Electronic Rulemaking: New Frontiers in Public Participation

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Introduction and Overview

In this paper we propose a social science research agenda that will reflect upon and, hopefully, inform the development of new information technology (IT)-based approaches to the electronic collection, distribution, synthesis, and analysis of public commentary in the regulatory rulemaking process. While the move to Internet-based governance is growing, there is a dearth of Political Science research on the impact of the Internet in the discipline's top-tier journals (Fountain 2001). Program managers at the National Science Foundation's Digital Government Program, in the Directorate for Computer and Information Science and Engineering, are encouraging social scientists to seek funding to conduct basic research on the changes underway as IT alters the citizen-government relationship. What follows are two possible approaches to a number of questions raised by this technological step.

We begin by identifying one area of the information technology transformation of governance, the use of web-based programs to collect public commentary on proposed agency rules. One reason for looking at e-rulemaking is because it crosses the line from the first generation of government Internet use – providing information to the public – to the next generation: citizen to government commentary, and potentially citizen to citizen discourse, in the development of agency rules. Such a process offers the opportunity for the public to engage in a more reflexive modernization (Beck 1995, 1997, 1998; Beck, Giddens, and Lash 1994; Giddens 1990), to provide public discourse, values, and direction in the development of policy. In the spirit of reflexive modernization, we offer a research agenda that aims to engender social science reflection in the development of a technological design that embodies a more participatory, democratic essence.

Two key issues, informed by democratic theory and critical environmental policy, are at the center of our research agenda. First, we will discuss the potential to examine and evaluate, from the perspective of discursive democratic theory, the growing practice of web-based public comment. Discursive democracy brings a number of crucial issues to the study of this digital transformation, including issues of deliberation, diversity, respect, preference change, and the general expansion of discourse in the public sphere. Second, we examine whether the interface between environmental science and public values can be improved in the process of e-rulemaking. We explore the extent to which these new mechanisms of public participation facilitate the integration of scientific knowledge and public values in environmental decision-making.

Again, our project is two-fold: First, we plan to examine the existing and evolving processes themselves, to see whether the potential for public participation in reflexive modernization is being realized. And second, we aim to reflect on the technology itself, stimulate a social science discussion of its development, and push for more involvement of this type of reflection in the continuing, relentless move to electronic governance.

From Rulemaking to E-rulemaking

The Administrative Procedures Act of 1946 was imbued with a number of democratic values, including the transparency of information, public participation, and the accountability of agencies (Kerwin 1999). Regulatory rulemaking is a process designed to sort through facts and opinions derived from numerous sources; it is also a time- and information-intensive process, often requiring three or more years to complete (Johnson 1998). While meeting the mandate of the APA through required public comment periods and responses to those comments is a major task of agencies, it has also become one of the key access points used by the public, interest

groups, movement groups, and other NGOs. Recent history has propelled rulemaking into the focus of public attention by inviting greater levels of citizen participation. As Cornelius Kerwin notes, rulemaking offers "opportunities for dimensions of public participation that are rarely present in the deliberations of Congress or other legislatures" (1999, 32).

The move to electronic, web-based participation has accelerated over the past few years, as agencies seek more a more efficient method of meeting the "notice and comment" provisions of the APA. The first of these began in 1997, with the USDA's (ultimately controversial) proposal for the first national set of rules for organic foods. For this innovative use of the internet, the National Organic Program of USDA was awarded the 1998 Government Technology Leadership Award.

Studies of this process (Zavestoski and Shulman 2002; Shulman, 2003) note that while the NOP was a bit overwhelmed with the number of electronic comments, the sorting of information, and so its delivery to relevant experts in the agency, was made easier. The process was highly efficient, allowing NOP staffers to economize on time and labor. And, perhaps most importantly, the USDA cited increased public confidence in the agency as a primary benefit. By allowing maximum participation and creating the ability to view all other participant's comments on-line, the NOP received praise even from opponents of the rule. According to the successful USDA Hammer Award application, "Universal access to information has spawned a communications network that improves public awareness, understanding, and participation in government." At the introduction of the revised rule, the Secretary of Agriculture declared: "I do want to point out that the fact that we are once again announcing a proposed rule on national organic standards is a living example of our democracy at work. The people spoke very loudly I might add" (Glickman 2000).

Another recent example is the public comment opportunities for the proposed Roadless rule at the Department of the Interior. The Roadless Area Conservation Initiative originated in January 1998, when then Forest Service Chief Mike Dombeck proposed to temporarily suspend road construction and reconstruction in most inventoried roadless areas and other adjacent unroaded areas. After the development of an interim rule, the Forest Service moved to develop regulations that would provide appropriate long-term protection for inventoried roadless areas.

