SEARCHING FOR EFFECTIVE NATURAL RESOURCE POLICY: THE SPECIAL CHALLENGES OF ECOSYSTEM MANAGEMENT

Steven E. Daniels and Gregg B. Walker

ABSTRACT

The success of ecosystem-based management on the mixed public and private lands of the western states will depend on its success as both science and public policy. This paper focuses on some of the special policy challenges it poses.

These policy challenges can be posed as a paradox that affects not only ecosystem-based management, but all technically complex policy situations: how does society employ the most appropriate science, but at the same time use policy processes that provide voice to the broadest possible range of affected groups? The paradoxical nature of the situation arises because highly science-based approaches create a narrow politics of expertise, while the politics of inclusion results from a more broadly constituted process.

A methodology, Collaborative Learning, is presented as a kind of process that attempts to integrate both the scientific complexity of ecosystem-based management with a discourse-based process that can accommodate diverse stakeholders with divergent worldviews and goals. Collaborative Learning takes a systems approach to understanding situations, seeks to identify and achieve desirable and feasible change, and provides ways to accomplish short-term goals without ignoring longer term linkages and issues.

Some results from Collaborative Learning processes are presented, and indicate that it offers some promise for its applicability to ecosystem-based management projects on mixed public/private lands. Other techniques, which share the core attributes of Collaborative Learning, are also likely to achieve a similar degree of success.

INTRODUCTION

Ecosystem-based management has an obvious foundation in the natural sciences. It incorporates ideas from a number of fields or theories in physical and biological science: geomorphology, disturbance ecology, conservation biology, etc. No matter how elegant the scientific theories, ecosystem-based management will not reach its potential on public lands until it is also effective public policy. That observation in no way denigrates the importance of the natural sciences, nor is it an argument that social or political sciences are more important than natural sciences. Particularly on public lands, or where there is a significant mixed public/private ownership (conditions that characterize most of the western third of the United States, and which will be collectively referred to throughout this paper as "mixed public lands"), ecosystem-based management will require our best efforts in both the natural and social/political sciences.

This paper provides a social science/public policy perspective on the challenges created by the current focus on ecosystem-based management. It presents a simple framework of policy effectiveness, and then examines the extent to which effective public involvement will be part of effective policy formation and implementation regarding ecosystem-based management.

The paper subsequently introduces a particular method for conducting public participation, Collaborative Learning, while emphasizing its applicability to ecosystem-based management on mixed public lands. Both the basic philosophy and intellectual heritage of Collaborative Learning are provided, in order to explain the essence of the technique, while not dwelling on details that are beyond the scope of this paper. The results of some Collaborative Learning facilitations of mixed public lands decision-making processes are presented.

POLICY EFFECTIVENESS

Sorting through the volumes that have been written about policy effectiveness, there seems to be four basic concepts that capture the nexus of policy effectiveness and ecosystem-based management. They are:

- Adaptive process
- Utilizes the most appropriate science and technology
- Implementable
- Low transaction costs

Adaptive processes recognize that management is inevitably field experimentation of the current stock of knowledge and assumptions. With this as a guiding precept, adaptive processes strive to learn from those field experiments as quickly and reliably as possible, in order to test those fundamental assumptions and knowledge levels. Much of the focus of adaptive management is on natural systems; Lee's work (1993) is an important recent attempt to integrate adaptive management into the policy arena.

Utilizing the most appropriate science and technology seems like an obvious criteria for policy formation, particularly when complex situations are involved. One must recognize, however, that "most appropriate" is a value statement, and for many technically trained specialists, it is synonymous with "most

Published in proceedings of "Ecosystem Management in Western Interior Forests" held May 3-5, 1994, Spokane, WA, USA.
Compiled and edited by Richard L Everett and David M. Baumgartner, Washington State University Extension, Pullman, WA.
(Bulletin Office, WSU, PO Box 645912, Pullman, WA 99164-5912.) MISC0228. 245 pp.

advanced", or "state-of-the-art". There are cases where advanced technical solutions to policy problems are in fact not the most appropriate, particularly when the costs of such solutions are too high or they result in policy recommendations that are not culturally or politically viable. The international development literature is replete with examples of highly technology-oriented proposals for development projects that illustrate that most-advanced technology and most appropriate technology are not synonymous.

