaying: Testing the Heuristic Approach to Collective Action." *American Journal of Political Science* 42: 903-920.
Schneider, Mark, and Paul Teske with Michael Mintrom. 1995. *Public Entrepreneurs: Agents for Change in American Government*. Princeton, NJ: Princeton University Press.
Schneider, Mark, Paul Teske, Melissa Marschall, Michael Mintrom, and Christine Roch. 1997. "Institutional Arrangements and The Creation of Social Capital: The Effects of Public School Choice." *American Political Science Review* 91: 82-93.
Schlager, Edella, William Blomquist, and Shui Yan Tang. 1994. "Mobile Flows, Storage, and Self-Organized Institutions for Governing Common-Pool Resources." *Land Economics* 70: 294-317.
Schlager, Edella and Elinor Ostrom. 1992. "Property Rights Regimes and Natural Resources: A Conceptual Analysis." *Land Economics* 68: 249-62.
Simon, Herbert. 1979. Models of Thought. New Haven, CT: Yale University Press.
--1955. "A Behavioral Model of Rational Choice." *Quarterly Journal of Economics* 69: 99-118.
Taylor, Michael, and Sara Singleton. 1993. "The Communal Resource: Transaction Costs and the Solution of Collective Action Problems." *Politics and Society* 21: 195-214.
Thibaut, John, and Laurens Walker. 1975. *Procedural Justice: A Psychological Analysis*. Hillsdale, NJ: Erlbaum.
Truman, David B. 1951. *The Governmental Process: Political Interests and Public Opinion*. New York, NY: Alfred A. Knopf.
Tyler, Tom R. 1990. *Why People Obey the Law*. New Haven: Yale University Press.
US Environmental Protection Agency, Office of Water. 1998. "Challenges Facing Our Estuaries: Key Management Issues." http://www.epa.gov/nep/about3.htm.

Weber, Edward P. 1998. *Pluralism by the Rules: Conflict and Cooperation in Environmental Management*. Washington, D.C.: Georgetown University Press.

Weimer, David L., ed. 1997. *The Political Economy of Property Rights: Institutional Change and Credibility in the Reform of Centrally Planned Economies*. New York, NY: Cambridge University Press.

Williams, Bruce A., and Albert R. Matheny. 1995. *Democracy, Dialogue, and Environmental Disputes: The Contested Languages of Social Regulation*. New Haven, CT: Yale University Press.

Williamson, Oliver E. 1975. *Markets and Hierarchies: Analysis and Antitrust Implications*. New York,NY: Free Press.

--.1985. *The Economic Institutions of Capitalism.* New York, NY: Free Press.

Wooley, John T., and Michael Vincent McGinnis. 1999. "The Politics of Watershed Policymaking." *Policy Studies Journal* 3: 578-594.

Yaffee, Steven L., Ali F. Phillips, Irene C. Frentz, Paul W. Hardy, Sussanne M. Maleki, and Barbara E. Thorpe. 1996. *Ecosystem Management in the United States: An Assessment of Current Experience*. Washington, DC: Island Press.

Zafonte, Matthew and Paul Sabatier. 1998. "Shared Beliefs and Imposed Interdependencies as Determinants of Ally Networks in Overlapping Subsystems." Typescript.

Appendix: Variable Construction

Unless otherwise noted, all variables are measured on a disagree/agree scale with integer response values ranging between [0,10], with 0 = strongly disagree and 10 = strongly agree. Specific value labels are included in the descriptions below if needed. Questions preceded by an asterisk (*) were reverse coded to minimize systematic response bias.

Question wording was slightly different for non-NEP and NEP respondents to reflect participation in different collective choice arenas. I display both NEP and non-NEP wording for the dependent variables to give a basic idea of the difference, but for brevity all other variables are reported with NEP wording. Specific wording for all questions is available from the author.

Dependent Variables

Stakeholder Cooperation

NEP: There is a high level of teamwork between stakeholders in the partnership. Disagree/Agree.

Non-NEP: There is a high level of teamwork between stakeholders in making decisions about the estuary.

Estuary Policy Satisfaction

NEP: Are the proposed or agreed upon management actions considered by the partnership very likely to significantly improve the problem, very unlikely to significantly improve the problem, or somewhere in between? 0= Very unlikely to improve, 10= Very likely to improve

Non-NEP: How likely are current government policies to significantly improve the problems of your estuary? 0= Very unlikely to improve, 10= Very likely to improve

Independent Variables

Problem Severity

Concerning the overall health of your estuary, do you think the problems associated with each issue listed below are very severe, not severe, or somewhere in between? 0= The problems are not severe, 10= The problems are very severe.

Conflict Resolution*

When conflicts arise, do you think that you can resolve conflicts to the satisfaction of your organization with the partnership, or do you think your organization will need to shift the dispute to courts, political, or other administrative arenas? 0= Resolve conflict inside partnership, 10= Shift disputes outside partnership.

Science

On average, do you perceive the level of scientific understanding about the causes and causes of problems in your estuary to be very inadequate, very adequate, or somewhere in between? 0 = Scientific understanding is very inadequate, 10= Scientific understanding is very adequate.

Problem Diffusion

Would you say that a full resolution of the problem would require changes in the activities or behavior of a small number of citizens and businesses, would it require changes of almost everyone in the estuary, or somewhere in between? 0= Only a small number would need to change, 10= Almost everybody would need to change.

External Decisions

Almost all major decisions affecting estuary issues are made outside the partnership. Disagree/Agree.

Procedural Fairness (alpha= .76)

1. Overall, the decision-making process in the partnership is fair to all stakeholders. Disagree/Agree.
2. My organization's interests and concerns are adequately represented in the partnership. Disagree/Agree.

Economic Domination

Economic interest groups have an undue influence on partnership decisions. Disagree/Agree.

Expert Domination

The partnership is dominated by experts and administrators. Disagree/Agree.

Environmentalism

In general, how would you describe your policy orientation on estuary issues when tradeoffs between environmental protection and economic development are important? 1-7 scale; 1= pro-development, 7= pro-environment.

Government Role (alpha = .70)

1. Preserving the rights of individual citizens is more important than protecting the environment. Disagree/Agree.

2. In general, government agencies and regulations intrude too much on the daily lives of private citizens. Disagree/Agree.

Inclusiveness

Maximizing the scope of public participation in environmental policy improves policy effectiveness. Disagree/Agree.

Number of Allies

Think about three people or organizations on which you have relied most heavily in dealing with estuary issues during the past year. Consider the full range of stakeholders, including government agencies, interest groups, and local officials. Please write the full name of the individual and/or organization in the space below. Again, all information will be held in confidence. Variable constructed by summing the number of mentions.

Entrepreneur

Sometimes, a single individual can make a big difference in watershed partnerships, helping to call attention to an issue or getting people to cooperate when they might not otherwise have been able to work together. Is there a stakeholder in your estuary who is critical in maintaining or energizing the partnership? 0= No, 1= Yes.

Trust

Thinking about the range of contacts you have had with other stakeholders, do you completely trust these stakeholders to fulfill the promises and obligations made on each issue in the context of the partnership, completely distrust them, or somewhere in between? 0= Completely distrust, 10= Completely trust.

Table 1. Types of Collective Choice Institutions for Environmental Governance

Consensual (NEP)	Adversarial (Non-NEP)
Inclusive: Collective decision-making includes all stakeholders who stand to gain from solving a collective action problem.	*Exclusive*: Decision-making limited to an elite subset of stakeholders.
Voluntary: Rule compliance insured by norms of cooperation and incentives.	*Coercive*: Rule compliance insured by penalties.
Specialized: Rule structure customized for a particular collective dilemma.	*Standardized*: Rule structure applies to broad classes of collective dilemmas.

Table 2. Cross-Tabulation of Stakeholder Type by Federal Level

	Stakeholder Type					
Federal Level	Government	Environmental Group	Business Group	Research and Education	Other	Total
National	134 (11.6%)	16 (1.4%)	19 (1.7%)	23 (2.0%)	22 (1.9%)	214 (18.6%)
State	229 (19.9%)	43 (3.7%)	26 (2.3%)	32 (2.8%)	47 (4.1%)	377 (32.7%)
Regional	94 (8.2%)	37 (3.2%)	27 (2.3%)	14 (1.2%)	46 (3.9%)	217 (18.8%)
Local	170 (14.8%)	39 (3.4%)	28 (2.4%)	3 (0.3%)	54 (4.7%)	294 (25.5%)
Other	16 (1.4%)	5 (0.4%)	10 (0.9%)	6 (0.5%)	13 (1.1%)	50 (4.3%)
Total	643 (56.8%)	140 (12.1%)	110 (9.5%)	78 (6.8%)	181 (15.7%)	1152 (100%)