In 1999, the USFS issued a notice of intent to prepare a Draft Environmental Impact Statement (DEIS). Following further public participation in the development of the DEIS the USFS issued its proposed rule and DEIS. The Forest Service posted the proposed rule, the considered alternatives, background information, and a schedule of public meetings on its Roadless Area Conservation website (roadless.fs.fed.us). In addition to 430 public meeting, the USFS also received more than 1 million postcards or other form letters, and approximately 60,000 original letters, 90,000 emails, and several thousand faxes. The USFS analysis of the public commentary is available on the website; unfortunately, as the FS only used the web to give people information, the limited use of the technology to allow email submissions, as opposed to discussion, was a step backwards.

Agencies including EPA, USDA, DOT, NOAA, SSA and others have all attempted one form or another of electronic commenting in rulemaking processes, Congress is mulling over an "e-Government Act," which if passed would require federal agencies to begin conducting much of their business over the Internet, and the White House OMB is currently pushing for a uniform protocol for e-rulemaking by the end of 2003 (OMB 2002). Many agencies seem to agree with the GAO, which optimistically finds that the "use of IT in regulatory management can reduce regulatory burden; improve the transparency of regulatory processes; and, ultimately, facilitate

the accomplishment of regulatory objectives" (GAO 2001, 1), as evidenced by their commitment to electronic rulemaking. Representatives of these agencies participated in e-rulemaking workshops sponsored by Drake University and the Harvard University Kennedy School of Government in 2001 and 2002, respectively. At both workshops, agency representatives praised the cost-effectiveness and efficiency of their e-rulemaking systems, but also acknowledged the need for social science research into the process, the impacts on public satisfaction with the agencies, and the final rulings themselves. There is, to date, little social science data evaluating the numerous issues involved in this transition; our research projects are designed to fill some of those gaps.

Optimists, Skeptics, and the Lure of Reflexive Modernization

There is both optimism and pessimism regarding this transformation to e-government. A school of "digital democrats" has been praising the potential of local, national, and even global-scale "town meetings" brought to us by the technology. By the middle of the 1990s, it was obvious that the internet would be the defacto standard for governments to get information to citizens (Noack 1995, 29). Interested in the two-way exchange of views, as opposed to just one-way delivery of information, democratic theorists have focused on the potential of the internet to increase citizen participation more broadly (Grossman 1995; Hill and Hughes 1998). Numerous scholars argue that web-based participation could be the answer to the decline in social capital and, so, interest in citizenship (see, for example, Coleman and Gotze 2001).

There are, however, more skeptical analyses. Certainly, we cannot expect the new technology by itself to solve the problems of citizen interest and participation, as well as government accountability and authenticity (Dawes *et al* 1999). A move to increased e-government brings up crucial issues regarding not only citizenship and representative government, but also more specific questions about the quality of citizen input and the ability of agencies to adopt to the potential increase in commentary. There are many who insist that the technology simply cannot address many of the key issues of democracy; Hern and Chauk (1997, 36) argue the importance of challenging "the myth of cyberspace as the current pinnacle of real democracy, freedom and information exchange." Even on a straightforward issue such as increasing public oversight of agencies, some suggest that it is ridiculous to assume that a technological change can lead to greater public control of the governmental agenda (Davis 1999, 170).

Others note the fact that many implementations of e-government have deprived the public of the potential of two-way, interactive deliberation on important policy issues; rather than increasing democratic involvement, these critics note the very real possibility that the internet could accelerate the fragmentation and disinterest of the public (Alexander and Pal 1998; Schlosberg and Dryzek, 2002). After nearly a decade of online government, most agency use of the web remains one-way availability of information, with no avenue for two-way discourse or interaction (West 2001, Larsen and Rainie 2002).

Finally, critics are concerned that digital government, rather than helping to bridge the digital divide, might actually widen the existing gap between the information and resource rich and poor (Malina 1999). Even the government's own advisory panels note this danger; the President's Information Technology Advisory Committee warned that "we should use information technology to bridge the gaps in our society, not to create new ones" (PITAC 1999, 13). Still, despite all of these criticisms and concerns regarding the potential perils of digital

democracy, e-rulemaking is being pushed by Congress, the White House, and numerous agencies.

Still, the potential is there, and one of our key underlying philosophies is the possibility of a reflexive design of the move to e-rulemaking and electronic participation in democratic decision-making more generally. The point of a theory and practice of reflexive modernity (see Beck, Giddens, and Lash, 1994) is that we no longer simply suffer the consequences of technological development as inevitable. Instead, we are to question the assumptions and implications of the technology, and how it affects practices and relations in social, economic, and political relations. "Reflexive" means "reflective," as in a population coming to terms with both these effects and a more critical response to them. Beck argues that

> reflexive modernization is the attempt to regain a voice and thus the ability to act, the attempt to regain reality in view of developments that are the consequences of the successes of modernization. These developments call the concepts and formulas of classical industrial society fundamentally into question from the inside, not from crisis, disintegration, revolution or conspiracy, but from the repercussions of the very ordinary 'progress' on its own foundations (Beck, 1997, 15).