Implementability is another core concept of policy effectiveness. It is difficult to see how a policy can be defined as effective, if it never produces results on the ground. Elegant models, intricate flowcharts, and bureaucratic plans may have their place in policy formation, but the benefits of policy are derived from what they accomplish. (While much of recent political science and public choice theory argues that policies are primarily crafted to perpetuate bureaucracies, we are going to set that more cynical perspective aside for this paper.) Certainly the forest planning process that was conducted pursuant to the National Forest Management Act of 1976 exemplifies elegant policy that had limited implementation. The linear programming models that supported each forest's plan were immense, with thousands of rows and columns of data. Even so, the land allocations that many of the plans generated were subsequently appealed, and some have never been fully implemented. In regions such as the Pacific Northwest, the plans bear little resemblance to the ecosystem-based management efforts currently underway.

Finally, low transaction cost is a facet of policy effectiveness in many ways tied to implementability. Transaction costs are those expenses society incurs to implement a policy, and all other things being equal, lower transaction costs imply more effective policy. If one policy creates a given set of benefits while avoiding expensive administrative appeals or litigation, it is arguably more effective than one that cannot. The ratio between the benefits of implementation and transaction costs is a standard benefit-cost analysis of policy effectiveness, and shows that a policy that never can be implemented is equivalent to having infinite transaction costs. In either case the benefit-cost ratio is driven toward zero.

Much of the discussion of ecosystem-based management focuses on either the criteria of adaptability or most appropriate technology. This paper focuses on the others: implementability and transaction costs. Without much loss of generality, we can focus on both of these by recognizing that they are shaped, to a large extent, by social legitimacy. If segments of society do not view a policy outcome as legitimate, and the stakes are high enough, they may coalesce into interest groups intent on impeding or preventing its implementation.

Social Legitimacy

Recognizing that social legitimacy is culturally located, i.e., its definition differs across societies and eras, we should focus on two criteria that define social legitimacy in contemporary American public policy:

(1) Decisions should be made in a rational manner; policy solutions must be recognized as technically sound.

(2) If people's lives may be affected by policy processes, then they should have a voice in those processes.

It is no coincidence that the first criteria broadly captures the more technical "adaptive" and "most appropriate science" criteria provided above, and that the second corresponds to the more process-oriented "implementable" and "low transaction costs" criteria.

This juxtaposition between technical competence and open process is a defining characteristic of American policy formation. Citizens demand technically sound decisions, but as situations become more complex fewer people have the technical background needed to either contribute or critique. On the other hand, these complex situations often touch people's lives in very fundamental ways. Our traditions of participatory democracy imply that those people should be at least consulted, if not directly involved. This creates a compelling dynamic between a narrow politics of expertise and a broad politics of inclusion, a dynamic that cuts across public policy disputes such as nuclear waste disposal, health care, and land management. Finding ways to increase the quality of technical expertise, while simultaneously increasing the inclusivity of decision processes, is perhaps the fundamental paradox of effective policy formation.

Several laws illustrate this paradox between expertise and inclusion. The Administrative Procedures Act of 1946, the National Environmental Policy Act of 1969, the Federal Land Policy and Management Act, and the National Forest Management Act of 1976 all require high quality decision or planning processes, while simultaneously requiring either administrative appeals, public disclosure documents, or public involvement activities.

This dilemma has also captured the attention of scholars from several disciplines. Reich (1985), a political economist, argues that the limited success of post-World War II public administration stems from competing paradigms. Neither the paradigm of administration as technocratic analysis or the paradigm of administration as interest intermediation pay sufficient attention to social learning activities that might benefit both. Yankelovich (1990), a pollster, sees improved political process coming from a citizenry working through of complexity of modern policy situations. Lee (1993), an environmental scientist, contends that sustainable development will come from the integration of adaptive management—to deal with the scientific uncertainty and complexity—and political negotiation, which meets the need for an involved citizenry. Pierce et al. (1993), political scientists, refer to this paradox as the "post-industrial quandary", and see interest groups as playing important roles as information brokers and political actors.