Table 3: Treatment Effects Regression Models for Estuary Policy Effectiveness

Independent Variables	With Policy Belief Interactions	Without Policy Belief Interactions
Benefits		
Problem Severity	.002 (.030)	.018 (.031)
Conflict Resolution	.058 (.023)**	.059 (.023)*
Transaction Costs		
Scientific Knowledge	.169 (.029)**	.169 (.029)**
Problem Diffusion	-.180 (.044)**	.002 (.025)
External Decisions	-.093 (.021)**	-.080 (.021)**
Fairness Evaluations		
Procedural Fairness	.244 (.037)**	.255 (.038)**
Business Domination	-.066 (.023)**	-.081 (.023)**
Expert Domination	.012 (.024)	.015 (.025)
Social Capital		
Trust	.123 (.033)**	.126 (.033)**
Number of Allies	.005 (.005)	.006 (.005)
Leadership	-.007 (.012)	-.007 (.012)
Policy-core Beliefs		
Government Role	.004 (.052)	.002 (.030)
Environmentalism	-.098 (.058)^	.005 (.029)
Inclusiveness	-.115 (.050)*	-.004 (.028)
Institutional Factors		
NEP Estuary	-.289 (.079)**	.098 (.028)**
Government Actor	.075 (.022)**	.065 (.023)**
NEP Estuary X Government Actor	-.073 (.026)**	-.062 (.027)*
Policy Belief Interactions		
NEP X Problem Diffusion	.261 (.053)**	----
NEP X Government Role	<.001 (.026)	----
NEP X Environmentalism	.132 (.066)*	----
NEP X Inclusiveness	.170 (.060)**	----
Constant	.522 (.075)**	.234 (.052)**
Coefficient Estimates For Probit Selection Equation		
Attitudinal Factors		
Average Scientific Knowledge	10.971 (1.85)**	10.979 (1.85)**
Average Trust	15.825 (2.210)**	15.840 (2.214)**
Average External Decisions	7.544 (1.341)**	7.543 (1.340)**
Geographic Factors		
Estuary Area	.008 (.002)**	.008 (.002)**
Population Density 1980	.003 (.001)**	.003 (.001)**
% Agricultural Land	-.038 (.013)**	-.038 (.013)**
% Rangeland	-.023 (.008)**	-.023 (.008)**
% Forest land	-.031 (.007)**	-.031 (.007)**
Constant	-17.160 (1.86)**	-17.166 (1.866)**
Diagnostic Statistics for Selection Bias		
ρ	-.008 (.072)	.005 (.071)
σ	.179 (.004)**	.194 (.004)**
$\lambda = (\rho * \sigma)$	-.002 (.012)	.107 (.013)

Entries in cells are coefficient estimates from maximum likelihood treatment effects models. Standard errors in parentheses. Hypothesis tests of coefficient=0, ^p< .10, *p< .05, **p< .01. N= 1173 for both models.

Table 4: Treatment Effects Regression Models for Perceived Stakeholder Cooperation

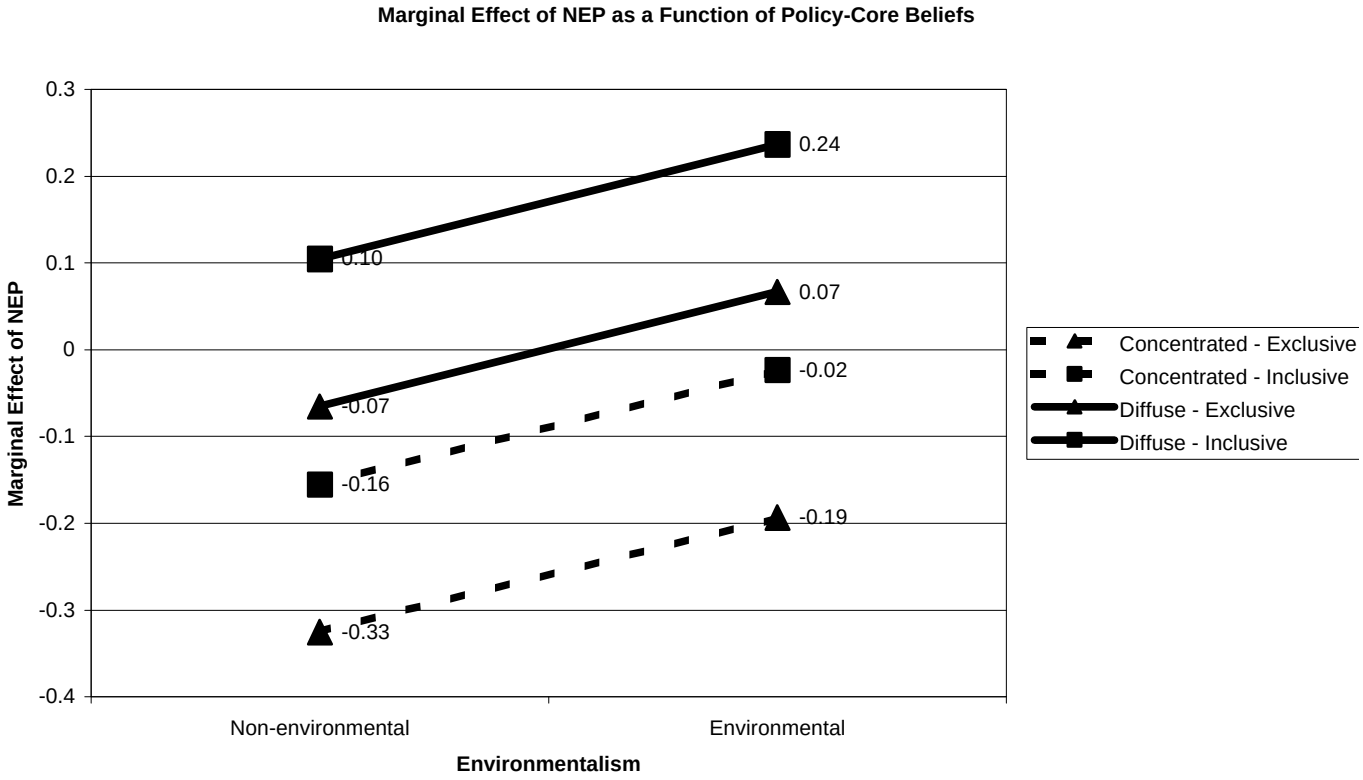
Independent Variables	With Policy Belief Interactions	Without Policy Belief Interactions
Benefits		
Problem Severity	-.040 (.028)	-.036 (.028)
Conflict Resolution	.023 (.023)	.022 (.023)
Transaction Costs		
Scientific Knowledge	.070 (.027)**	.071(.027)**
Problem Diffusion	-.106 (.046)**	-.014 (.024)
External Decisions	-.041 (.021)^	-.036 (.021)^
Fairness Evaluations		
Procedural Fairness	.437 (.033)**	.438 (.033)**
Business Domination	-.051 (.023)*	-.056 (.022)*
Expert Domination	-.029 (.022)	-.028 (.022)
Social Capital		
Trust	.242 (.033)**	.244 (.033)**
Number of Allies	-.002 (.005)	-.001 (.004)
Leadership	.029 (.011)**	.030 (.011)**
Policy-core Beliefs		
Government Role	.010 (.053)	-.009 (.027)
Environmentalism	-.040 (.059)	.035 (.028)
Inclusiveness	.009 (.058)	.030 (.026)
Institutional Factors		
NEP Estuary	-.006 (.022)	.063 (.024)**
Government Actor	.026 (.022)	.021 (.022)
NEP Estuary X Government Actor	-.040 (.026)	-.035 (.025)
Policy Belief Interactions		
NEP X Problem Diffusion	.129 (.053)**	----
NEP X Government Role	-.025 (.063)	----
NEP X Environmentalism	-.008 (.068)	----
NEP X Inclusiveness	.009 (.058)	----
Constant	.176 (.076)	.126 (.051)**
Coefficient Estimates for Probit Selection Equation		
Attitudinal Factors		
Average Scientific Knowledge	10.939 (1.846)**	10.945 (1.856)**
Average Trust	15.887 (2.220)**	15.874 (2.218)**
Average External Decisions	7.488 (1.349)**	7.498 (1.34)**
Geographic Factors		
Estuary Area	.008 (.002)**	.008 (.002)**
Population Density 1980	.003 (.001)**	.003 (.001)**
% Agricultural Land	-.038 (.013)**	-.038 (.013)**
% Rangeland	-.023 (.008)**	-.023 (.008)**
% Forest land	-.031 (.007)**	-.031 (.007)**
Constant	-17.149 (1.869)**	-17.160 (1.863)**
Diagnostic Statistics for Selection Bias		
ρ	-.032 (.076)	-.025 (.075)
σ	.180 (.004)**	.181 (.004)**
$\lambda = (\rho * \sigma)$	-.006 (.014)	-.005 (.014)

Entries in cells are coefficient estimates from maximum likelihood treatment effects models. Standard errors in parentheses. Hypothesis tests of coefficient=0, ^p< .10, *p< .05, **p< .01. N= 1173 for both models.

