

Social Science Tools for Natural Resource Managers

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Abstract

Over the past several decades natural resource issues have become highly controversial, even playing out on the national or international stage. While natural resource science has advanced, the controversy has not gone away. If anything, it has gotten worse. The reality is that natural resource managers need to be as skilled at addressing public concerns as they are with resource science. Fortunately, over the same period the social sciences have produced useful tools that can aid natural resource managers. But resource managers need to know about these tools and be trained in their use. The purpose of this article is to provide an introduction to some of the social science tools or approaches that have proven to reduce political conflict over resource issues. When beginning a major project, resource managers can review this list to see which of these approaches might prevent or mitigate controversy. References are provided for each tool as a starting place for further exploration.

Keywords

Public Controversy, Values Conflict, Public Participation, Dispute Resolution, Joint Model Building, Multi-Agency Project Co-Management, Inter-Agency Dispute Resolution

1. Values Clarification

The social sciences provide a clear explanation for why things have become controversial. It has to do with values.

Values are the yardsticks by which we judge things to be right/wrong, fair/unfair, justified/unjustified, a priority/unimportant. [1] The problem is that values are rarely perceived as science. Yet they dictate how people interpret the science, and are the actual basis for choosing one alternative over another.

Following World War II there was a general pro-development consensus. But

sometime in the 60s or early 70s consensus began to melt in the face of the consequences of the pro-development orientation. Rachel Carson showed us how DDT was wiping out whole species. The Cuyahoga River had so much pollution on its surface that the river caught fire. The same year (1969) the largest oil spill in US history took place in upscale Sana Barbara, California. The negative feedback was getting louder and louder. In 1979 the accident at Three-Mile Island was the worst incident at a commercial nuclear plant in US history. The myth of our ability to utilize technology to manage impacts was deteriorating.

These major events were accompanied by many, many smaller personal experiences. It was no longer safe to swim in some rivers. The formerly blue skies were now grey with smog. The place in nature where we used to go to get in touch with oneself was now sprouting a subdivision.

The result was a growing change in values. [2]

It's possible to visualize this change. Imagine the pro-development consensus as a bell-shaped curve, so dear to statisticians (**Figure 1**). A natural resource manager could come up with proposed actions that were acceptable to the overwhelming majority as the range of values that had to be addressed was relatively narrow.

But as values began to change, the consensus melted, and the range of values began to grow. Now the range of values that need to be addressed was often quite broad. (**Figure 2**) Natural Resource managers had increasing difficulty finding alternatives that enjoyed the support of a significant majority.

Into the 1960s, the underlying assumption was “leave it to the experts”. The hidden premise of “leave it to the experts” is that experts are somehow superior in discerning what is right for society. But experts cannot make decisions without assigning a weight or priority to competing values. When decisions are made about what level of health or safety risk is “acceptable,” how much it is “reasonable” to pay to protect an environmental resource, or how costs should be distributed among various classes of people, these are not technical decisions (even though they may involve a great deal of technical information). These are decisions about values or philosophy.

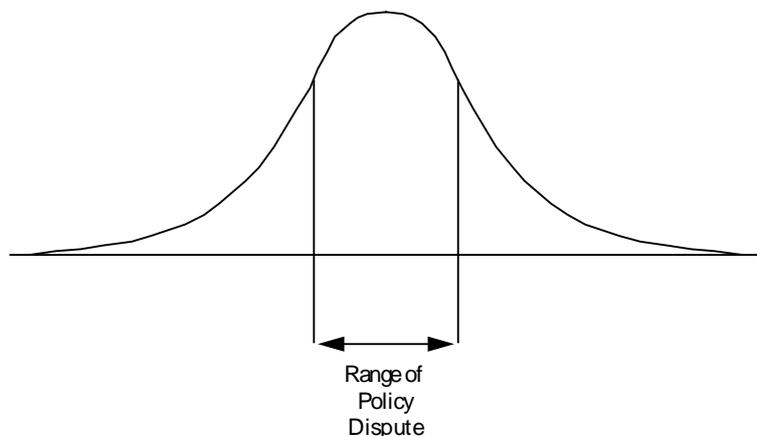


Figure 1. Narrow range of policy dispute when there is societal consensus.