Perhaps it is more important to focus on these authors' diverse academic traditions than on the specific ways that they address the paradox of technical competence and inclusive process. Finding an aspect of policy formation that has attracted attention from so many different fields implies that it is probably not a

Published in proceedings of "Ecosystem Management in Western Interior Forests" held May 3-5, 1994, Spokane, WA, USA.
Compiled and edited by Richard L Everett and David M. Baumgartner, Washington State University Extension, Pullman, WA.
(Bulletin Office, WSU, PO Box 645912, Pullman, WA 99164-5912.) MISC0228. 245 pp.

figment of one's idle musings, but neither is it likely to be easily resolved. Progress in ecosystem-based management on mixed public lands, and indeed progress on many wide-ranging and complex policy questions will depend on our progress on this paradox. We cannot view wild swings from purely technocratic to purely inclusive processes as progress. Our ability to develop processes that can truly identify and further the public interest hinges on our ability to enhance both.

The Challenges of Mixed Public Land Management

With this brief background on the fundamental paradox of policy formation as a foundation, what are the defining characteristics of mixed public land management? What is there about mixed land management that seems to create the challenges that confound successful policy formation and implementation?

Several sources of complexity come to mind:

- Deeply Held Values
- Markedly Different Worldviews
- Multiple Parties
- Multiple Issues
- Legal Constraints
- Entrenched Conflict Industry

Taken together, these attributes make public land ownership as vexing a situation as a prudent person would undertake.

The deeply held values and markedly different worldviews mean that public land disputes are little less than cultural conflicts. For many people in the mixed land states, the activities that define their core identities may involve the public lands. As one travels throughout the western states, one hears phrases like "I am a rancher," or "I am an elk hunter," not "I am in the beef industry," or "I like hunting elk." When public lands are at stake, the very places and activities around which people build their self-identities are on the table (Kemmis 1990). When one combines this intense link to the public lands with the range of views about how those lands should be managed, it is easy to see why disputes over them can move quickly through merely heated into white-hot.

The multiple parties and multiple issues mean that public lands disputes are often structurally difficult to address. A rule of thumb in dispute resolution is that a large dispute has 12 or more participants; it is common to find several times that number in a public lands situation. Moreover, some may live a considerable distance from the specific land in question if federal lands are involved. How to involve these distant stakeholders, and what weight to give their views, are confounding questions. It is similarly common to have participants come and go throughout the process, and to have significant differences between the views of organizations apparently sharing similar ideological positions. There are moderate environmental groups, and more extreme ones, just as there are moderate and extreme commodity interests. It is not possible to invite one environmentalist and one commodity representative and have the range of interests adequately represented.

The legal constraints and entrenched conflict industry mean that any public land decision process has precise procedural requirements that must be met, and that there are well-organized groups of advocates who will pounce on procedural errors to overturn any decision that they feel does not meet their needs. As such, decision-makers' range of process opportunities is substantially limited; they do not have carte blanche to assess a situation and craft a unique process that meets the special issues at hand. They must comply with a daunting array of judicial mandates, policy directives, and legal precedents. In addition, the policy gladiators employed by the various interest groups are rewarded for the quality of their battles, not their compromises; they are only too willing to exploit procedural errors and adopt extreme rhetorical positions.

The Special Challenges of Ecosystem-Based Management

As if the demands of public land management are not enough, adding ecosystem-based management contributes even more. Notable among these are:

- Complexity and uncertainty increases
- Systems view is more important
- Mixed ownership solutions are more important
- Institutional continuity is more important

One of the goals of ecosystem-based management is to consider more issues, acres, and years in one's decisions. This certainly raises the technical complexity, but it creates an additional policy challenge as well. Since ecosystem-based management is based on emerging disciplines such as conservation biology, there are few guarantees that management will create the precise objectives models might predict. Probabilistic assessments are perhaps the best one can reasonably produce.

This fundamental uncertainty allows interest groups to establish unrealistically stringent burdens of proof as preconditions any management activities are begun, thus effectively preventing implementation. In the spotted owl conflict, both of the major combatants have used this tactic. Environmentalists have argued for no more harvesting on the federal lands because there are no guarantees that the owl will survive if harvesting persists. Industry proponents have likewise argued that there is no proof that protecting critical owl habitat will guarantee species survival, nor is there any proof that the owl will not adapt and survive if harvesting continues. Both sides are right—there are no guarantees with ecosystem-based management.

A systems view is also increasingly important under ecosystem-based management. The ability to understand the linkages between the various physical and biological components of an ecosystem are obviously central to success of this emerging management philosophy. It is equally important, however, to understand the links between social structure, land ownership patterns, existing technology, and policy processes.