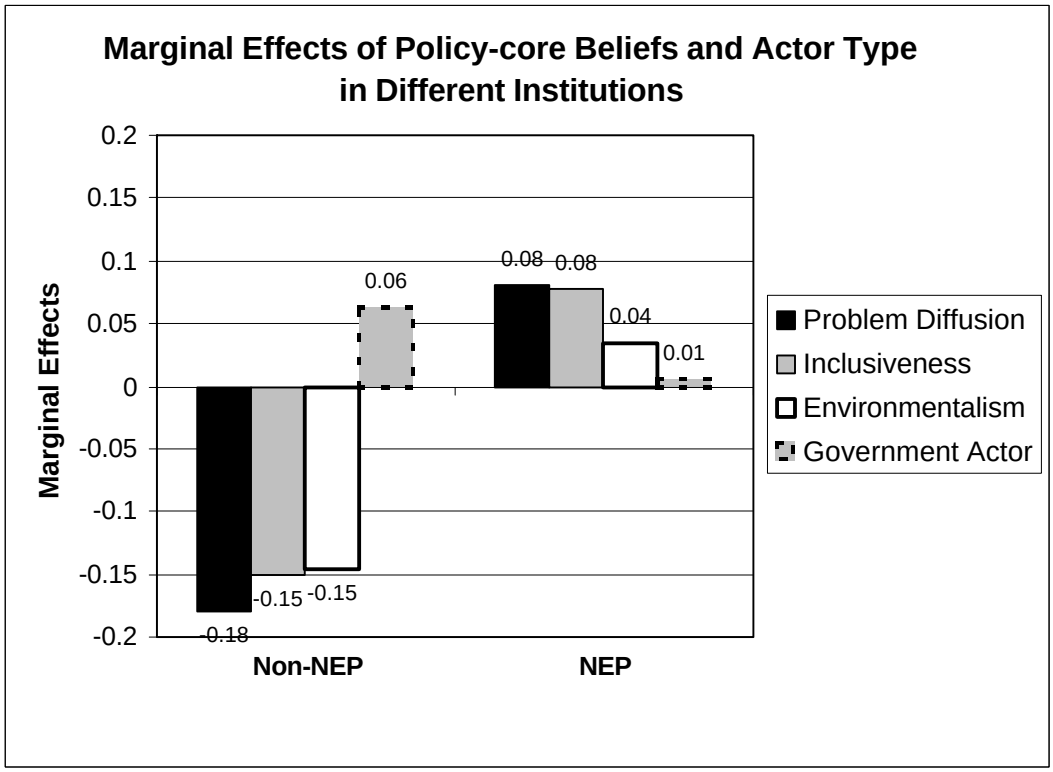
Table 5. Indirect Effects of the NEP on Attitudinal Support

Predictors of Attitudinal Support	Bivariate Regression Coefficient	Indirect Effect on Policy Satisfaction	Indirect Effect on Perceived Cooperation
Benefits			
Problem Severity	-.020 (.014)	---	---
Conflict Resolution	.149 (.018)**	.009	.003
Transaction Costs			
Problem Diffusion	.083 (.016)**	.171	.081
Scientific Knowledge	.052 (.014)**	.009	.004
External Decisions	-.004 (.019)	---	---
Fairness Evaluations			
Procedural Fairness	.107 (.014)**	.026	.047
Economic Domination	-.154 (.018)**	.010	.008
Administrative Domination	-.019 (.016)	---	---
Social Capital			
Trust	.045 (.013)**	.006	.010

Cell entries in column two are unstandardized bivariate regression coefficients using the NEP dummy as the independent variable, with standard errors in parentheses. Columns three and four are the indirect effects of the NEP on both measures of attitudinal support for significant bivariate relationships. ^ p< .10, *p< .05, **p< .01


Marginal Effect of NEP as a Function of Policy-Core Beliefs
Marginal Effect of NEP
0.3
0.2
0.1
0
-0.1
-0.2
-0.3
-0.4
0.24
0.10
0.07
-0.02
-0.07
-0.16
-0.19
-0.33
Non-environmental
Environmental
Environmentalism
Concentrated - Exclusive
Concentrated - Inclusive
Diffuse - Exclusive
Diffuse - Inclusive

Dear Reader: I apologize for the lousy graphics on the bar graphs. They were very artistic until translated into PDF, so I had to change them to a simpler format.



The Limits of Civic Environmentalism

Summarization by ELI with Statistical Remarks by Troy Abel[*]

Presented by Troy Abel, Southern Illinois University, Edwardsville

[*] This paper introduces research that Troy Abel presented to the U.S. Environmental Protection Agency Office of Economy and Environment, National Center for Environmental Research and the National Science Foundation, Decision, Risk, and Management Science Program workshop, "Community Based Environmental Decision Making," held on May 9, 2000, at the National Rural Electric Cooperative Association Conference Center in Arlington, Virginia. Funds from the Joseph Fisher Fellowship and National Science Foundation grant SBR-9815876 supported this effort. I am grateful for the research assistance of Mary Beth Chrestman, Denise Hanchulak, Jabeen Aktar, Jason Townsend, Heonyol Kwon and Rich Radil. Many of these remarks are also the product of my collaboration with Mark Stephan.

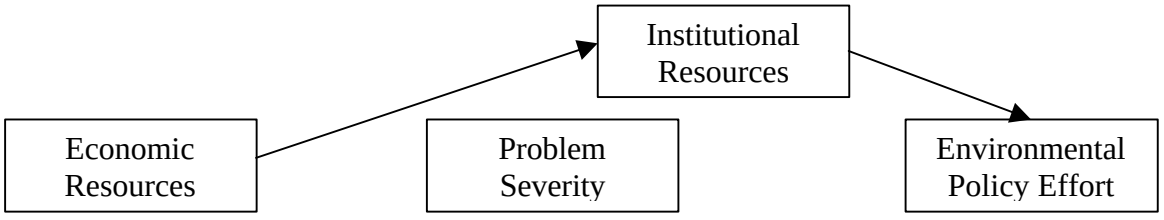
The Limits of Civic Environmentalism

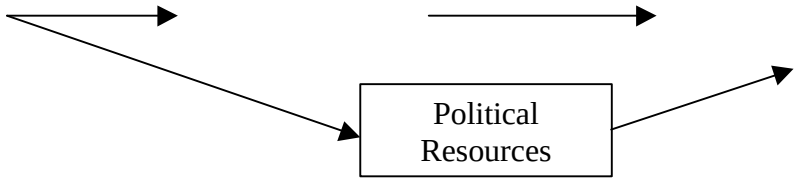
Troy D. Abel
Assistant Professor
Department of Political Science and
the Environmental Science Program, Box 1453
Southern Illinois University at Edwardsville
Edwardsville, IL 62026

My research attempts to answer the question of what factors influence a community's propensity to go beyond environmental compliance. I looked at this question using quantitative analysis and, more recently with co-author Mark Stephan, qualitative methods. Our combination of multivariate regression, case studies, and interviews examining local environmental initiatives found that politics explains most of these efforts; stable communities are less likely to adopt beyond compliance policies; and participatory decision making does not necessarily incorporate the views of the general citizenry.

My research question immediately introduces two operational issues: how to measure "community cooperation" and how to measure "environmental performance." For community cooperation, I looked at the presence of social capital, or civicness, which some suggest should positively influence communities to go beyond environmental compliance. Social capital refers to a web of cooperative relationships between citizens that facilitate a community's ability to resolve collective action problems. For environmental performance, I looked for communities voluntarily pursuing environmental activities independent of state or federal regulations. I found 53 communities who adopted local resolutions to reduce greenhouse gas production as part of the Cities for Climate Protection program.

This diagrammatic model illustrates the causal framework I tested with multivariate regression techniques (adapted from Ringquist, 1993).





In this model, economic, institutional, political resources, and problem severity all influence the environmental policy effort. My research focuses on the influence of political resources within this framework.

To measure civicness as a political resource, I primarily looked to two previous studies. The first is by Putnam (1983; 1993), who studied regional government performance in Italy and specified potentially influential variables such as the number of civic associations, newspaper readership, referenda turnout and preference voting to create a civic community index. Putnam postulated that this "social capital" index would correlate with a region's governmental effectiveness. The Italian research found that northern Italy had both a higher civic index and better regional governmental performance. Social capital thus became a postulated precondition for making democratic practices work.

A second study, by Irwin et al. (1997), looked at American counties, and considered the number of small and retail firms, civic associations, small manufacturers and certain religous denominations as factors that would be related to "nonmigration," or stability, at the community level. This index seems to be problematic, as it finds that the most civic communities in the country are Los Angeles, New York and Houston. Because these places contain very large numbers of small firms, non-profit associations, small manufacturers and adherents to civic denominations; statistical associations may be problematic. I addressed this problem by standardizing the variables by population and found that a slightly different set of items clustered together in subsequent factor analyses.

Multivariate Analysis

For my quantitative study, two alternative operational procedures were conducted to determine the existence and scope of an unmeasured or latent "civicness" variable. First, similar variables were factor analyzed but after standardizing by the total population for each variable. For instance, the number of small retail firms was calculated as a percentage of all retail firms

and the number of churches or voluntary associations were percentaged in relation to all non-profit associations. Second, Internal Revenue Service (IRS) data collected on most U.S. non-profits provided the association data. This data set was obtained on CD-ROM from the Urban Institute's National Center on Charitable Statistics (IRS, 1997).

To test for the existence of a county's "civic" dimension, a modification of Armor's (1974) method of principal components analysis was followed. Multiple items were factor analyzed to determine which ones covaried together. Candidate items were based on previous research (Irwin et al., 1997a; Irwin et al., 1997b; Irwin et al., 1998; Tolbert et al., 1998) and included 10 measures: (1) the nonmigration rate, (2) percent of persons 25 or older with a HS degree, (3) percent of households with children, (4) percent of persons working in their county of residence, (5) percent of owner occupied housing, (6) median age, (7) per capita presidential vote, (8) percent retail individual proprietorships, (9) percent retail eating and drinking establishments, and (10) proportion of voluntary non-profit membership associations among all non-profits.

To identify variables loading on different factors, an iterative PCA was conducted where the number of factors was decreased successively and followed by a varimax rotation. One rule for determining how many "latent" variables exist is to retain factors with eigenvalues greater than one. But, changes in the eigenvalues and explained proportional co-variance often suggest the inclusion of fewer dimensions. Thus, factors were forcibly lowered on subsequent rotations to determine latent variable stability, the consistency of certain items loading on particular dimensions, and consistency with a priori expectations.[25] Generally, items loading above an absolute value of 0.4 were considered to be scale components.

