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USING COLLABORATIVE LEARNING I

Late on a Sunday in July 1994, lightning storms moved eastward across the Cascade Mountain range of Central Washington. They followed in the wake of record-breaking summer temperatures and encountered forests suffering from years of drought-like conditions. They ignited many fires—41 in the Wenatchee National Forest alone.

The fires thrived because of a number of factors: unusually dry forest conditions, a large volume of natural fuels, steep terrain, and strong winds with gusts up to 50 miles per hour. When they broke out, few local firefighting resources were available. Much of the firefighting equipment based in the Pacific Northwest had been deployed to fires in the Rocky Mountains, which had already claimed 16 lives. During the first few days of the Cascade-region fires, extreme fire behavior hindered containment efforts. Many seasoned firefighters encountered unpredictable and severe wildfire activity; some reported fires making dramatic, rapid runs down valleys—consuming more than 81,000 acres in a two-hour period (Wenatchee National Forest 1994).

By the end of July, four significant fires were burning in the Chelan County portion of the Wenatchee National Forest: the Tyee Creek Fire, the Rat Creek Fire (which was human-caused), the Hatchery Creek fire, and the Round Mountain fire. Together these fires burned more than 181,000 acres, temporarily closed major highways, destroyed 37 homes, involved more than 8,000 firefighting personnel from 25 states, and cost almost 70 million dollars to suppress (Wenatchee National Forest 1994). Although the fires were generally contained by mid-August, some high-elevation areas burned through September.

In late August, the Wenatchee National Forest launched a short-term rehabilitation effort to thwart erosion, reduce flooding risk, and maintain public safety. Some forest areas were closed to the public. Severely burned hillsides were seeded and fertilized. Drainages were shored up with hay, rock, and check dams. Burned trees were cut as part of a contour felling process to reduce sedimentation from overland flow. Roads were modified to provide for manageable water flows during winter snow melt and spring rains.

Long-Term Forest Health

As these emergency rehabilitation efforts proceeded, forest-level and ranger district management began to plan for the long-term health of the damaged forests. They realized that rehabilitating the forests required a comprehensive fire recovery planning effort. This effort needed to be grounded in ecosystem-based management—combining the best available scientific knowledge with thorough public involvement. To draw on the best available science, the forest leadership supported the development of a science team organized by the Wenatchee Lab of the USDA Forest Service Pacific Northwest Research Station. The science team would incorporate data from these and previous fires to determine management scenarios that could address forest ecosystem health, sustainability, and biodiversity.

The national forest staff recognized that the fire recovery public involvement scenario offered an opportunity for innovation. Primarily, the Forest Service wanted to consider public expectations for forest character and function. They also anticipated that forest restoration activities could be controversial, and that different views about fire recovery and forest health provided the potential for outright conflict. There are a number of techniques that the staff might have employed: transactive planning (Friedmann 1973), strategic perspectives analysis (Dale and Lane 1995), search conferencing (Diemer and Alvarez 1995), and so forth. Key Wenatchee National Forest personnel were aware of the authors' previous collaborative learning applications elsewhere in the region, and solicited their involvement.

This paper describes the collaborative learning approach used in the Wenatchee fire recovery planning The authors have reported other applications of this approach elsewhere (e.g., Daniels and Walker 1996; Walker and Daniels 1994a). Nowhere, however, has collaborative learning been applied as comprehensively as in this instance.

Fire Recovery Planning and Collaborative Learning

Collaborative learning (CL) is a recent innovation in public participation theory that has been applied to various community- or ecosystem-level decisionmaking processes. The technique is grounded in the theories of conflict management and systems thinking As a result, it is well suited to deal with (1) the rancorous rhetoric and conflictual context that characterizes contemporary natural resource debate, and (2) the fundamental complexity of land management situations. The application of collaborative learning to the Wenatchee National Forest fire recovery situation (referred to hereafter as the Fire Recovery Collaborative Learning

Project, or FRCL project) proceeded through several steps between October 1994 and April 1995.

Action 1—Collaborative Learning Training

The first stage of the FRCL project emphasized education of both the collaborative learning facilitators and the Wenatchee personnel who would be involved in planning. The authors spent considerable time on the forest shortly after the fires, meeting ranger district personnel, making presentations about the project, attending various management team meetings, and participating in field trips into the burned areas. As part of a larger project, the authors also helped train and supervise graduate students who conducted more than 120 interviews in the fire-affected communities of Leavenworth, Entiat, and Chelan, Washington.