Mixed ownership of public and private land is common throughout the western public lands states, and our ability to deal with this

Published in proceedings of "Ecosystem Management in Western Interior Forests" held May 3-5, 1994, Spokane, WA, USA.
Compiled and edited by Richard L Everett and David M. Baumgartner, Washington State University Extension, Pullman, WA.
(Bulletin Office, WSU, PO Box 645912, Pullman, WA 99164-5912.) MISC0228. 245 pp.

historical artifact will determine the future of ecosystem-based management to a considerable extent. The nineteenth century land grant policy to railroads and homesteaders has created a pattern of "checkerboard" lands (alternating one-mile squares) in the former case, and a pattern of private lands in the low elevations and public land above them in the latter case. In both situations, no single owner controls a block of land that mirrors any significant ecosystem-based processes, and any policy that intends to reflect ecosystem function must cross ownership boundaries. In addition, there is considerable legal ambiguity in the authority that any federal land management agency has to either consider the activity of other land owners in its' own planning, or to regulate the behavior of nearby landowners.

Finally, ecosystem-based management attempts to manage lands over biologically significant periods of time. When dealing with natural processes where the effects of management activities may not be fully realized for decades, as is often true of forests, institutional continuity is crucial. The frequently changing political philosophies of the executive branch makes such continuity difficult on federal lands, as do fluctuating budgets and the agencies' tradition of frequent personnel transfers. Such continuity is equally important on private lands, where uncertainty over endangered species management in the Pacific Northwest is reportedly compelling small landowners to harvest timber earlier than they had planned, and where estate laws may force family ranches, farms, or forests to be somehow "cashed out" to pay estate taxes.

Given this inventory of challenges facing ecosystem-based management on mixed lands, the line between realism and pessimism becomes blurred. It may be that only the politically naive would believe that ecosystem-based policies will be easily crafted and implemented. That is not to say that the transition to ecosystem-based management is folly; indeed the mixed lands of the western states deserve nothing less. It merely assures that ecosystem-based management will require our best natural and social science, as well as our best policy processes. The remainder of this paper presents a brief overview of Collaborative Learning, a recent innovation that has been designed to accommodate the complexity of ecosystem-based management on mixed lands.

COLLABORATIVE LEARNING

Collaborative Learning (CL) is framework designed for natural resource policy decision-making situations and public involvement in policy discussions. It emphasizes activities that encourage systems thinking, joint learning, open communication, and a focus on appropriate change (Daniels and Walker, 1993).

Collaborative Learning is a hybrid of work in two areas:

- soft systems methodology (SSM)
- the alternative dispute resolution (ADR) fields of mediation and negotiation

By incorporating features of SSM and ADR, Collaborative Learning promotes **working through** the issues and perspectives of a situation.

From SSM: Learning and systems thinking. The origins of Collaborative Learning are in "soft systems methodology" (SSM). Soft systems is an application of theoretical work in systems and experiential learning (Wilson and Morren 1990). SSM stresses that learning and thinking systematically are critical to planning, making decisions about, and managing complex situations like natural resource controversies. These — systems thinking and learning—are areas that alternative dispute resolution methods, including mediation, typically disregard or consider peripheral to the settlement task (See Figure 1). As Flood and Jackson (1991) observe, SSM "is doubly systemic since it promotes a systemic learning process, orchestrating different appreciations of the situation, which is never-ending, and it also introduces systems models as part of that learning process. The systemic learning process aims to create a temporarily shared culture in which conflicts can be accommodated so that action can be taken" (pp. 177-178).

ELEMENTS	SSM	ADR
Promotes Learning	High	Low
Emphasizes Systems Thinking	High	Low
Deals with Value Differences	Low	High
Handles Strategic Behaviors	Low	High

Figure 1.—Collaborative Learning as a Hybrid.

From ADR: Values and strategic behaviors. While CL's emphasis on learning and systems thinking come from SSM, SSM does not deal well with value differences and strategic behaviors such as negotiation. The alternative dispute resolution (ADR) areas of mediation and negotiation do, and serve as a second foundation for Collaborative Learning. Mediation, the intervention of an impartial third party into a dispute, deals well with significant value differences. "Value disputes," Moore observes, "are extremely difficult to resolve where there is no consensus on appropriate behavior or ultimate goals" (1988, p. 256). Yet mediators, via identification and reframing methods, can address value conflict. Specific techniques include (1) transforming value disputes into interest disputes, (2) identifying superordinate goals (both short- and long-term), and (3) avoidance (Moore 1986, p. 178; see also Gray 1988).