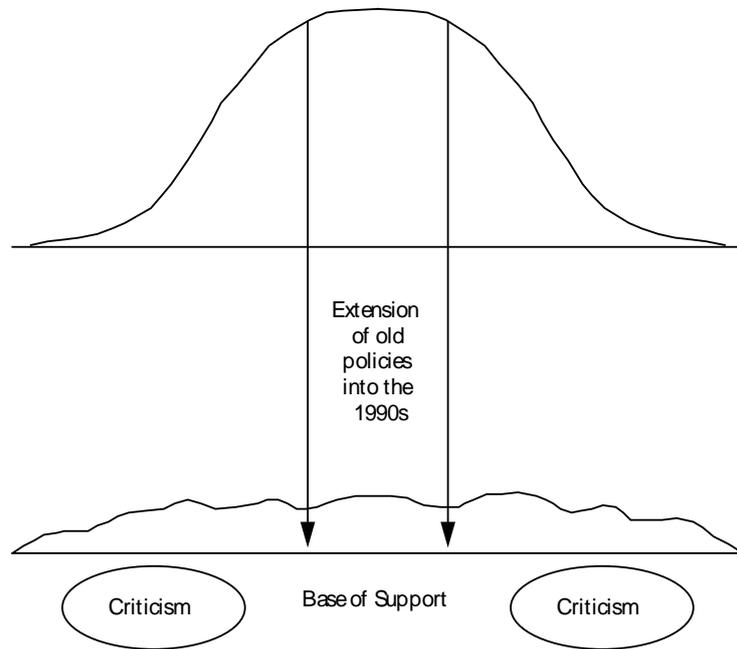


Figure 2. Broad range of public dispute when there is little agreement on values.

As long as they are considering only one values dimension at a time, whether it is cost, or health risk, or feasibility, technical experts are the best qualified people to make the call. But the minute a technical expert has to choose between two values, the issue is no longer simply technical, it is a decision about what is more important, jobs or clean water, individual freedom or environmental protection, human health concerns or the needs of other species. These decisions, by their very nature, are values choices. Values choices involve assigning a weight or priority to one thing society thinks is good compared to another thing society think is good. Most hard decisions—what are normally called “policy” decisions—are essentially a values choice, informed with technical information.

Expertise and scientific study may inform these choices, but ultimately there is nothing about expertise that provides a basis for making these fundamental values choices. This is not to say that technical experts don’t have opinions about such things; in fact, one of the criticisms of engineers is that they often assume that the cheapest workable solution is—virtually by definition—also the best. But that simply means that engineering training teaches people to place a very high value on cost. Someone whose primary interest is worker safety, or environmental protection, might believe the engineer’s approach is very biased and short-sighted.

When the spread of values is quite large, people may no longer trust resource managers. They see agencies as committed to using the resources of the agencies to defend the old values. Even when agencies conduct expensive scientific studies, people question the results because the studies were conducted by agencies that are seen as biased. [See Computer-Aided Dispute Resolution below.]

When the range of values is wide, people with similar values begin to affiliate

in groups or join existing groups with the values they support in order to gain added leverage. These groups may then engage in warfare with each other. Resource managers find themselves not only having to manage their own antagonistic relationship with the public but are often caught up in the cross-fire between groups.

These advocacy groups seek out any leverage they can find, and often turn to regulatory bodies to exert pressure on environmental studies and programs. The groups often demand that the regulatory body require solutions that are not feasible economically or technically or that go far beyond agency mandates or funding.

There are two principal uses of values for natural resource managers: *values appraisal* and *values-based alternatives*.

Values Appraisal

The essence of values is that they are rooted in a positive “good”—whether that good is environmental protection, sustainability, economic development, etc. Values are something people or groups stand for, rather than something they are against. It is easy in the heat of controversy to concentrate on the nature of people’s opposition. Under those circumstances it is even easy to begin to think of others as adversaries, or “the opposition.” But that opposition is based on a belief that something else, a positive good, is even more important.