We should be especially attentive when the technology is to supposed to benefit democratic practice. Rather than become infatuated with the technology and its democratic potential, we should be careful to bring that technology under democratic control. We can examine, reflexively, how it might strengthen, rather than negate, a system of deliberative democracy. Use of the Internet as a mechanism of reflexive modernization could lead to an open and authentic mode of communication, an increase in the diversity of voices and respect for varying positions, and an expanded public sphere. Plurality of participation can be achieved, among other ways, by opening the discussion to modes of expression beyond those traditionally accepted. The Internet may be a more accepting mechanism of the forms of lay expression that are outside the realm of either scientific or legal argumentation. Personal narrative or moral urging, for example, would weigh into deliberations on rulemaking. Such processes would not only lead to better and more reflective decision-making, but also increased legitimacy for the agencies.

As the National Research Council noted in its report *Making IT Better*, "IT is anything but a mature, stable technology" (NRC 2000, 1). The challenge for researchers in this unsettled context is to assemble interdisciplinary teams capable of shaping IT and broader social or organizational dynamics into the most productive pathways. "Overwhelmingly, the most important opportunities lie in not simply automating existing applications, but rather in rethinking and remolding the structure and organization of the business process to reflect the best uses of IT and in redesigning and remolding the technology to make it most valuable in its (rethought) application context" (NRC 2000, 146). One challenge is to pursue a vision that is long-term and evolutionary in the face of demands for technical quick fixes to persistent information management problems.

Building technical systems for social applications such as rulemaking requires that agencies and university researchers collaborate across the traditional "stovepipe" barriers, whether they lie between or within agencies, or else amongst the academic disciplines. The social sciences can inform IT developers on questions of legitimacy and authenticity in the political process. There is also a need for researchers who understand the relationship between IT and organizational structures. According to a recent NRC report:

> Nontraditional research mechanisms may be needed that will encourage the participation of end user organizations in research, broaden the outlook of IT researchers, and/or overcome disciplinary boundaries in universities. The management of interdisciplinary research collaborations generates its own set of issues: technologists and social scientists have different vocabularies, methodologies, time perspectives, standards of evidence, and so on. Such differences need to be bridged if collaborations are to be effective. (NRC 2000, 168)

The potential is in open forums organized by groups in the public sphere and communicative exchanges with agencies in the development of this technology. To that end, we suggest a model of user and end user advisory boards is appropriate for engaging federal agencies and citizens in a process that seeks to design IT to reduce the collective burden of making better public policy, while involving the public in democratic decision making in new and expanded ways.

There lies the possibility of an authentic and reflexive modernity – and the motivation for our proposed research projects. Otherwise, the danger is a digital democracy that involves only symbolic participation, creates new divides between government and the governed, leaves out those on the underside of the digital divide, and generally undermines democratic authenticity.

We now turn to two key issues ripe for reflection.

Discursive Democracy and E-rulemaking

The move to electronic participation in rulemaking has been justified mostly on economic grounds. The dominant value driving implementation of the technology is efficiency rather than democracy. Many agencies like the idea of electronic participation because it is a low-cost way to meet regulatory requirements for public comment. Dockets no longer have to be organized by staff and housed in expensive office space open to the public; they are kept in electronic storage for off-site perusal. When sued, agencies no longer have to spend hundreds of labor hours producing a docket of the decision-making process; courts are provided with electronic dockets simply by clicking "send."

Efficiency such as this is not inherently undemocratic. But the focus on efficiency can have a detrimental impact on the democratic process. For example, the cheapest computer programs designed to run a digital democracy pass electronic submissions through data-mining filters that send the public comments to the appropriate experts in the agency. Here, the requirements of the APA are met with as little cost and time as possible. But these most efficient programs offer only one-way communication (rather than offer space for discourse), and categorize and organize comments by key words (rather than being sensitive to the variety of positions that citizens might take, and the intentions and nuances that might accompany the key words). With too much of an emphasis on efficiency, the potential of the technology is lost, the discursive landscape gets flattened, and the rich variety of kinds of communication that humans can engage gets edited out of all recognition. Efficiency was only one of the values that led to the passage of the APA, but it was imbued with other values as well, including the transparency of information, public participation, and the accountability of agencies (Kerwin 1999).