Collaborative Learning deals with parties' strategic behaviors by incorporating methods designed to promote collaborative, integrative negotiation. CL encourages parties to identify and assess innovative approaches for settling their differences, including logrolling, bridging, non-specific compensation, etc. (Lewicki and Litterer, 1985). CL facilitators, like mediators, often use transformative strategies that encourage parties to engage in role reversal, mirroring, and future orientation.

Published in proceedings of "Ecosystem Management in Western Interior Forests" held May 3-5, 1994, Spokane, WA, USA.
Compiled and edited by Richard L Everett and David M. Baumgartner, Washington State University Extension, Pullman, WA.
(Bulletin Office, WSU, PO Box 645912, Pullman, WA 99164-5912.) MISC0228. 245 pp.

Collaborative Learning and Communication

Successful Collaborative Learning processes sustain quality discourse: constructive discussion of ideas, collaborative argument, and interaction. Communication competence encompasses these elements, providing a dimension of Collaborative Learning that goes beyond SSM and ADR. CL promotes productive dialogue that ideally permeates the entire CL experience. CL communication competence is fostered through the development and implementation of discourse and interaction guidelines (e.g., "ground rules" that value diversity), facilitation, and taking stock. Collaborative Learning encourages competent communication and quality discourse by emphasizing conflict and negotiation competence (Walker 1992), and a variety of interrelated communication "skill" areas; elements of a collaborative communication competence "system." These include: (1) listening skills, (2) questioning and clarification skills, (3) feedback skills, (4) modeling skills, (5) social cognition skills, (6) dialogue skills, and (7) collaborative argument skills (Daniels and Walker 1993).

Collaborative Learning: From Problem-Solution to Situation Improvement. Collaborative Learning encourages thinking "differently" about controversies and policy decision situations. Thinking differently involves reframing; literally changing the language and perceptions of natural resource conflicts. Collaborative Learning:

- Stresses *improvement* rather than solution.
- Emphasizes *situation* rather than problem or conflict.
- Focuses on *concerns and interests* rather than positions.
- Targets *progress* rather success.
- Seeks *desirable and feasible change* rather than desired future condition.
- Encourages sys*tems thinking* rather than linear thinking.
- Recognizes that ***considerable learning***—about science, issues, and value differences—will have to occur before implementable improvements are possible.

Drawn from SSM, "situation improvement" is a critical component of Collaborative Learning (Checkland and Scholes 1990; Wilson and Morren 1990). Natural resource controversies are often discussed in terms of "conflict-resolution" or "problem-solution" (e.g., Crowfoot and Wondolleck 1990). Doing so imposes a burden on parties in conflict. They may be immersed in a complex, intractable, and seemingly irresolvable conflict. A "conflict resolution" frame implies a "total solution" standard for success. Collaborative Learning redefines the conflict or problem as a "situation." Rather than trying to find "the solution," parties develop improvements over the status quo situation. Results are measured as "progress" rather than by some absolute standard of "success".

Constructing improvements is a learning process. Parties are encouraged to understand situations in terms of their complexity. This is fostered by CL activities that require systems thinking, rather than linear, single-issue perspectives. Based on their systemic learning, CL participants focus on concerns and interests related to the situation, instead of taking positions or making demands. Improvements are based on these concerns, and are ultimately debated to determine if they are both technically desirable and culturally feasible.

Collaborative Learning in Practice

Collaborative Learning encourages people to learn actively, to think systematically, and to learn from one another about a particular problem situation. The first stages of CL emphasize common understanding. Activities might include information exchange, imagining best and worst possible futures, and visual representations of the situation, perhaps through the use of "situation/systems" maps. In middle stages, CL participants focus on concerns and interests regarding the specific situation, and how those concerns relate to other concerns. Out of these concerns, CL parties identify possible changes that could be made; "situation improvements." In latter stages, the participants debate these improvements, addressing whether or not they represent desirable and feasible changes in the present situation.

Throughout the CL process, participants talk with and learn from one another in groups of various sizes. For example, a CL process may use a "2-4-8" approach to discussing situation improvements. After the CL participants develop improvements, they discuss that improvement with one other person. Those two join two others and talk about each person's improvements. Those four join four others and the process continues. Within these discussions, active listening, questioning, and argument are respected. People clarify and refine their improvements through dialogue. Consistent with the theme of "working through," Collaborative Learning emphasizes "talking with" rather than "talking at."