With this knowledge of the forest, the fires, and affected communities, the authors designed and conducted a two-day "Collaborative Learning Training Course" for 25 Wenatchee National Forest employees. FRCL project success depended in part on their understanding and acceptance of the collaborative learning process itself, particularly among the project-level interdisciplinary (ID) teams. The training course included presentations on soft systems methodology, situation mapping, and learning. It used small group activities to teach participants about some of the stages of the collaborative learning framework. These activities involved ID team members from specific ranger districts working on decisionmaking situations that were meaningful to them, such as Adaptive Management Area planning, watershed assessment planning, or recreation area construction conflict.

Action 2—Collaborative Learning Workshops

Citizen workshops were key components of the FRCL project. The first set of these workshops was part of the Wenatchee National Forest's "pre-project" effort—they generated public input before the development of specific fire recovery projects that would be subject to National Environmental Policy Act (NEPA) review. The workshops were constructed to emphasize both scientific expertise and citizen involvement. The project included four full-day workshops: three in Chelan County and one in the greater Seattle area.

Workshop design began with the assumption that people need a common base of knowledge about fire recovery issues before they can effectively participate in decisionmaking. To that end, the workshops were preceded by "issue presentation evenings"—meetings at which the public could learn about is-

Photo by Grant Gibbs

Grant Gibbs

After the summer fires of 1994, the charred hills of the Wenatchee National Forest were left vulnerable to erosion and flooding.

sues such as fire ecology and fire's effects on wildlife, fish, vegetation, recreation, and tourism. Presenters came from federal and state agencies and included other experts from the local area. The subsequent day-long CL workshops emphasized informal discussion more than formal presentation. These workshops were open to the public and were publicized widely. Their goal was to identify public issues regarding forest health and allow the participants to develop management improvements that could be undertaken as part of fire recovery projects (*fig. 1, p. 8*). The participants engaged in a series of activities to promote understanding of issues and concerns.

Best and worst views and situation mapping. In addition to the issue presentations, two active learning tasks were used to create a common understanding of the fire recovery situation. When participants—both citizens and agency personnel—arrived at the issue presentation evenings, they were given blank cards and asked to write down their best and worst imaginable futures for the Wenatchee National Forest's burned areas. Workshop assistants transferred these "bests" and "worsts" to newsprint paper and displayed them on walls for all participants to see. This activity demonstrated that most people's interests in the fire recovery situation are far more compatible than either their prior experience or expectations may have indicated.

Certainly there were some statements that were complete opposites. But there was also a substantial set that indicated a more nuanced approach. For example, one individual's "best" was:

> Immediate salvage of burned timber done with state-of-the-art technology. Put most priority on pine stands and logging on snow cover. Next, move into fir stands for salvage. Use these revenues to regenerate a new forest and maintain forest health into the future. Insect and disease control, chipping unmerchantable material, and blowing on the soil for mulch.

Another individual's "worst" case scenario included:

> Tremendous human impact on the land, such as more roads, soil compacrion, and other damage; spread of noxious weeds; loss of big trees and snags and logs (takes centuries to replace); disturbance and destruction of wildlife.

The "best" and "worst" futures exercise works much like other visioning processes to engage the participants in thinking about those values that they hope to restore or sustain, as well as those outcomes they would prefer to avoid.

A second method for creating a collective understanding of fire recovery was to build "situation maps" (also referred to as "mind maps" or "cognitive maps") of the process. The purpose of such an exercise is to create a visual representation or "rich picture" (Wilson and Morren 1990) of the fire recovery situation—including enough material so that all participants could see their interests and concerns represented. A common behavior when dealing with situations as complex as fire recovery is to choose a single cause and attribute all of the negative features of the situation to it ("it's all due to bad fire suppression management"; "it's all due to too much fuel material"; "the forest will be harmed if salvaged"). A properly constructed mind map shows that there are many possible causes and thus many possible changes that could render improved forest health. It presents a "systems" view of the problem situation, encouraging participants to think systemically about concerns, interests, needs, and situation improvements.

Individual and small group tasks. A participant-centered active learning task—identifying themes of concern and interests—provided a transition from common understanding to action. This required the participants to select aspects of the fire recovery situation, as shown on the mind map, that concerned them and/or that they thought could be improved. This activity parallels "issue identification" in traditional problemsolving and "focusing on interests" in mutual gains negotiation (Fisher and Ury 1991). Participants identified concerns individually, and then discussed them initially in pairs, and then in groups of 4 to 8. The Forest Service personnel were distributed throughout the room so that at least one was in each group.