In the last decade or so, numerous political theorists have refocused on deliberation as a crucial aspect of democratic practice. Participants make proposals, attempt to persuade others, listen to the responses of those others, and determine the best outcomes and policies based on the arguments and reasons fleshed out in public discourse. Some democratic theorists (for example Bessette 1980, 1994; Rawls 1997) argue that deliberation and public reasoning already occurs in current liberal democratic governments, legislatures, and/or courts; often these theorists are

content to stop there. However, most deliberative democrats (including Barber 1984; Bohman 1996; Dryzek 1990, 2000; Young 2000) insist on expanding the practice of discourse to the public deliberation of policy issues. There is a renewed interest in the place of discussion, reasoning, and engagement across lines of difference in democratic politics. As Dryzek says in his recent reflection on the past ten years of deliberative democratic theory,

> the essence of democracy itself is now widely taken to be deliberation, as opposed to voting, interest aggregation, constitutional rights, or even self-government. The deliberative turn represents a renewed concern with the authenticity of democracy: the degree to which democratic control is substantive rather than symbolic, and engaged by competent citizens (Dryzek 2000, 1).

One of our key aims in designing a research project informed by the issues, suggestions, and cautions of deliberative democracy is the examination of the authenticity and legitimacy of the rulemaking process. While the technological wave to be ridden is the digital one, the democratic wave, in both theory and political practice, is discourse. The underlying question is whether new electronic forms of participation offer more democratic legitimacy than traditional forms of comment. More specifically, deliberative democratic theory brings numerous parameters to bear on the development of our project hypotheses:

1. Deliberation, not preference aggregation. In light of the deliberative turn in democratic thinking, it is important that reflective as opposed to unreflective preferences get expressed and addressed. One-way electronic participation, in which a citizen simply sends a message presenting a preference, leaves us in an "aggregative" mode of democracy (and leaves the mechanics of that aggregation to the experts in agencies). No engagement with the position of others is required, and no reflection on one's own position is induced. The EPA, for example, has a 'de facto guideline' for two-way communication (Covello and Allen 1988), but it has rarely implemented the suggestions contained therein (see Schlosberg 1999, 168-170, and EPA's recent rethinking in EPA 2001). In light of contemporary democratic thinking's stress on deliberation and authenticity, an exclusively aggregative approach constitutes a giant step back. This is not to imply that existing procedures are any paragon of deliberative authenticity, merely that if the new technology is not diverted away from mechanical aggregation it will deplete any potentially beneficial deliberative aspects that do exist (Schlosberg and Dryzek 2002).

2. Inclusion of difference. A more authentic discourse – and a more authentic democracy – includes the diversity of voices present in a society (and in particular those that are affected by the outcome of the deliberation). Deliberative democratic theory has paid particular attention to the issue of plurality of participation (Bohman 1995; Dryzek 1990; Hanson, 1985; Young 1996). This inclusion takes a variety of forms. First, obviously, it means the equal participation of more individuals and groups in the development of policy. This is the essence of environmental justice demands for participation for traditionally excluded groups (Schlosberg 2003). But it also means opening the discussion to modes of expression beyond those traditionally accepted. Young (1996, 2000) wants to move beyond simply rational argumentation – which she sees as exclusive – to include other forms of communication. In practical terms for this project, this would mean giving value to participation that is outside the realm of either scientific or legal argumentation. Personal narrative or moral urging, for example, would weigh into deliberations on rulemaking.

3. Respect for a variety of positions. Linked to the above is the issue of *respectful* engagement in a discourse across differences. Deliberation is aimed not just at a singular outcome in terms of policy at the end, but also at the understanding and mutual respect of participants in the process itself. As Benhabib (1992, 38) argues, the emphasis is 'on sustaining those normative practices and moral relationships within which reasoned agreement *as a way of life* can flourish and continue.' Young (2000, 24-5) notes that participants in democratic discussion listen to others, treat them with respect, make an effort to understand them by asking questions, and not judge them too quickly. This calls on people to be able to understand the positions of the others with which they engage. Within this context, participants should develop arguments which are agreeable to those with different interests and ends (Gutman and Thompson 1996; Bohman 1995).

4. The transformation of preferences. Discursive democracy differs from standard liberal democracy in one key way: preferences and interests are not brought into the conversation as in a battle – with one winning and others losing. The ideal of deliberation is that of communication that actually changes the preferences of participants in the face of the arguments and positions of others. In this way, a process of democratic rulemaking cannot just be one-way, with either an agency positing a position for citizens to accept or that agency simply taking note of objections to proposed rules. There must be room in the design of the online procedure for individuals to not only deliberate with others, but note changes in their own position. Again, authenticity within deliberative democracy depends on participants affecting the outcome of the process; this, of course, includes the possibility of changes to proposed agency policy.