After four PCA iterations, the analysis was adjusted for population outliers and produced results which indicated that two latent factors existed based on the proportional co-variance of the ten variables.[26] Table one displays the four items that loaded on the first factor which could be construed as one dimension of a county's civic infrastructure. They were: (1) percent of persons 25 and older with a HS education; (2) percent of owner occupied housing; (3) percent of retail trade that are individual proprietorships; and (4) percent of non-profit organizations that are

[25] David Armor suggested this technique after several conversations we had about my research.
[26] The most obvious outliers, very small and large counties, were omitted by including only cases above 25,000 and below 4,000,000 in population.

membership associations.[27] To evaluate whether these items should be combined, an alpha reliability was conducted and resulted in a value of 0.72 (Carmines and Zeller, 1979).

[27] The first factor produced an eigenvalue of 2.41 and explained approximately 48% of co-variation in the eight items.

TABLE 1

"Civic Infrastructure Index"

Item	Factor Loading
Persons 25 & older with HS degree (%)	0.78442
Owner occupied housing (%)	0.73824
Retail trade individual propriortierships (%)	0.72434
Membership non-profit associations (%)	0.75068
Eigenvalue = 2.24850 Cumulative co-variation explained = 0.5621 Alpha reliability = 0.7400	

The four items represent an alternative operational definition of a postulated "unmeasured" civic dimension for American counties. The items were used to estimate factor scores for a new variable based on the PCA.[28]

My prior expectation was that larger, richer, Democratic and more civic counties would exhibit a propensity to go beyond environmental compliance. Table 1 below displays the results of a multivariate model of climate change policy adoption propensity.[29] The statistically significant chi-square test of the log-likelihood ratio indicates that the null hypothesis stating each independent variable except the constant are equal to zero can be rejected with 99.9% confidence. The effect of each independent variable can be evaluated in logistic regression by utilizing an odds ratio. The odds ratio can be thought of as a measure of association and analogous to a relative risk measure.[30] Moreover, while there may be statistical significance, a value of one indicates that the relationship between an independent and dependent variable is very weak. Values greater than one are indicative of a positive relationship while odds ratios

[28] A factor score is produced by standardizing each variable to zero mean and unit; variance; weighted with coefficients; and summed for the factor. The new factor variable has a mean approximately equal to zero and a standard deviation equal to one.

29 Data analysis is conducted using multiple logistic regression. A number of candidate independent variables representing the resource, policy, and political elements were available from Census and IRS data sources. To select variables for inclusion in the multivariate logistic regression models, Hosmer and Lemeshow's (Hosmer and Lemeshow 1989) four step method was generally followed. A logit regression model is an appropriate technique to analyze multivariate models where the dependent variable is dichotomous (McFadden 1974; McFadden 1975; McFadden 1976; Maddala 1983; King 1986; Hosmer and Lemeshow 1989; Maddala 1992; Kleinbaum 1994). The most parsimonius model is presented here. For a more detailed data analysis and the model building sequence, see Abel (1998).

30(See Kleinbaum 1994).

less than one signify a negative relationship. The model yields a 15 percent reduction in predictive error over the modal category (no adoption).[31]

Table 1. Logistic Regression of Climate Change Policy Adoption and *NACo Innovation Recognition*

Variable	Odds Ratio DV = climate adoption *DV =NACO innovation award*			z-score		
Resources						
Population	**0.95**	**1.16**	***1.12***	-0.38	3.71***	*2.76***
	(0.12)	(0.05)	*(0.05)*			
Per capita local government revenues	**1.60**	**2.74**	***1.90***	1.03	3.41**	*3.31***
	(0.73)	(0.81)	*(0.38)*			
Policy						
Government employees per capita	**1.00**	**0.63**	***0.65***	0.23	-3.09**	*-3.92****
	(.003)	(0.09)	*(0.07)*			
Politics						
Democratic presidential vote (%)	**1.15**	**4.40**	***0.84***	4.37***	4.62***	*-1.16*
	(.039)	(1.41)	*(0.12)*			
Civic index PCA index	**7.38**	**0.53**	***0.50***	4.49***	-2.83**	*-6.16****
	(3.28)	(0.12)	*(0.06)*			
Number of Cases	1,459	1,460	*1,460*	Max VIF = 10.30		
Log likelihood ratio	-111.2***	-117.35***	*-429.24****	Max VIF = 1.61		
Pseudo-R^2	0.0394	0.3605	*0.1732*	***Max VIF = 1.63***		
% Reduction of Error	17.5	15.0	*10.8*			
**significant at 0.05, **significant at 0.01, ***significant at 0.001*	Standard errors are in parentheses					

The first column of table 3 presents a multivariate model of policy adoption propensity including the civic index developed by Irwin, Tolbert and Lyson while the latter two columns utilizes my standardized index. Population is positively correlated with policy adoption propensity supporting one proposition. However the odds ratio (close to one) indicates population is a relatively weak determinant. As expected, the per capita local government revenue coefficient is positive and statistically significant. The odds ratio indicates that for every one more thousand dollars of per capita local revenues, the likelihood of voluntary climate change policy adoption

[31] Another statistical issue arose in this analysis because of the large split of cases between the categories of the dependent variable (40 adoptions and 1,460 non-adoptions). Maddala (1983, 1992) indicated that large disparities between the dichotomous categories of the dependent variable would affect the estimation of the constant term and consequently, any predictive statistics such as the pseudo-R^2 or classification estimates. He suggested undersampling the disproportionately larger groups and in this case, the non-adopters. A 10% random sample of 1,420 non-adopters produced a sample of N = 184 and multiple logistic regression yielded similar coefficients and better predictive results (pseudo-R^2 = 0.4099 and Reduction Of Error = 55.0%).

nearly tripled. This association makes good theoretical sense and replicates the findings of other state and local policy output studies.[32] Unexpectedly, my proposition about government capacity is not supported by the statistically significant but inverse correlation between policy adoption propensity and local government employees per capita.[33]

Democratic presidential vote (%) is positively associated with policy adoption propensity, thus, one of the political propositions is supported by the data analysis. Moreover, the odds ratio indicates that Democratic partisanship has the strongest association with policy adoption propensity. For every ten percent increase in a county's Democratic vote for president, the likelihood of voluntary policy adoption quadruples. This association corroborates the classic proposition that politics matters and the studies that have found it to be related to policy outputs.[34] Finally, and surprisingly, my civic proposition is not supported by the analysis as the civic factor's odds ratio is less than one indicating it has an inverse association with policy adoption propensity. For every one-unit increase in a counties PCA score, the likelihood of policy adoption was 0.53 times lower. This finding is antithetical to most theory and empirical work on the influence of social capital or civicness. In short, places with a higher PCA score are less likely to voluntarily adopt a policy to reduce CO_2 emissions.

My standardized civic measure in fact appears to be a limiting factor for communities who are not going beyond compliance. This kind of analysis follows a growing literature examining civic environmentalism, or the increasing participation of citizens in environmental decisions (John 1993; Siranni and Friedland 1997). In short, although my index represents a standardized measure of stability, it seems to represent the "wrong kind of civicness" for civic environmentalism. Therefore, local patterns of strong associational networks may inhibit political and policy efforts to move communities beyond environmental compliance.

---

[32] (Dye 1966; Hofferbert 1966; Dye and Gray 1980; Lester, Franke et al. 1983; Lester, Franke et al. 1983; Lester 1990; Lester and Lombard 1990; Davis and Feiock 1992; Ringquist 1993) Other resource variables that did not have an affect on policy adoption propensity and were omitted from the model included number of manufacturers, number of small manufacturers, per capita income, median family income, and median household income. In fact, median family income will be used as a dependent variable below.

[33] Several other variables representing local organizational capacity or policy commitments were tested and found to be insignificant determinants including per capita expenditures for education, health, welfare, highways, fire, and police.

[34] (Key and Jr. 1949; Plotnick and Winters 1985; Wright, Erikson et al. 1987; Calvert 1989; Erikson, Wright et al. 1989) Other political variables, % Presidential vote and Republican vote, were also significant but their odds ratios were lower indicating they are not as influential as the Democratic partisanship variable.

Socioeconomic Performance

Economic prosperity is another area were civic or social capital factors are postulated to be influential. The noted economist Michael Porter recently argued that: "The enduring competitive advantages in a global economy lie increasingly in local things-knowledge, relationships, and motivation that distant rivals cannot match" (1998, p. 78). This thesis reflects yet another dimension of the influence of social capital, that is, as a determinant of economic performance. Putnam argued: "The social capital embodied in norms and networks of civic engagement seems to be a precondition for economic development, as well as for effective government" (Putnam, 1993b, p. 36). Earlier, Mark Granovetter's (1973; 1983; 1985) research implicated embedded social networks, mechanisms facilitating social capital, with more effective economic transactions such as job searches and contracting. Again, the work of Tolbert, Lyson and Irwin tested these theories about social capital at the county level. They advance the idea that institutions of local capitalism include small and medium sized firms, the number of small retail establishments, the number of family owned farms, and the number of associations (Tolbert, Lyson et al. 1998).

In a recent study, they tested the thesis that places with more of these local institutions would have greater stocks of civicness, and thus higher socioeconomic levels. They operationalized socioeconomic levels with four dependent variables; income, inequality, poverty, and unemployment. After controlling for other variables such as education, the small manufacturer, family farm, and religious items varied as hypothesized. However, contrary to their thesis, the association variable was not statistically significant in any model (Tolbert, Lyson et al. 1998).

Another Civic Effects Estimation

The second quantitative model of this paper follows their efforts and tests the effect of county variables including my modified civic index on median household income. Can the empirical framework depicted in table one help explain local economic prosperity as postulated by Tolbert, Lyson, and Irwin?

Economic Prosperity

Table 2 below first replicates the same empirical model delineated above where certain resource, political, and institutional factors are tested with median family income as the dependent

variable. Because of concerns with the first dependent variable, this continues as a validation of the multivariate model's explanatory power.