The discussion then moved from concerns to specific improvements. Based on their identified concerns and interests, participants generated ideas that they considered to be desirable and feasible improvements to current fire recovery management. They developed improvements individually and subsequently discussed them in pairs and larger groups. Participants engaged in some preliminary debate about the desirability and feasibility of improvements, although they primarily talked about the need for, and details of, proposed improvements.

Action 3—ID Team Planning

The collaborative discussions in the CL workshops produced numerous statements of concerns/interests and more than 100 potential improvements regarding management of the fire recovery situation. These concerns/interests and improvements were reviewed by the Forest Service as part of actual fire recovery project planning. The various fire recovery ID teams developed specific short- and long-term projects—which emphasized trail rehabilitation, sensitive plant protection, wildlife habitat restoration, salvage, fuels reduction, reforestation, public safety, and innovative forest products. The ranger district that embraced CL most enthusiastically organized the improvements from their workshops into themes and developed subsequent NEPA alternatives based on them.

Action 4—NEPA-Related Collaborative Learning Workshops

The proposed projects developed through the CL process were subject to public review and comment pursuant to NEPA requirements, albeit not in the typical manner. The leadership of the Wenatchee National Forest chose to divide its fire recovery planning into discrete geographic areas, and prepare Environmental Assessments (EA) for each area. Each of the four ranger districts affected by the fire chose different public involvement strategies once the draft EAs had been released for public comment. Only one district, the Leavenworth, chose to use CL workshops to receive public comment at this point. Various alternative projects for restoring forest health were the focal point of these workshops—participants were asked to scrutinize them and suggest

Collaborative Learning Defined

Collaborative learning (CL) is a framework designed for natural resource policy decisionmaking and public involvement in policy discussions. As *table 1* demonstrates, it is a hybrid of work in two areas of mediation and negotiation: soft systems methodology (SSM) and alternative dispute resolution (ADR) (Daniels and Walker 1995). The key notions that define collaborative learning are:

- redefining the task at hand not as solving a problem or resolving a conflict but as improving a situation;
- viewing the situation as a set of interrelated systems;
- defining improvement as desirable and feasible change;
- focusing on concerns and interests rather than positions;
- encouraging interrelated systems thinking rather than linear thinking;
- recognizing that considerable learning—about science, issues, and value differences—will have to occur before improvements are implemented; and
- featuring communication and negotiation interaction as the means through which learning and progress occur.

From SSM: Learning and Systems Thinking

The origins of CL are in soft systems methodology. Soft systems is an application of theoretical work in systems and experiential learning (Checkland and Scholes 1990; Wilson and Morren 1990), which stresses that learning and thinking systemically are critical to planning, making decisions about, and managing complex situations. These areas—systems thinking and learning—are ones that ADR, including mediation, typically disregard or consider peripheral to the settlement task. 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" (p. 177–78).

Table 1. Collaborative learning as a hybrid.

Elements	SSM	ADR
Promotes learning	High	Low
Emphasizes systems thinking	High	Low
Deals with value differences	Low	High
Handles strategic behaviors	Low	High

From ADR: Values and Strategic Behaviors

While CL's emphasis on learning and systems thinking comes from SSM, that area of theory does not deal well with value differences and strategic behaviors such as negotiation; the ADR areas of mediation and negotiation do. They also 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 (Carpenter and Kennedy 1988). "Value disputes," Moore observes, "are extremely difficult to resolve where there is no consensus on appropriate behavior or ultimate goals" (1988, p. 256). The parties' strategic behaviors are addressed by incorporating methods to promote collaborative, integrative negotiation (Gray 1989; Lewicki et al. 1994).

Collaborative Learning and Communication

Successful CL processes sustain quality discourse, which includes constructive discussion of ideas, collaborative argument, and interaction. Communication competence encompasses these elements, providing a dimension that goes beyond SSM and ADR processes. Regardless of the setting or group size, CL communication competence is fostered. Collaborative learning encourages competent communication and quality discourse by implementing interaction guidelines (e.g., "ground rules" that value diversity) and by emphasizing various interrelated communication "skill" areas. These include: listening; questioning and clarification; feedback; modeling; social cognition, such as reframing; dialogue; and collaborative argument skills (Walker 1992; Daniels and Walker 1994).