5. Expanding discourse in the public sphere. Digital democracy is a way of extending participation into civil society, beyond elected representatives. However, civil society contains not just individuals, but groups as well. It is widely recognized that flourishing associational life in civil society is crucial to the well being of democracy. Conservative theorists of "social capital" such as Robert Putnam (2000) stress the supportive role of nonpolitical groups in inculcating trust that in turn makes people good citizens. More radical theorists emphasize social movements that often oppose the state. The central question here is: What role is there for groups of any sort in a digital democracy? The virtue of electronic access to, for example, agency web sites is that it can be achieved by individuals without reference to groups. This possibility, however, might constitute one less reason to join and support a group. We already see this problem in the "Action" sections of many major environmental organization websites; action entails pushing a button to add one's name to an electronic petition, or send an email to a member of Congress. This sort of electronic action is isolated, one-way, and largely unthinking. While Putnam's thesis regarding bowling alone focuses on the depletion of *social* capital, a move to commenting alone depletes the *political* capital of a populace becoming ever more isolated. No interchange or opportunity for questioning means little reflection and little communicative competence (interpreted as something more than the capacity to use the technology). The hazard, then, is a further loss of democratic authenticity. Digital democracy need not be inherently isolating, but it is a danger worth exploring.

6. Impact and Authenticity. Of course, democratic processes are authentic only if those processes have an actual impact on the development and implementation of policy that affects people's lives. There are numerous examples of inauthentic and co-opting

mechanisms that only offer the veneer of democratic participation without the reality. Numerous theorists make clear the importance of authenticity as a measure of democratic process (Dryzek 2000, Young 2000). In addition, as noted above, numerous social theorists have discussed the importance of a "reflexive modernization," where democratic processes are used to reflect on the impact of modernity (especially on environmental issues) and actively redirect policy in less risky and more sustainable directions (Beck 1995, 1997, 1998; Beck, Giddens, and Lash 1994; Giddens 1990). As a matter of practicality, there are numerous examples of democratic processes leading to both public acceptance of environmental risks and greater opinion of agencies (Fischer 2000; Williams and Matheny 1995).

One of our central objectives is to examine the move to electronic participation using current theories and values of discursive democracy. We want to explore exactly what sort of democratic participation has been created by the move to electronic participation. We do not plan to simply examine e-rulemaking from some ideal form of discursive democracy, but to compare traditional forms of comment to electronic participation using the parameters of discursive democracy. Specific questions include:

- Is electronic participation one-way, or discursive?
- Given the digital divide, is participation more diverse or less diverse than past forms of public comment? Does digital democracy expand the franchise?
- Are some types of comment (for example, legalistic or scientific) more acceptable to agencies than others (emotional, ideological, storytelling)?
- Do those who engage in e-rulemaking commentary show more respect for the positions of others than those who use traditional modes of comment?
- Do the preferences of citizens change as they are exposed to those of others in online commenting?
- Is electronic participation group-based, or isolating?
- Is participation authentic: does it have an actual effect on rulemaking?

These questions are provided as hypotheses, with a theoretical justification and suggested data sources, in Table 1.

Integrating Public Values and Scientific Knowledge

Another object of our research is to determine the extent to which new Internet-based mechanisms of public participation facilitate the integration of scientific knowledge and public values in environmental decision-making. Despite the wide variety of goals for involving the public in environmental decision-making, in most cases the challenge is to overcome the inherent conflicts between the ideals of healthy ecosystems, the science surrounding suggested policy, and the interests and values of various stakeholders. These conflicts typically play out in a public policy arena where scientific evidence underlies environmental decisions. This arena is often characterized by distrust and even hostile communication, which is a by-product of the adversarial stances of those involved. When decisions emerge from such a context, a distrustful public may issue challenges, which leads to implementation delays, protracted litigation, and enforcement problems. Increasingly, challenges are issued by underrepresented individuals and groups who feel excluded from the decision-making process. To the extent these instances are a clash of public values and scientific knowledge, one possible key to overcoming conflict is a

public participation process that effectively integrates scientific knowledge and public values. Our research will examine whether Internet-based public participation facilitates such a process.

One focus of public participation is to introduce public values into the traditionally science-based environmental decision-making process. The move towards more public participation in the last twenty years is often justified as a response to the shortcoming of the science of risk assessment in which scientific experts "rationally" arrive at policy recommendations by using quantitative analysis to weigh risks against each other and against the cost of regulation. The goal of this effort is to allow agencies to focus limited resources on the most significant risks (Graham and Wiener, 1995; Tengs *et al.*, 1995; Ames *et al.*, 1987). Critics contend this has the effect of removing public values from the decision-making process. Public participation, then, is a way to bring public values back in.

For policymakers and agency personnel, however, simply involving public values for their own sake is problematic. As regulatory officials often see it, the public's values are uninformed by the relevant science. Since some citizens are poorly informed about risk, their preferences are perceived to be susceptible to biases. Limiting risk decisions to councils of experts insulated from public opinion, however, does not necessarily serve the objective of risk minimization (not to mention democracy or reflexive modernization). Comparative risk studies tend to overemphasize point estimates and underemphasize the experimental uncertainty (Byrd and Cothern, 2000; Cohen and Ellwein, 1995). Experts are not immune to overconfidence and underestimation of error (Henrion and Fischoff, 1986). Many decisions regarding risk, while appearing more rational, are highly subjective (Montague 1999; O'Brien 2001). As Kammen and Hassenzahl (1999, 11) point out: "Since decisions about values and preferences are made not just at the final decision stages, but throughout the risk assessment process, risk analysis necessarily combines both technical expertise and value choices." Whether or not they are based on science, and no matter where that science comes from, value choices are essential to democratic decision-making. As Kleinman (1998) argues, the inability of laypeople to comprehend the complexities of the production of scientific knowledge is insufficient grounds for the exclusion of lay perspectives.