Results From Collaborative Learning Applications

We have used Collaborative Learning in various settings, including public involvement situations involving as many as ninety people. Collaborative Learning has been applied in partial day, full-day, and multi-day meeting formats.

The results of these applications indicate that a Collaborative Learning framework can help parties make progress on a problem situation (e.g., Walker and Daniels 1993). CL process evaluations indicate that:

- Participants understanding of the situation is broadened.
- Concerns are expressed and discussed.
- Improvements have been developed and implemented.
- Strategic behaviors persist.
- Relationships improve.

Through CL activities such as mapping, parties see the situation as a complex system of issues. Doing so broadens their understanding of the situation. CL promotes discussion of stakeholders' concerns. From these concerns, parties develop tangible improvements that reflect their understanding of the particular situation as a system.

Published in proceedings of "Ecosystem Management in Western Interior Forests" held May 3-5, 1994, Spokane, WA, USA.
Compiled and edited by Richard L Everett and David M. Baumgartner, Washington State University Extension, Pullman, WA.
(Bulletin Office, WSU, PO Box 645912, Pullman, WA 99164-5912.) MISC0228. 245 pp.

CL provides a structured approach to discussing and improving a problematic situation, such as those inherent in ecosystem management. CL does not require any reallocation of decision authority, nor does it try to limit parties' strategic behaviors. Self-interest typically motivates people to participate in a CL process. Further, CL does not require consensus. Parties' agreement on an issue or broadening of self-interest to include the interests of others stem from parties' own choices, based on their understanding of the situation and willingness to work through issues with others.

Other Collaborative Learning Benefits

Collaborative Learning presumes that situations are dynamic, systemic, and changing. CL is a framework that can be adapted to a particular situation to generate:

- Dialogue between diverse communities: scientific, public, administrative.
- Integration of scientific and public knowledge about the problem situation.
- Increased rapport, respect, and trust among participants.

Collaborative Learning and Ecosystem Management

Collaborative Learning is both philosophically and practically compatible with the basic tenets of ecosystem management. First, ecosystem management's commitment to ecological analysis and methods is consistent with CL's emphasis on a "human activity system" view of situations. Second, CL needs the best science and technologies that ecosystem management features to be a part of CL's learning activities. CL provides a venue for scientific and technical knowledge to be part of the civic discourse. Third, the CL framework adapts well to public participation. CL accommodates open participation, values local knowledge, and respects citizen interest and commitment. Fourth, CL provides the opportunity for the development of shared visions and goals upon which partnerships may be based. Collaborative Learning encourages a holistic, systemic view of a situation. It respects the complexity of a situation in a manner similar to ecosystem management.

What Collaborative Learning Is Not

Collaborative Learning, while beneficial within an ecosystem management approach, is no panacea or "silver bullet." It is one of possibly many frameworks that can involve people in meaningful learning and discussion about ecosystem management situations. It does not stress or demand consensus. It does stress learning, understanding, and the development of improvements in the situation. CL does not foster the development of a group "mentality" or "recommendations." Rather, CL encourages parties to make progress on improving the situation as they work through issues, values, and concerns.

CONCLUSION

In terms of understanding the policy challenges posed by ecosystem-based management, this paper's discussion of Collaborative Learning should be viewed as illustrating the kinds of policy processes that ecosystem-based management is likely to require. Various forms of public policy formation that have a rich agency/citizenry dialogue at their core have been developed in recent years, dating back to at least Freidmann's transactive planning (1973). The social and political forces that spawn these efforts are at least as likely to increase rather than abate. Certainly the current trend to "reinvent government" illustrates this trend (Osborne and Gabler 1992).

The task of designing policy processes that can accommodate ecosystem-based management essentially requires matching the tool to the task. We must think very carefully about the fundamental characteristics and challenges of ecosystem-based management, and then design systems that are compatible with those characteristics, and robust in the face of the challenges. Doing less is analogous to trying to screw in a light bulb with a hammer, or paint a room with a screwdriver.