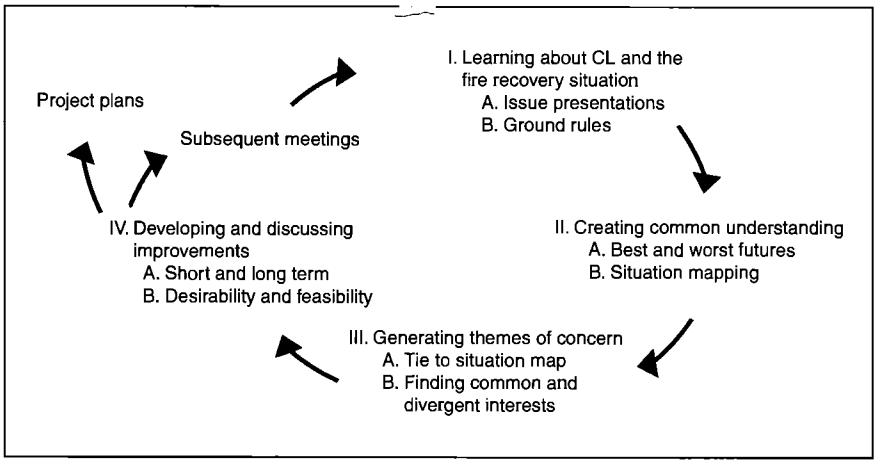

Figure 1. Collaborative learning (CL) at the fire recovery workshops.

desirable and feasible changes. Workshop participants "debated" the projects, and through their constructive argument examined one another's general goals and specific ideas.

As the draft EAs were being released, the salvage harvests on the Wenatchee became shielded from most legal challenge because of sufficiency language that was part of the budget rescission legislation. As of this writing, fuels-reduction treatments on 27,000 acres (approximately 15% of the burned area) have been conducted through salvage sales. A total of 106 mmbf were harvested (another 12 mmbf were offered for sale but did not sell). Equally important, other fire recovery–related projects such as noxious weed treatment and prevention, fuel break construction, road obliteration, and wildlife habitat improvement are under way (Wenatchee National Forest 1996).

Evaluating the CL Project

Initial evaluations from both agency and nonagency workshop participants have been favorable and constructive. Citizens felt they were listened to and that their knowledge and input were respected. Participants valued the workshops' emphases on basic learning, constructive communication, and generation of specific management improvements. Citizens appreciated the opportunity to interact individually and in groups with Forest Service personnel, and Forest Service employees have welcomed the opportunity to participate in CL workshops as citizens.

Some unexpectedly positive results also occurred from the workshops. For example, a column appeared in the newsletter of the local Audubon Society chapter supporting limited salvage logging that was written by someone who, by his own admission, had arrived at the workshops steadfastly opposed to any salvage. Other behaviors, however, indicate just how durable positional politics can be. Another workshop participant subsequently wrote an article for a regional environmental magazine attributing the fires to unusually hot weather and arguing that the Forest Service's concern with forest health/ fuels management was misdirected (Hoover 1995)—even though he had participated in discussions at the CL workshops that focused on the interplay between fuels, climate, and topography in shaping fire behavior.

The CL workshops engaged longtime opponents in discussions that were more constructive than typically occur. Often, however, those differing perceptions of the situation and of each other limited progress. The *Wenatchee World* reported how one disagreement in a Leavenworth workshop was handled:

> Participants were encouraged to get into small groups and discuss their ideas with people who may have differing views. Longtime Leavenworth logger Grant Gibbs said one thing he would most like to see as a result of the fires was more logging of trees—especially the burned trees—and the removal of debris from the forest floor. Across the table, Liz Tanke, a member of the Western Ancient Forest Campaign, listened intently. Afterwards, she asked Gibbs more about his ideas, but said she felt that more dead trees should be left standing for birds.
>
> "I may disagree with what you are saying and you might not agree with me," she said, "but I think we should wait to see what [Forest Service scientist] Rich Everett and his group [the Science Team] come up with before we make any judgments" (Partridge 1995, p. 10).

Interestingly enough, Gibbs and Tanke independently approached the facilitators to commend the approach as a useful opportunity, and to suggest that it be employed in more situations.

Some lessons can be learned from both this use of collaborative learning in fire restoration planning, as well as in other applications. First, over the past several years, we have found it more useful to seek *progress* rather than a full *solution.* Solution connotes everyone being satisfied, every issue being resolved, and the matter settled for all time—none of which is likely in many cases. Progress, however, is virtually always possible, and incremental progress can lead to valuable long-term policies Second, collaborative processes are neither quick nor easy. They must build a foundation of trust, procedural agreement, and mutual commitment that more traditional, legalistic processes often lack. But the very elements that make collaboration challenging also make it powerful. Earnestly undertaken, collaborative processes do not allow exclusion of ideas or groups.