In an environment in which public trust of government officials and scientific experts at times appears to have broken down, and where policymakers and agency personnel distrust citizen input, the public is unlikely to accept scientific justifications for a decision. This relationship results in what Renn (1995) describes as an adversarial style of policymaking in the U. S. Under an adversarial regime, policymakers anticipate objections to their decisions, so they compile as much scientific evidence as possible in support of their position. In this mode of decision-making, citizens are not involved in the production of science. But as long as citizens know they can challenge a decision on the grounds that its scientific basis is flawed, no amount of evidence will be sufficient. In essence, citizens learn to use the strategy of continually calling for more scientific evidence with greater levels of certainty before risks are taken.

In fact, such an environment often results in lay activists using science to their own advantage, either by producing their own science, or by pointing out the absence of sufficient science to justify a decision or the potential biases in existing science. This type of strategizing tends to place minority communities at a disadvantage since they often lack the economic and social capital necessary to engage and challenge the science. When they do obtain scientific knowledge, they tend to be dismissed even more readily than other lay activists. These factors make it important to understand whether the Internet can serve to integrate public values with scientific understanding. To the extent that it can, minorities and others whose voices are often

left out of environmental decision-making processes may be able to participate more meaningfully in such decision-making.

The daunting challenge, then, is to promote better cross-fertilization of scientific knowledge and public values. Experienced policy makers and analysts cite two main reasons why this rarely occurs. First, policymakers have been unable to develop a reliable method of incorporating public values into rational scientific grounds for decision-making. Second, lay citizens are typically not able to understand some of the sophisticated scientific evidence relevant to a decision without a certain amount of education (Fischer 2000).

One approach to overcoming this situation is to educate citizens about the production of scientific knowledge, and to expose them to a range of accessible scientific information. The scientifically-informed value orientations of citizens can, in turn, more easily be incorporated into environmental decisions. Presumably, the commitment to public participation in environmental decision-making is towards the ends of producing a more educated public that can participate in meaningful ways and producing a government more aware of public values. In theory, having participated meaningfully in this manner, citizens will perceive the decision-making process as fair and just, and be more likely to accept the final decision, which is more likely to be a reflection of their interests. As a result of this whole process, citizen trust in government is restored. Again, our aim is to determine whether Internet-based public participation facilitates such a process.

The social science questions surrounding the increase in web-based public participation in environmental decision-making are numerous. They revolve around the interface of science and public values, the public perception of the process and agencies involved, and, of course, the nature of the decisions made. Given the increasing move to Internet-based public participation, we are seeking to determine the extent to which this mode of participation facilitates the integration of science and values, and to identify the extent to which it allows for various minority voices, and values, to be heard. Specific questions include:

- Does making science available over the Internet result in more scientifically-based public comment?
- Are citizens more likely to offer value-based justifications when commenting via the web?
- Do citizens who participate in Internet-based comment perceive that their interests and values are represented in the final decisions?
- Do rules that incorporate electronic public comments more or less likely to reflect public values, in addition to science?
- Do citizens who participate in Internet-based public comment periods end up trusting agencies more?

These questions are provided as hypotheses, with theoretical justifications and data sources, in Table 2.

Approach and Methodology

We focus on public participation in *environmental* decision-making for a variety of reasons. First, it is an area of public policy where public interest and participation are quite high. Andrews, in his history of US environmental policy, argues that "one of the most distinctive features of modern U.S. environmental protection policy ... is the unprecedentedly broad right of

access to the regulatory process, which extends not only to affected businesses but to citizens advocating environmental protection" (1999: 240). Rosenbaum notes that more than 75% of all public participation programs in the U.S. originated in federal statutes since 1970, and the vast majority of those are in environmental legislation (Rosenbaum 1989: 215). Paehlke (1989) argues that in the last three decades the environmental area has led all others in the scope and extent of democratic innovation, not just in legislative politics, but also in environmental administration and law. Such innovations include public inquiries, right-to-know legislation, alternative dispute resolution, advisory committees, and policy dialogues. In environmental policy, then, there has developed a culture of participation.

Second, and not surprisingly, environmental issues have been central in the development of web-based public comment. As noted earlier, two of the major uses of the technology have been in the environmental arena – the USDA's proposed rules for organic foods and the Forest Service's proposed Roadless Area Conservation Ruling. In addition, in December 2001 the EPA brought a new system on-line, the EPA Dockets or "EDOCKETS" system, that allows citizens to search for and comment on any open proposed rule. All of this demonstrates that environmental issues are central in both public participation and this transition to electronic rulemaking.