Table 2. Ordinary Least Squares Regression on Median Family Income

Variable	Coefficient	t-score
Resources		
Population	**.006** (.001)	8.07***
Per capita local government revenues	**4.57** (0.42)	10.95**
Policy		
Government employees per capita	**-212.5** (18.2)	-11.7**
Politics		
Democratic presidential vote (%)	**-55.6** (28.3)	-1.96***
PCA factor score	**-1186** (200.4)	-5.92**
Number of Cases	1,460	Max VIF = 1.63
F- ratio	104.54***	
Adjusted-R^2	0.2619	
**significant at 0.05, **significant at 0.01, ***significant at 0.001*	Standard errors are in parentheses	

The multiple regression above confirms that the empirical framework presented I developed above provides explanatory power for median family income variation in American counties. Population and local government revenues had a positive and statistically significant relationship with median family income. The percentage Democratic vote exhibited a significant negative relation to a locality's prosperity. Contrary to expectations, the PCA index produced a significant and negative association to median family income. This result is consistent with the findings above with different dependent variables. The stable civic index also appears to be a limiting factor for economic prosperity.

Case Studies and Interviews

To examine the environmental policy propensity question in another way, Mark Stephan and I conducted a pilot survey of local officials, using a database from Renew America. We emphasize that civic environmentalism means that citizens, not just stakeholders, scientists or

elites, participate in the environmental policy making process. In the survey, we asked local officials if their programs surpass or are independent of Federal or State requirements (program scope), whether they include citizen involvement, whether citizens are influential in the process, and at what stage of policy citizens exert influence. Readers should realize that these results are from a pilot survey of 50 respondents. I intend to generate a more structured instrument to draw from a more representative sample of local jurisdictions in the United States later in the research project. A fuller discussion of this research will be available this fall in an issue of the *American Behavioral Scientist.*

On the program scope questions, an overwhelming majority responded that they either surpassed or were independent of State and Federal requirements. Local respondents felt that citizens were influential in 65% of the cases. The most common participatory mechanism reported in the pilot was the use of public meetings followed by the use of citizen advisory groups. Citizen respondents seemed to be involved throughout the policy making process with slightly more involvement at the agenda setting and implementation stages.

We argue that the most important question in the pilot survey was about who the participants are. We wanted to know if the environmental decision making process is bringing in new citizens or if participants are the typical array of activists, community leaders, higher educated and higher income residents that normally get involved in these types of processes. To answer this question, We conducted 16 follow-up telephone interviews of situations where citizens were deemed influential in the process by the pilot respondents. Six respondents characterized participants as unrepresentative of the community and 15 said participants were exclusively community activists. Most participants also characterized environmental policy participants as wealthier and better educated than the general population.

Conclusion

To summarize, we found that local politics explains most of a locality's propensity to do more for the environment. Stability, on the other hand, seems to limit civic environmentalism. In the processes studied, citizen participants were not new to community efforts. So far, civic environmentalism is not as civic as we would like it to be.

I am conducting another research project that illustrates this conclusion. For another paper, I examined over four hundred EPA environmental justice grants (Abel 2000). I began by

characterizing the types of projects funded to get a sense of what capacities the program aimed to cultivate. I identified four types of capacities: technical, informational, political and civic. Less than ten percent of the grants fell into the civic capacity category. I argue that civic capacity: efforts to make environmental policy processes inclusive and build citizen competence should be emphasized if we want to encourage civic environmentalism. For future research directions, I will work on constructing a better community civic index and doing a comparison of communities that are beyond compliance and those that are short of compliance. I hope my research will contribute to the development of policies that include new citizens and enhance their competence in the environmental decision making process.

Selected References

Abel, T. D. (1998). Paths to new public policy: civic factors and local voluntary environmental effort. The Institute of Public Policy. Fairfax, VA, George Mason University.

Abel, T. D. (2000). The next environmental justice framework: administration and representation. 2000 Annual Meeting of the American Society for Public Administration, San Diego, CA.

Armor, D. J. (1974). Theta Reliability and Factor Scaling. Sociological Methodology. H. L. Costner. San Francisco, CA, Jossey-Bass**:** 17-50.

Calvert, J. (1989). Party politics and environmental policy. Environmental Politics and Policy: Theories and Evidence. J. P. Lester. Durham, NC, Duke University Press**:** 158-178.

Carmines, E. G. and R. A. Zeller (1979). Reliability and Validity Assessment. Beverly Hills, CA, Sage.

Davis, C. E. and R. Feiock (1992). "Testing theories of state hazardous waste regulation." American Politics Quarterly **20**: 501-11.

Dye, T. (1966). Politics, Economics, and the Public: Policy Outcomes in the American States. Chicago, IL, Rand McNally.

Dye, T. R. and V. Gray (1980). The Determinants of Public Policy. Lexington, MA, Lexington Books.

Erikson, R. S., G. Wright, et al. (1989). "Political parties, public opinion, and state policy in the United States." American Political Science Review **83**(3): 729-50.

Granovetter, M. (1973). "The Strength of Weak Ties." American Journal of Sociology **78**(6): 1360-1380.

Granovetter, M. (1983). The Strength of Weak Ties: A Network Theory Revisited. Sociological Theory 1983. R. Collins. San Francisco, CA, Jossey Bass**:** 155-200.

Granovetter, M. (1985). "Economic action and social structure: the problem of embeddedness." American Journal of Sociology **91**(3): 481-510.

Hofferbert, R. (1966). "The relationship between public policy and some structural and environmental variables in the American states." American Political Science Review **60**(1): 73-82.

Hosmer, D. W. and S. Lemeshow (1989). Applied Logistic Regression. New York, John Wiley & Sons.

IRS and I. R. Service (1997). IRS Business Master Files. Washington, D.C., National Center for Charitable Statistics.

Irwin, M., C. Tolbert, et al. (1997). "How to build strong home towns." American Demographics(February): 43-47.

John, D. (1993). Civic Environmentalism: Alternatives to Regulation in States and Communities. Washington, DC, CQ Press.

Key, V. O. and Jr. (1949). Southern Politics in State and Nation. New York, Knopf-Vintage Books.

King, G. (1986). "How not to lie with statistics: avoiding common mistakes in quantitative political science." American Journal of Political Science **30**(August): 666-87.

Kleinbaum, D. G. (1994). Logistic regression: a self-learning text. New York, Springer-Verlag.

Lester, J. P. (1990). A new federalism? Environmental policy in the states. Environmental Policy in the 1990s. N. J. V. a. M. E. Kraft. Washington, DC, Congressional Quarterly Press**:** 59-79.

Lester, J. P., J. L. Franke, et al. (1983). A comparative perspective on state hazardous waste regulation. The Politics of Hazardous Waste Management. J. P. Lester and A. O. M. Bowman. Durham, NC, Duke University Press**:** 212-231.

Lester, J. P., J. L. Franke, et al. (1983). "Hazardous Waste, Politics, and Policy: A Comparative State Analysis." Western Political Science Quarterly(36): 257-85.

Lester, J. P. and E. N. Lombard (1990). "The comparative analysis of state environmental policy." Natural Resources Journal **30**: 301-19.

Maddala, G. S. (1983). Limited-dependent and qualitative variables in econometrics. New York, Cambridge University Press.

Maddala, G. S. (1992). Introduction to econometrics. New York, Macmillian Publising.

McFadden, D. (1974). Conditional logit analysis of qualitative choice behavior. Frontiers in econometrics. P. Zarembka. New York, Academic Press**:** 105-142.

McFadden, D. (1975). “The revealed preferences of a government bureaucracy: theory.” Bell Journal of Economics **6**(2): 401-16.

McFadden, D. (1976). “The revealed preferences of a government bureaucracy: empirical evidence.” Bell Journal of Economics **7**(1): 55-72.

Plotnick, R. D. and R. F. Winters (1985). “A politicio-economic theory of income redistribution.” American Political Science Review **79**(2): 458-73.

Porter, M. E. (1998). “Clusters and the new Economics of Competition.” Harvard Business Review **November-December**: 77-90.

Putnam, R. D. (1993). Making democracy work: civic traditions in modern Italy. Princeton, NJ, Princeton University Press.

Putnam, R. D. (1993). “The prosperous community : Social capital and economic growth.” Current(356): 4-9.

Putnam, R. D., R. Leonarde, et al. (1983). “Explaining Institutional Success: The Case of Italian Regional Government.” The American Political Science Review **77**: 55-74.

Ringquist, E. J. (1993). Environmental Protection at the State Level: Politics and Progress in Controlling Pollution. Armonk, New York, Sharpe.

Siranni, C. and L. Friedland (1997). “Civic innovation & American democracy.” Change **29**(1): 14-24.

Tolbert, C. M., T. A. Lyson, et al. (1998). “Local Capitalism, Civic Engagement, and Socioeconomic Well-Being.” Social Forces **77**(2): 401-28.

Wright, G. C., R. S. Erikson, et al. (1987). “Public opinion and policy liberalism in the American states.” American Journal of Political Science **31**(4): 980-1001.

Policy Discussion for Session III

LINKING COMMUNITY-BASED PROCESS TO MEASURABLE ENVIRONMENTAL, ECONOMIC AND QUALITY-OF-LIFE IMPROVEMENT

Gerald J. Filbin

Office of Environmental Policy Innovation
Office of Policy, Economics and Innovation
US Environmental Protection Agency
1200 Pennsylvania Avenue, NW (1803)
Washington, DC 20460

202-260-8099
filbin.gerald@epa.gov
http://www. epa.gov/ecocommunity

Discussion remarks prepared for the session on - *Cooperation in Environmental Decision Making -- Community-Based Environmental Decision Making Workshop*.
US EPA Office of Economy and Environment and National Center for Environmental Research, NSF Decision, Risk and Management Science Program. May 9, 2000.