Finally, there are some notions specific to collaborative learning that have surprised these authors with their effectiveness. Situation improvement is a comfortable activity for most participants; they understand its usefulness and are able to propose improvements The participants' abilities in systems thinking continually exceeded expectations, and such activities broaden their grasp of the situation. But while we would hope that relationships among the various parties in such a collaborative situation improve, the only marked results to date have been increased appreciation for the efforts of Forest Service personnel. A considerable measure of distrust between groups and strategic behavior persists

The attitudes and inter-group conflicts that characterize public land management today took decades to form, and it will take more than a few meetings to chip away at those positions. Collaborative learning, and other processes like it, should be viewed as incremental steps in that direction, not a fresh wind blowing across the land that will sweep away all of the hardball tactics we have seen in recent years. Whether one is satisfied with this level of accomplishment is an individual reaction, of course. Given the contentious situations in which collaborative learning has been applied, the authors have viewed the Wenatchee effort as generating progress in a sound direction. It certainly created a series of forums in which the gaps between citizens and scientists, and between agencies and interest groups, could begin to be bridged. JOF

Literature Cited

CARPENTER, S., and W.J.D. KENNEDY. 1988. *Managing public disputes: A practical guide to handling conflict and reaching agreements.* San Francisco: Jossey-Bass.

CHECKLAND, P., and J. SCHOLES. 1990. *Soft systems methodology in action.* New York: John Wiley & Sons.

DALE, A.P., and M.B. LANE. 1995. Strategic perspectives analysis: A procedure for participatory and political impact assessment. *Society and Natural Resources* 7:253–67

DANIELS, S.E., and G.B. WALKER. 1995. Searching for effective natural resources policy: The special challenges of ecosystem management. In *Ecosystem Management of Natural Resources in the Intermountain West,* ed. F.H. Wagner. Logan, UT: Utah State University, College of Natural Resources.

———. 1996. Collaborative learning: Improving public deliberation in ecosystem-based management. *Environmental Impact Assessment Review.* In press.

DIEMER, J.A., and R.C. ALVAREZ. 1995. Sustainable community, sustainable forestry: A participatory model. *Journal of Forestry* 93(11):10–14.

FISHER, R., and W. URY. 1991. *Getting to yes.* 2nd ed New York: Penguin.

FLOOD, R.L., and M.C. JACKSON. 1991. *Creative problem solving: Total systems intervention.* Chichester, UK: John Wiley & Sons.

FREIDMANN, J. 1973. *Retracking America: A theory of transactive planning.* Garden City, NY: Anchor Press.

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

HOOVER, M. 1995. Weather big cause of Wenatchee forest fires. *Columbiana* 5(2):32.

LEWICKI, R.L., J.A. LITTERER, J.W. MINTON, and D.M. Saunders. 1994. *Negotiation.* 2nd ed. Burr Ridge, IL: Irwin.

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

PARTRIDGE, M. 1995. Environmentalists, loggers talk fire-recovery. *Wenatchee World* 10 (Jan. 15).

WALKER, G.B. 1992. Toward a theory of conflict communication competence. Paper presented at the International Association for Conflict Management Conference, June, Minneapolis, MN.

WALKER, G.B., and S.E. DANIELS. 1994. Collaborative learning and the management of natural resource disputes. Paper presented at the annual meeting of the Rural Sociological Society, August 12, Portland, OR.

WENATCHEE NATIONAL FOREST. 1994. *Fire information sheet.* Wenatchee, WA: Wenatchee National Forest.

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

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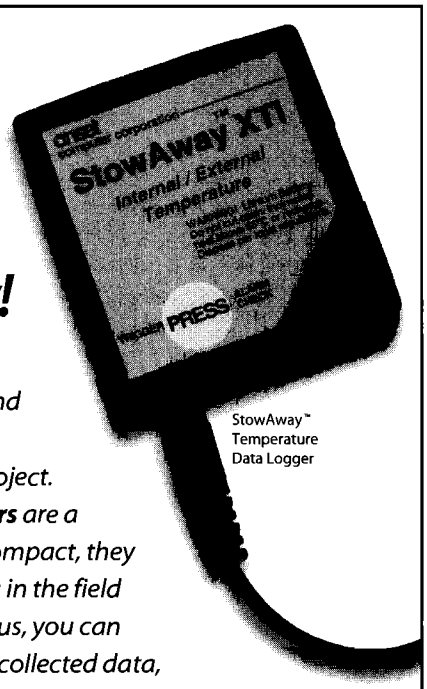

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