The core of our data will come from at least three different rulemaking cases. We will examine citizen comments in these cases, and conduct a survey of citizens who commented on the proposed rulings. Our selection of cases will be aimed at allowing us to compare traditionally submitted comments to electronically submitted comments in cases where the Internet was used as both an information dissemination and collection tool. We will select cases in order to achieve a level of geographical and issue diversity that will allow us to determine if the hypotheses might hold better in some rulemaking contexts than others. For example, the rulemaking and political cultures of some agencies might make their use of electronic commenting more useful than it would be for other agencies. Below we describe the citizen comments, survey, and two additional types of data we intend to collect.

(1) *Citizen comments*: In submitting formal comments on proposed rulings, citizens have traditionally had two options: sending letters and providing testimony at public hearings. With the advent of the Internet, agencies have not only allowed comments to be submitted via email or through agency web pages, they have also made full dockets available on-line. Agencies also continue to collect public comments through a variety of more traditional mechanisms: public hearings, faxes, and letters. We will compare electronically submitted comments to comments submitted through the mail or by fax using qualitative data mining software, such as NVivo. Public hearings offer an interesting comparison, but whereas we will have contact information for letter writers and electronic commenters, contact information is seldom provided when testifying at public hearings (unless that testimony is also submitted in written form).

(2) *Survey of citizen commenters*: To better understand similarities and differences between individuals who elect to make public comments using Internet technology and those who comment using traditional communication mechanisms, we will perform a telephone survey. The survey will contact representative samples of each community participating in the case study processes. Relying on the contact information provided in most letters, faxes, and emails, we will construct sampling frames for each of the cases we examine. To achieve statistical validity, we will aim for 500 completed surveys for each case studied (250 traditional commenters and 250 electronic commenters). The margin of error (MOE) for a sample of 250 randomly selected members of a community is affected by the size of the universal population.

Assuming a universal population of 2000 members, the margin of error for each sample is +/- 5.5 percent at a 95 percent confidence level. Variables such as those associated with discursive democracy, the incorporation of values and scientific knowledge into citizen comments, and satisfaction with a ruling's outcome and the agencies involved, will be compared across traditional and electronic comments.

(3) *Interviews with agency personnel involved in the selected rulings*: Measuring the outcomes of public participation processes is always difficult. Several measures will be derived from the survey, but we will also conduct interviews with agency personnel who were involved in each of the rulings in order to generate rich qualitative accounts of how the public participation process worked. This will also allow us to determine if citizens and agency personnel share views on the public participation process. At least ten interviews will be conducted for each case. Interviewees will include agency rule writers, community relations staff, legal counsel, and relevant scientific experts.

(4) *Agency and media records of the final rulings*: We will collect and analyze official agency reports on the results of rulemaking processes in order to supplement the individual accounts derived from the interviews. This will include the final rules with their legally mandated Preambles (at times longer than the rules themselves) that explain the decision process.

This approach of combining qualitative and quantitative methodologies offers a more robust approach to the research (Fielding & Schreier 2001). Combining these methods offers the benefit of a research design in which the nuances of behaviors (e.g., commenting) and attitudes can be observed. The public nature of citizen comments provides the perfect opportunity to perform both content analysis of comments, and randomly survey those same commenters.

Expected Results and Benefits

We see benefits of our research in terms of both governmental policy and processes and in terms of empirical support for disciplinary and interdisciplinary arguments. Many government agencies have already committed substantial resources to the electronic collection and synthesis of public commentary during rulemaking. At the same time, agencies such as EPA are increasingly committed to environmental decision-making processes that not only involve the public in a more discursive manner, but also more efficiently integrate scientific knowledge with public values. This research will provide significant evidence as to whether current uses of the Internet as a public participation mechanism is expanding democratic practice and agency legitimacy. In addition, the richness of the multiple types of data we will collect will allow us to explore how the Internet can be more effectively used towards the end of integrating scientific knowledge and public values in environmental decision-making. Such findings will provide key information for agencies that bring e-rulemaking systems on-line in the future, and help agencies with existing systems meet their public participation – and legitimation – goals more quickly.

Given the complete absence of data with respect to Internet-based public participation in regulatory rulemaking, our findings will serve as guideposts for the ongoing and future development of e-rulemaking practices and related research endeavors. By understanding the factors that influence participation and satisfaction with outcomes, as well as the potential of the Internet to shape these factors, we hope to provide a valuable service to policymakers, agencies, and ultimately citizens as well.