The opinions expressed in these remarks are those of the author and do not reflect positions or policies of the US EPA.

Jerry Filbin is EPA's Agency coordinator for community-based environmental protection (CBEP). In this capacity he coordinates EPA internal communication and collaboration for implementation of community-based approaches among an Agency network of CBEP coordinators and practitioners. He is the lead staff on CBEP implementation policy issues for the Agency's Reinvention Action Council. His Ph.D. from Wayne State University (1980) is in the field of aquatic ecology. He is also adjunct faculty in the Whiting School of Engineering at Johns Hopkins University.

Community-based environmental decision making - reaching for better results through better partnerships.

Over the last six years EPA has had an increasing interest in working more effectively with communities as a partner in promoting stewardship and sustainability. In February 1999, EPA released its *Framework for Community-Based Environmental Protection* (EPA, 1999) to define why and how it would implement community-based approaches. EPA's principle goals in adopting community-based approaches focused on:

- doing a better job in achieving the Agency's programmatic goals (clean air, water, etc.);
- supporting communities' efforts to ensure long-term ecological, economic, and quality-of-life benefits;
- helping communities address environmental concerns that were not amenable to traditional federal regulatory concerns;
- and promoting integration of EPA programs to enhance community-based decision making.

EPA's interest in community-based approaches came from a desire to help communities protect the ecosystems, ecological resources and ecosystem services (ESA, 1997) that are the foundations of local economies and quality of life. EPA also recognized that traditional regulatory approaches *alone*, would not be adequate to meet these environmental challenges for building a more sustainable future. EPA also understood that citizens in the US are reluctant to grant broad regulatory powers over land use to any level of government. Therefore, collaborative approaches that rely on the broadest stakeholder participation and consensus processes seemed to offer the greatest potential for protecting ecosystem goods and services.

For EPA, the community-based environmental protection (CBEP) approach required:

- a focus on addressing the collective issues within a definable geographic area
- working collaboratively with a full range of stakeholders through effective partnership
- assessing the quality of land, air, water and living resources in a place as a whole
- working to help communities integrate environmental, economic and social objectives and promote local stewardship of all community resources
- working collaboratively to identify and implement the use of the most appropriate public and private, regulatory and non-regulatory tools
- using an adaptive management approach that relied upon ongoing assessment information to feed decision processes.

EPA's strategy for incorporating and promoting this approach included incorporation of the approach for all EPA programs and regions; building capacity for states, tribes, local agencies and community groups; and carefully selecting places where EPA might work directly and as a prominent partner to optimize the use of resources for achieving success. EPA recognized that its involvement with communities might change over time and might be different for each community. In some places, EPA as a Federal agency might be only indirectly involved, (e.g., providing data, information or referral) and conversely, in some places, in partnership with

community members and other agencies, EPA might take a leadership role for some or part of a community project. In the middle of this gradient may be a large number of places where EPA's role might be a mix of activities -- such as educator, advisor, grant source, facilitator.

In the development of the Agency's CBEP approach, EPA recognized the need for social science tools, methods and information to assist communities in identification of public perceptions, desires and beliefs as a necessary ingredient for community decision processes. Social science approaches may also provide tools such as "social marketing" to find the most effective ways to educate and influence beliefs and behaviors. Over the last 4 years, EPA has supported a community-based fellowship through a cooperative agreement with the Society for Applied Anthropology (SfAA). These fellowships provided technical assistance for social science assessments to communities by SfAA fellows. Similarly, EPA has been working on the development and pilot testing of tools for community profiling to help communities better identify public perceptions, beliefs and behaviors that would be significant issues for community-based environmental decision making.

Promoting community-based initiatives.

The papers we heard this afternoon provide us with some precautionary tales about the nature of "devolution" of federal environmental programs and true community participation; about the circumstances that are likely to promote public participation on decision processes; and about the pitfalls of assessing public perceptions and motivations.

One aspect of the community-based approach that we had to recognize very early on as we began to frame the Agency's CBEP approach was that there was no single model of how place-based projects originated. Certainly, we recognized that local and county governments in many places had experience in more holistic approaches to environmental planning. Many local and county governments were moving away from more traditional "top-down" planning approaches and moving toward more inclusive processes that included tools like "visioning@" (EPA 230-B-96-003, 1997). Clearly, public concerns over issues such as sustainability and smart growth influenced the considerations of local government entities, and there was an acknowledgment from local governments that citizens where demanding a more active role. We also recognized a growing movement towards more "grass-roots", citizen-lead efforts where governments and local institutions may, or may not have been partners. We examined a number of models to describe how these efforts worked, included community-based education (e.g., Project Head Start) and public health (e.g., HIV/AIDS prevention, treatment and social services) organizations. These organizations identify their goals and derive their governance through broad community participation and leadership. In this model, local and state governments participate as advisor, resource provider, information resource, and liaison to higher levels of government. One challenge for each community is to identify suitable models for local stewardship and to integrate the activities of individuals, citizen groups and local governments with ***a focus on environmental results*** as an outcome of good and fair community processes. It would be an oversight not to acknowledge that in the United States there are old models of participatory

processes for conservation and community planning, including citizen conservation and zoning commissions at local and county levels, and even town meeting form of government.

In today's paper by Dr. Lubell we see evidence that a process that is perceived as fair and open and that minimizes the burden of "transaction costs" is important to encouraging wide community involvement. That paper also presents evidence that perceptions about the severity of environmental issues, the soundness of scientific information and the likelihood of positive outcomes may have an influence on peoples willingness to participate and support community action. The paper also provided evidence that the level of social capital within a community is a necessary ingredient to extensive public participation. These hypotheses are consistent with some of the observations we made in trying to develop case studies of community-based watershed protection efforts in two communities -- the Blackfoot watershed in Montana and in the Big Darby Creek watershed in central Ohio.

In the Blackfoot watershed, community members rather than county or state government lead the way in developing plans to protect a valuable and possibly endangered trout fishery. The state government provided scientific assessment information, but local land owners devised and voluntarily implemented strategies to protect stream bank and habitat by limiting the number of access areas for recreational use through private land. Their action apparently was effective in mitigating the need for regulatory approaches for protecting endangered species. In this case, the members of the local community perceived the gravity of the problem with the assistance of government agencies. Significant to the local landowners who were at the heart of this initiative were three perceptions:

- they shared a unique and valuable natural resource ("*A River Runs Through It"*).
- the resource was at risk from unjudicious use and lack of conservation effort
- that only their collective action could preserve and protect the resource.

In the case of the Blackfoot, a western aversion to regulatory approaches, and the trust among community members on the watershed issues build through long evenings of discussion and debate were strong drivers in the creation of consolidated effort. Notably, there was an "institution of social capital" that played a very strong role in facilitating the community dialogue -- we should never underestimate the importance of the local tavern/restaurant in creating social capital!

In the second case, the Big Darby Creek watershed in Ohio, state government played a strong role in educating communities through assessments and public education and awareness programs. The link from government into the community was made most effectively through the local academics and conservation agents who "wear two hats" as both members of the local community and as an extension of the natural resource conservation agencies. The Creek contains several endangered species of fish and mollusks and is both an urban and rural recreational resource in the metropolitan Columbus area. Local fishing and hunting organizations became strong advocates for improved conservation and enthusiastic partners of government and academia in raising public awareness and facilitating community discussions about planning and best land use practices. While the threats to the Big Darby from rapid and

environmentally damaging patterns of suburbanization are very real and continuing, some progress has been made on agricultural land where local owners have begun to teach each other the value of better farming and land conservation practices. Equally important here were the perceptions of the importance of the resource, the decline of the condition of the natural resource, and the importance of collective voluntary action. A very key factor here, also was the trust that the community build among its members and with the state and local government over these issues.

I would like to suggest, however that sustaining a local effort involves making perceivable progress in solving problems. Without measurable progress toward an environmental or economic or social goal, these initiatives are very hard to sustain, losing participants who are frustrated by the high transactional cost with no apparent gain. I believe that from a community perspective, as Drs. Abel and Stephan identify, there is a need for results and accountability as communities assume more control over local environmental issues. Not only is this necessary for participation of the Federal agencies under the Government Performance and Results Act (GPRA), but it will be key to sustaining community involvement for long term stewardship.

To this end, I would propose that we (collectively) need to help communities understand their status and trends by developing better and more understandable indicators of environmental, economic and social progress that are applicable and useful at the community level. We need to link those indicators more closely to our measures of public perceptions and particularly public attitudes and behaviors in order to understand what community action models work most effectively under what circumstances to produce results. The good news is that there is progress in finding these types of indicators (Hart, 1999). The bad news is that we haven=t made very good progress on integrating the social sciences, natural sciences and science of public administration in ways that help us use indicators to encourage public action through understanding, trust, and sustained civic participation.

What Are Useful Roles for the Federal Government?

Dr. Lubell asks the question in his paper, "Do institutions matter?". I believe that we are beginning to develop a body of evidence, although most of it anecdotal at this point, that for communities, the Federal government can be an important institution in supporting community initiatives. For the US EPA, clearly we envision continuing a strong role in implementing and overseeing the Federal environmental regulatory program since it provides a way to create an "environmental baseline" upon which communities can build to attain their long term sustainability goals. This Federal regulatory program provides a bulwark against any "race to the bottom" that could be created by the fragmentation of environmental standards and political winds at state and local levels that may drive political entities to opt for reduction in public expenditure or acceptance of economic growth strategies that sacrifice long term environmental and economic progress for ephemeral economic growth.