Collaborative Learning is particularly applicable for ecosystem-based management because it has been designed specifically to address the policy challenges of mixed public lands. As a result, it has three features that make it well suited to ecosystem-based management: 1) it explicitly adopts a systems approach to the situation and works to improve the participants' systems understanding, 2) it is more modest in its expectations for progress than the more frequently used rational-comprehensive models which seek solutions, and 3) it expects and attempts to accommodate a wide range of worldviews about land management and the strategic behaviors that those worldviews are likely to generate in controversial situations.

It is our prediction that any situation in which ecosystem-based management makes progress will feature at least these three characteristics: a systems approach, realistic goals, and high political acumen. Whether these attributes arise spontaneously or result from carefully thought-out method is immaterial. If a structured method is used, it is similarly irrelevant if it goes by Collaborative Learning or any other name. Perhaps the only thing that matters, at the core, is that it make progress on the paradox of public deliberation: it must be able to generate technically sound decisions, while simultaneously allowing stakeholders rich and meaningful voice in the process. The scientific burdens of ecosystem-based land management, combined with the range of interests in the mixed public/private lands, appear to require nothing less.

Published in proceedings of "Ecosystem Management in Western Interior Forests" held May 3-5, 1994, Spokane, WA, USA.
Compiled and edited by Richard L Everett and David M. Baumgartner, Washington State University Extension, Pullman, WA.
(Bulletin Office, WSU, PO Box 645912, Pullman, WA 99164-5912.) MISC0228. 245 pp.

LITERATURE CITED

Checkland, P. and J. Scholes. 1990. *Soft systems methodology in action.* New York: John Wiley.

Crowfoot, J. and J. Wondolleck. 1990. *Environmental disputes: Community involvement in conflict resolution.* Washington, DC: Island Press.

Daniels, S. and G. Walker. 1993. Managing natural resource disputes: The Collaborative Learning approach. Paper presented at the National Conference on Peacemaking and Conflict Resolution, Portland OR, 01 June 1993.

Flood, R. L. and M. C. Jackson. 1991. *Creative Problem Solving: Total Systems Intervention.* Chichester, UK: John Wiley.

Friedmann, J. 1973. *Retracking America: A Theory of Transactive Planning.* Garden City, NY: Anchor Books.

Gray, B. 1989. *Collaborating.* San Francisco: Jossey-Bass.

Kemmis, D. 1990. *Community and the Politics of Place.* Norman, OK: Univ. Oklahoma Press.

Lee, K. 1993. *Compass and gyroscope: Integrating science and politics for the environment.* Washington, DC.: Island Press.

Lewicki, R. and J. Litterer. 1985. *Negotiation.* Homewood, Ill: Unwin.

Moore, C. 1986. *The mediation process.* San Francisco: Jossey-Bass.

Moore, C. 1988. Techniques to break impasse. *In:* Folberg, J. and A. Milne, eds. *Divorce Mediation: Theory and Practice.* New York: Guilford.

Osborne, D. and T. Gaebler. 1992. *Reinventing government.* New York: Penguin.

Pierce, J., M. Steger, B. Steel, N. Lovrich. 1992. *Citizens, Political Communication, and Interest Groups: Environmental Organizations in Canada and the United States.* Westport, CT: Praeger.

Reich, R. 1985. Public administration and public deliberation: An interpretive essay. Yale Law Journal 94: 1617-1641.

Walker, G. 1992. Toward a theory of conflict communication competence. Paper presented at the International Association for Conflict Management conference, Minneapolis, MN, 20 June.

Walker, G. and S. Daniels. (1993). Collaborative inquiry and the mediation of natural resource disputes. Paper presented at the Speech Communication Association conference, Miami Beach, FL, 19 November.

Wilson, K. and G. Morren. 1990. *Systems approaches for improvements in agriculture and resource management.* New York: MacMillan.

Yankelovich, D. (1991). *Coming to Public Judgment: Making Democracy Work in a Complex World.* Syracuse, NY: Syracuse Univ. Press.

Authors

Steven Daniels
Associate Professor
Department of Forest Resources
Oregon State University
Corvallis, OR 97331

Gregg Walker
Associate Professor
Department of Speech Communication
Oregon State University
Corvallis, OR 97331

Published in proceedings of "Ecosystem Management in Western Interior Forests" held May 3-5, 1994, Spokane, WA, USA.
Compiled and edited by Richard L Everett and David M. Baumgartner, Washington State University Extension, Pullman, WA.
(Bulletin Office, WSU, PO Box 645912, Pullman, WA 99164-5912.) MISC0228. 245 pp.