As for our contributions to the discipline, a significant body of research is emerging in the area of public participation in environmental decision-making (c.f., Fischer 2000). To date,

absent from this literature is any research investigating Internet-based public participation mechanisms. This research will expand our existing knowledge of public participation in federal rulemaking processes. It will also offer insights into democratic deliberation more broadly, and lead to a better understanding of whether Internet-based public participation has the ability to overcome the inability of current participation mechanisms to engage citizens discursively and integrate scientific knowledge and public values. Finally, the research will make specific contributions to the disciplines of political science, public administration, and sociology. Some political theorists argue that truly deliberative democracies are necessary to overcome the adversarial tendency of policymaking (Dryzek 2000; Williams and Matheny 1995). Our research will provide an empirical test of whether the increased deliberation the Internet affords does indeed diminish the conflict and distrust prominent in most policymaking processes. Our findings will provide insight into the possibility of the Internet and participation in e-rulemaking as a tool for a more citizen-based, reflexive modernization as well.

Solutions to environmental problems are dependent on the science underlying the problem, the local political environment and the decision-making strategies it employs, and the cultural traditions and the strategies of participation it suggests. The best approach to solving environmental problems, then, is to implement environmental decision-making processes that can accommodate the variation of these characteristics from one environmental problem to another. To the extent that the Internet can provide a flexible and adaptable mechanism of public participation, it may hold the potential to serve as the infrastructure that can facilitate the unique and culturally specific processes that will arrive at solutions to environmental problems. The results of our research will be vital in determining whether such potential is being, or can be, realized. In the meantime, we aim to bring elements of the ongoing transition to e-governance more thoroughly into academic discussion, as one element of reflexive modernization.

Table 1. Discursive Democracy: Hypotheses, Theoretical Bases, and Data Sources

Hypothesis	Theoretical Basis	Data Source
H_1 Participation in electronic rulemaking is more discursive than traditional forms of comment.	The trend in democratic theory is toward more discourse and deliberation (Dryzek 2000); online discussions may actualize this trend.	· Citizen comments · Survey
H_2 Electronic participation is more diverse, demographically, than traditional forms of comment.	There is a digital divide, but electronic comment may offer more access to participation than exists now.	· Citizen comments · Survey
H_3 Software for electronic participation in rulemaking privileges scientific and legalistic comments more than other forms of comment.	Only Certain forms of comment are acceptable and incorporated in much democratic deliberation (Young 1996).	· Citizen comments · Interviews with software designers and agency personnel
H_4 Electronic participants show more respect toward other opinions than participants in traditional forms of comment	Democratic discourse engenders respect (Benhabib 1992, Young 2000).	· Citizen comments · Survey
H_5 Citizen preferences change more after participating in electronic comment than in traditional comment.	Democratic discourse engenders reflection on one's positions and preferences (Habermas, Bohman)	· Citizen comments · Survey
H_6 Electronic participation occurs more in isolation than via groups than traditional forms of comment.	Democracy is as much about groups as about individual participation (Dryzek 2000; Putnam 2001).	· Citizen comments · Survey
H_7 Electronic commentary is incorporated into revised rules	Democratic processes must be authentic in order to be valid (Dryzek 2000).	· Citizen comments · Final rules · Interviews with agency personnel · Survey

Table 2. Public Values and Scientific Knowledge: Hypotheses, Theoretical Bases, and Data Sources

Hypothesis	Theoretical Basis	Data Source
H_1 Making scientific information for a proposed rule available to the public over the Internet results in more scientifically informed public comments.	The public gets excluded from decision-making because of its lack of scientific understanding. A scientifically literate public is more valuable to agency officials. (Tesh 2000)	· Citizen comments · Interviews with agency personnel
H_2 Citizens are more likely to offer value-based justifications for a position on a ruling when commenting over the Internet.	Regular participants learn the value of scientifically based comments. New participants commenting over the Internet will more freely offer value-based justifications for their views. (Hill & Hughes 1998)	· Citizen comments · Survey · Interviews with agency personnel
H_3 Citizens who participate in Internet-based public comment periods are more likely to perceive the decision-making process as fair, and to report their interests were adequately represented in the final decision.	Citizens object when decision-making processes appear unfair or their interests are not represented. Internet-based commenting increases perceived fairness because of ease of participating, and a sense that the decision-making playing field is level. (Aikens 1999)	· Survey
H_4 Citizens who participate in Internet-based public comment periods are more likely to report higher levels of trust in agencies than traditional commenters.	Document access and procedural transparency reduce the sense that decisions are made behind closed doors. (Cross 1999; Dawes *et al*. 1999)	· Survey
H_5 Final rulings that incorporate electronic comments in addition to traditional comments are more likely to reflect public values.	Expanding the options for participation encourages a diversity of voices, including those not typically part of decision-making processes. (GAO 2001; PITAC 1999)	· Agency and media accounts · Interviews with agency personnel
H_6 Final rulings that incorporate electronic comments and reflect public values are less likely to undergo litigation.	Citizens will litigate unless a decision appears consistent with their values, regardless of the science (Johnson 1998).	· Agency and media accounts · Interviews with agency personnel

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