The EPA and other Federal agencies also have clear mandates in matters that cross state and tribal boundaries and the authorities and influence it can exert are important in addressing issues that occur at landscape and global scales. The Federal government also has the ability and authority to ensure that the interests of minority communities are considered within the context of community planning and community environmental initiatives. Most notably, the Federal government has the authority under Title VI of the Civil Rights Act to move or deny federal resources and assistance in support of minority communities' concerns (Collin and Morris Collin, 1998). The Federal authority in this matter becomes all the more important when states are unsure about their authority or ability to act in these matters (Manry for the State of Florida, 1999).

In the 200 plus projects EPA has participated in over the last 6 years that are identified as "community-based", Agency staff have played a variety of roles, such as:

- technical and analytical assistance for environmental assessments,
- assistance and training in group facilitation and community visioning,
- pilot testing community profiling techniques to ascertain community values and beliefs.

EPA has also provided monetary resources for community activities through grants to organizations that provide training, assessment assistance and policy analysis for local governments. One of EPA's most valuable roles is in providing information on environmental conditions and change within communities. EPA has access to a tremendous amount of environmental information and data - and public access to these information resources is improving rapidly. Examples of information systems such "Envirofacts", "Enviromapper", and "Surf your Watershed" located on the EPA website provide citizens with instant access to information about their communities.

In today's papers we heard evidence to suggest that the level of public awareness and knowledge about environmental issues and processes is an impediment to public participation in community decision processes. This suggests that EPA may find an important role in expanding its current environmental education initiatives for adults.

Similarly, it seems that EPA and other Federal and state/tribal agencies might be able to fill a significant information/education gap by considering what role they could play in creating state-level centers for community education and assistance for sustainability planning and implementation. Some of the existing models, such as the cooperative extension- land grant colleges and universities and the Natural Resource Conservation Service show us how government can support assistance networks for natural resource protection. I suggest that it might be worthwhile to create a pilot test for a state sustainability assistance center to see if such a center, perhaps at a land grant university could provide both hands-on assistance with environmental, economic and quality-of-life assessments; access to better local information and data; and educational opportunities focused at improving adult participation in civic process.

It seems likely that institutions such as these are more likely to find trust within communities because they are locally (or at least state) based and could become an institution, focused on sustainability goals and customer service. They are also more likely to work in scales of size and time that are relevant to local communities. They could also provide mentoring and evaluation to ensure accountability through successful outcomes. The applications of social sciences that we have discussed today become an important ingredient to supporting community decision processes.

BIBLIOGRAPHY

Collin, R.W.,and R. Morris Collin, 1998. The Role of Communities in Environmental Decisions: Communities Speaking for Themselves. J. Env. Law and Litigation. 13: 37-89.

Ecological Society of America, 1997. Issues in Ecology: Ecosystem Services: Benefits Supplied to Human Societies by Natural Ecosystems. ESA Bulletin No. 2. Washington, DC.

Hart, M. 1999. Guide to Sustainable Community Indicators. 2nd Edition. Hart Environmental Data. North Andover, MA (http://www.subjectmatters.com/indicators/

Manry, D. September 1999. Administrative Law Magistrate Finding in: Rowe - vs- Oleander Power Project and Florida DEP.

US EPA, 1999. EPA's Framework for Community-Based Environmental Protection (EPA 237-K-99-001). Washington, DC.

US EPA, 1997. Community Based Environmental Protection: A Resource Book for Protecting Ecosystems and Communities (EPA 230-B-96-003). Washington, DC.

Policy Discussion for Session III by Bruce Tonn, University of Tennessee, Knoxville

This short piece provides comments on the three papers presented in Session III: Cooperation in Environmental Decision Making of the Community-Based Environmental Decision Making Workshop organized by the EPA and NSF on May 9, 2000. Specific comments are provided about each paper as well as general comments that cut across all three papers. This commentary also highlights other important community-based environmental decision making research issues and discusses the need to consider how powerful national social, economic, and technology trends could impact future community-based environmental decision making.

Comments on *Attitudinal Support for Environmental Governance* by Mark Lubell

This paper explores the relationship between community-based environmental decision making process type and public participation. The hypotheses are that collaborative processes have characteristics that potential participants would find favorable and that such attitudes would then translate into increased participation. Stakeholders involved in decision making about thirty estuaries were surveyed. Twenty of the estuaries are part of the National Estuary Program, which involves collaborative decision making processes. The remaining ten estuaries are not part of this program.

This research demonstrates that collaborative programs have characteristics which potential stakeholders would find favorable. The set of variables used in the analysis is quite strong, as is the accompanying literature review and theoretical discussions. These mostly Likert scale variables measure important factors such as degree of collaboration, process effectiveness, problem severity, perceived fairness of the process, the locus of decision making authority (internal or external to the region), and whether the process is dominated by economic interest groups or experts and administrators. The paper also develops a strong transaction cost framework that explains participation decisions in terms of minimizing total environmental decision making transactions costs that must be expended to achieve one's goals. Many of the paper's specific hypotheses were supported by the statistical results.

I only have one straightforward suggestion for improving this paper. This involves providing the reader some additional information about the estuaries and stakeholders. A map of where the thirty estuaries are located and a table or two describing each estuary and its constellation of stakeholders would provide a foundation for the following theoretical analyses.

My other suggestions probably relate more to extensions of this research than to the current paper. One suggestion relates to fully implementing and tuning the use of the Azjen and Fishbien model. (1) This is an excellent model to apply to the study of public participation. The model has four elements, beliefs, attitudes, intentions and behaviors. With respect to public participation, one can model stakeholder's beliefs about environmental decision making processes, their attitudes about environmental decision-making processes emanating from their beliefs, their intentions to participate, and finally their ensuing participatory behaviors. It would

be exciting to add to the variable set described above, which mostly measures beliefs about decision making processes, variables that measure attitudes (e.g., which process characteristics are most favored by potential participants), intentions, and actually participatory behaviors. It would also be interesting to include in the model variables that capture characteristics of the region where the estuary is located as a proxy for potential cultural influences, and characteristics of each process being implemented in each estuary. For example, it is possible that how long a process has been operating may influence beliefs and attitudes about the process, regardless of whether it is collaborative or not.

Comments on *The Limits to Civic Environmentalism* by Troy Abel and Mark Stephan

The main purpose of this paper is to explore the relationship between devolution of environmental decision making responsibilities and public participation. It has been hypothesized by some that devolution will lead to increased public participation. This is an important hypothesis to explore because the state of environmental civicness is quite low in this country and the expectations about devolution can be quite high. To explore this hypothesis, program contacts for 107 municipal-based environmental programs highlighted by Renew America as having achieved success were surveyed about the participatory aspects of their programs. The data do not support the above hypothesis. Indeed, the data show that municipal environmental decision making is dominated by an elite corps of leading citizens, law makers and bureaucrats.

Conducting an analysis with regard to the above hypothesis is quite a challenging task. Here are several suggestions that the authors could consider as they continue their research in this area. Foremost, the programs included in the database need to be better described. Were the programs in the database indeed established to undertake new environmental responsibilities devolved to municipalities from federal and state governments? It is hard to discern from the paper. After all, municipalities have had a stable of environmental issues to contend with for many years, as related to land use, waste disposal, and local natural amenities, for example. It is also arguable whether many new local environment decision-making responsibilities have actually devolved to the municipalities. Additionally, many communities are instituting sustainability programs, not at the behest of state and federal governments but because of their own growing recognition of the needs to protect the environment. So, I think there is some work to be done to better flesh out the devolutionary aspects of the above hypothesis.

I do not question the lack of civic environmentalism displayed in most communities around the country. The presentation at the workshop highlighted the decline of social capital in our communities as one potential explanation but writers such as Putnam mentioned in the presentation were not mentioned in the paper. Thus, it is recommended that the paper mention the literature which describe factors that may constrain people from participating in community-based environmental decision making processes, such as work, lifestyle, lack of community social capital, personal anxieties, and a built environment not conducive for social dialogue. Conversely, it would be interesting to explore if environmental-issue non-governmental organizations (NGOs) are providing opportunities for more people to exercise civic environmentalism. The number of this type of NGO has grown phenomenally in recent years and

may be a more appropriate forum for broad civic environmentalism than would be fora dominated by municipal governments.

Comments on *Surveying Diverse Stakeholder Groups* by Bill Leach, Neil Pelkey and Paul Sabatier

This paper addresses a very important issue to social science researchers, data collection. Researchers routinely face time and funding constraints that could lead them to interview fewer people associated with an environmental decision making process than would be ideal. This paper discusses how insights into watershed decision making could be different had researchers not only interviewed coordinators or one specific stakeholder group or only direct participants in the decision making process and not knowledgeable outsiders. Data collected from twenty-four watershed groups provides a quantitative description of potential biases associated with limited respondent sets.

It would be interesting if this paper developed hypotheses concerning expected differences in viewpoints about watershed decision making. For example, it was found that coordinators believed processes were infused with more trust and had made more progress than did the stakeholders. It was argued that coordinators' beliefs could be biased. On the other hand, it is possible to hypothesize that coordinators would experience more trust in a process because they would have more frequent and intense relationships with more stakeholders than would the average stakeholder. Additionally, one could hypothesize that coordinators would have had more experience in environmental decision making and observe that what others would judge as little progress as would actually be better progress as compared with many other environmental decision making processes. If one were to accept these hypotheses as valid, then the question becomes whether the answers provided by the coordinators would in some sense be more informed than the answers provided by the stakeholders. What differences would be expected among stakeholders? Also, why would one not expect to find that non-participants have less extreme views of watershed decision making processes, given a tendency some people have of providing answers toward the middle of scale questions when one does not have high knowledge about the answers to the questions being put to them?

General Comments

The main comment pertains to the choice of decision process or mode for different contexts. It appears that the debate about this has been between those who espouse "rational", expert dominated processes versus those that favor collaborative processes. I think it is most reasonable to argue that different decision making processes are appropriate for different contexts.(2) For example, with respect to the Abel and Stephan paper, it could be argued that many or most of the environmental problems being confronted by the municipalities in their database could be best dealt with by an "elite corps" approach. One could also question whether a collaborative approach is best for every NEP estuary. Future research should endeavor to test hypotheses that relate decision making contexts to the effectiveness of different decision making processes or modes. What would be the predicted outcomes of environmental decision making efforts that implemented inappropriate processes? What would be the predicted outcomes of

efforts that implemented the most appropriate processes? This type of research requires long-term observations and evaluations of complex processes that may indeed switch among modes and even implement combinations of decision process types as the needs arise.

The need to improve public participation seems to be a given among a large group of concerned government officials and environmental activists. What is a reasonable goal? What can we expect from or demand of our citizens? A recent article by Michael Schudson in the *Wilson Quarterly* argues that historically citizens of the United States have largely been ignorant of political ideas and issues and have been generally uninvolved.(3) There is no golden era of citizen participation in our past. Indeed, the combination of factors that can constrain citizen participation and the decided lack of ability of government to implement strong, long-lasting participation programs can appear overwhelming.(4) I think it would help this community to discuss what would be reasonable goals for environmental citizenship for the average person in the US.

In conjunction with this discussion, I believe it is important to explore in-depth the potential contributions of information technology to environmental citizenship. Many issues could be explored. For example, how are community networks being used to support local and regional environmental decision making? Are data and information provided by federal agencies such as EPA and USGS through their websites being used by communities? Can the data and information be provided in better manners? To what extent are automated decision support tools being used to support community decision making? How can these tools be better tailored for this application? Information technology issues could be explored in the all the contexts covered by the three papers in this session.

Other Important Research Issues

Community-based environmental decision making is exceedingly complex. There are numerous additional issues that are worthy of research attention. Here are several for consideration:

- Uncertainty: How is it handled? How ought it be handled?
- Turnover of Participants: What is the level and impacts upon community environmental decision making of turnover?
- Expertise: What is the level of expertise needed to support this endeavor and how can it be developed?
- Foresight: Is it being practiced? If so, to what extent? If not, why not?
- Interconnections: with adjacent areas, with other governments, with other environmental problems. Are these connections being made? If not, why not?
- What is the *ideal* for community-based environmental decision making? Again, it is important to articulate expectations and goals, even if people disagree on them and even if they are revised over time.

Future Assessment of Community-based Environmental Decision Making

Community-based environmental decision making is a future-oriented exercise. Generally, the goals are to preserve today's environment and improve tomorrow's. Foresight is needed to identify future risks to the environment and long-term programs are needed to promote environmental quality. Within this vein, then, it is important to be future-oriented with respect to the prospects for community-based environmental decision making in the future. It would be useful to assess the potential impacts of strong social, economic and technological trends over the next twenty years upon this endeavor.

For example, the population of the U.S. is rapidly aging. What impacts might this trend have upon community-based environmental decision making? Will seniors have more time to devote to this activity? Will they be have strong or weaker attitudes about the environment? Will generational disputes arise? Will they have more leisure time and money to engage in eco-tourism? Will eco-tourism be a growing phenomena in any case? How will this industry impact local and regional environmental decision making?

In many ways, it appears that the rise in concern about public participation is in response to the growing domination of corporations upon our country, communities, families and individuals. Additionally, it can be viewed as a response to the growing dominance of big government upon all aspects of American society. In fact, one could argue that the future of community-based environmental decision making lies in a bigger battle for the soul of American society being fought by communities (which includes families and civic organizations), ubiquitous government and pervasive corporate organizations. How will this battle evolve in the future?

The important role of information technology to support community-based environmental technology was mentioned above. However, what would be the impact if personal computers in twenty years were one million times more powerful than today's personal computers? (5) How would the discussions change if our abilities to genetically engineer flora and fauna were significantly enhanced, even to the point of becoming God-like? What could be the possible future interactions between the state-of-the-environment, these two factors, and community-based environmental decision making? Will we see the emergence of re-environmentalization, where large swaths of the American landscape are allowed to return to natural states? These types of questions need to be asked to complement social science research on today's environmental decision processes.

ENDNOTES

1. Azjen, I. and Fishbien, M. 1980. *Understanding Attitudes and Predicting Social Behavior*. Prentice Hall, Englewood Cliffs, NJ

2. See Tonn, B., English, M., and Travis, C., 2000. A Framework for Understanding and Improving Environmental Decision Making, *Journal of Environmental Planning and Management*, Vol. 43, No. 2, 165-185.

3. Schudson, M. 2000. Americas Ignorant Voters, *Wilson Quarterly*, Spring.

4. Tonn, B., and Petrich, C. 1997. Environmental Citizenship: Problems and Prospects, ORNL/NCEDR-1, Oak Ridge National Laboratory, Oak Ridge, Tennessee, December.

5. This prediction was made by Bill Joy, Chief Scientist of Sun Microsystems, during a presentation made at the National Science Foundation on May 5, 2000.

Question and Answer Period for Session III

Matt Clark of EPA asked about the bottom line of community based environmental decision making. At the end of the day, are we getting a cleaner environment? In contrast, he asked, what if we allocate all our resources to enforcement rather than to public participation?

Troy Abel responded that his sample had 53 communities that are exceeding federal standards for prevention of global climate change. He also noted that, as a political scientist, his primary research concern is not about how to get a cleaner environment.

Mark Lubell responded that attitudinal support is necessary but not sufficient for obtaining success in environmental policy. He said that collaborative decision making is not a blanket solution to all types of problems, and that there are certain types of problems where enforcement would fail, for example, nonpoint source pollution. With lawn fertilizers, collaborative decision making would be much more efficient. Additionally, he suggested that, although we may see attitudinal changes in the near future, we may not see any environmental changes for at least ten years.

Gerald Filbin stated that the burden is on the researchers to demonstrate the payoff when federal resources are being invested. He said that EPA has been involved in community based efforts for six years now and should be able to measure some type of benefits from the process.

Anne Bostrom of the National Science suggested that conflicts can be very expensive and, therefore, the expense of resolving conflict can be justified.

Mark Nechodom of US Forest Service mentioned a case study that compared conflict with upfront investment in the process and found that multi-stakeholder processes can be even more costly than conflict because of the appeals process. This study undermines claims that investment in the process can reduce conflict costs by 80%.

Anne Sargeant of EPA mentioned that her experiences with communtiy involvement in the places she has lived have given her some ideas of what is important for encouraging involvement. For example, there should be a venue or place that people can go to meet each other and get things done. She also thought it is easier to get involved on smaller scales, for example, in neighborhood associations that are more accessible. Finally, she asked Troy Abel whether he can include moneyless organizations (those that would not report to the IRS) in his analysis.

Abel responded that the ideas suggested would be difficult to include in a quantitative analysis but that he would try to consider them in his case study work.

Clay Ogg of EPA suggested that certain parameters should be in place in order for a community based program to be successful. He gave the example of a Department of Agriculture watershed program where communities must identify their problem, set goals

and identify steps they will take to achieve their goals in order to be considered for the program. Ogg felt that community based programs have a high likelihood of working if this kind of disciplinary approach is taken.

Lubell responded that every management plan has different goals, obligations and rules and that it is hard to compare across programs. One of the benefits of collective decision making is that the local community derives its own goals and objectives based on the specific issues of their environment.

Lubell and Ogg agreed that it would be useful to have data where specific goals of a process are identified and "checked off" when they are achieved.

Nechodom suggested that the goals are usually ecosystem condition goals and that the process by which you get there is less important than the goals. He also felt that USDA's watershed program and EPA's CBED program are rare, or alone, among government programs in emphasizing social capital building. He noted that this discussion referred back to Matt Clark's initial question in this session.

Abel suggested that many more grants (for example in the environmental justice program he studied) should go to social capital building and that we need to find ways to provide people with more political information, including relevant offices to contact, and time and locations of public meetings.

Nechodom suggested that we have to consider whether we want to define "politics as practice" or "politics as means." In other words, is public participation a good in itself or are we trying to get better environmental policy?

Bryon Norton referred to Lee's *Compass and Gyroscope* which argued that the idea that people will learn and be part of the process has not, and will not, work. Lee promoted the idea of an epistemological community of people who are interested and willing to invest their time and learn new models. If these people are representational of the community, they are accepting the responsibility not only of decision making, but of ultimately educating their constituents about the problems and difficult trade-offs that had to be made. Norton argued that, based on this idea, the goal of increasing participation may not be necessary or even optimal.

Mark Stephan of Georgetown University said that when we do not have full participation, the question becomes what is the nature of the representation. How do we hold the citizens in advisory groups accountable? In our democratic system, the usual form of accountability is voting, but we do not vote citizens in and out of these panels.

Norton responded that environmental concerns never make it to the agenda for public accountability anyway. He argued that these communities can be informal and participants can lose their legitimacy when they do not function as representatives of particular constituencies.

Anne Sergeant suggested that we may not have full accountability, even at the national level. She also thought there may be problems where a number of people do not care what happens anyway, so their nonparticipation is fine.

Stephan responded that what is important is that everyone has an equal opportunity to participate.