It’s easy as a natural resource manager to see opposition and controversy as adversarial. Opposition may even be interpreted in personal terms, as dislike or animus towards the manager personally.

One important step in handling controversy without it becoming adversarial is to understand the values of the various actors. An important tool in avoiding adversarial relationships is to have a thorough understanding of the values of the key individuals and groups involved in the issue.

Natural resource managers are encouraged—early in a study or project—to conduct an assessment of the values of the major actors in that study or project. This will mean that you are more likely to avoid discussing the issues in a manner offensive to any of the actors. It will also help avoid being adversarial. People are for some value, not against you.

It’s not difficult to assess values. Often a series of interviews with key actors can accomplish this task. Look for values-laden language or predictions of dire consequences as cues to values. If the list of actors is lengthy, more formal techniques, such as content analysis, can be used. [3]

Development of Values-Driven Alternatives

If I am someone with strongly-held values and I see no alternatives being considered that portray those values, I will almost certainly become an opponent of what you propose. One effective tool for avoiding this problem is to use values as a basis for identifying alternative courses of action. Typically, particularly in major studies or projects, development of alternatives involves at least four steps: development of broad conceptual alternatives; evaluation of conceptual alternatives, development of more refined alternatives, evaluation of the impacts asso-

ciated with the refined alternative. During the broad conceptual stage, use your values appraisal to develop alternatives that explicitly meet alternative values held by the actors. Use your technical expertise to identify alternatives that address those values to the best of your abilities. These alternatives do not necessarily have to fit within a budget or agency policies. They simply have to portray as best as you are capable what alternatives would look like that would be closest to satisfying each set of values.

Then you need to evaluate the alternatives. It helps if you engage the public with you in evaluating the alternatives. At this stage it may be clear that some of the alternatives don't comply with law, or are so expensive they are not feasible, or have undesirable resource impacts. The next set of alternatives will usually portray a narrower range of alternatives, but you'll have the advantage of clearly being willing to consider a range of alternative values equal to the values held by the key stakeholders in your study or project – and you may quite possibly discover workable options that you would not otherwise consider.

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2. Public Participation

Public participation—rarely practiced in the early 60s—is now a legal requirement or prerequisite for governmental decision making in most of the western world. Public participation requirements are embedded in virtually every important piece of environmental legislation in the U.S. and Canada since the 1970s. More than thirty-five European countries are signatories to an international agreement known as the Aarhus Convention Those governments which are signatories to the Convention commit to take steps to ensure public participation and access to information in all environmental decision-making. Public participation is also a prerequisite for international economic development project funding by the World Bank and the various regional banks. Many private companies have also conducted public participation programs as part of decisions about management of natural resources, siting of facilities, and environmental cleanup or remediation. This means that knowing how to design and

conduct an effective public participation program is increasingly a core competency for senior environmental managers.

Public participation is the process by which public concerns, needs and values are incorporated into governmental (and corporate) decision-making. [4] Public participation is two-way communication and interaction, with the overall goal of better decisions, supported by the public. But there are many different kinds of public participation, and one of the fundamental skills is knowing what kind of participation is suitable in a particular circumstance.

Figure 3 portrays a continuum of types of public participation. The continuum can be broken into four general categories. [5]

Public Information/Public Relations

Public information programs are essentially one-way communication to the public. Public information programs without opportunities for the public to influence the decision are not public participation. But while public information by itself does not constitute public participation, it remains an essential component of an effective public participation program. People cannot participate unless they receive complete and objective information upon which to base their judgments. But one-way communication, by itself, is normally a part of the paternalistic Decide-Announce-Defend (DAD) so often derided by the public.

Procedural Public Participation

Many agencies conduct public hearings at which the public can comment on proposed actions and have increased openness to information. Hearings might better be referred to as “procedural” public participation or even “checklist” public participation. They serve an important function—in the absence of other kinds of public participation—because they force a certain degree of openness and create a legal record upon which decisions can be based (and challenged in court). But they can become simply a procedural hoop through which the agency must jump, without having much impact upon the decision, and with no chance for collaborative problem solving.

Consultation/Collaborative Problem Solving

Natural resource managers have had considerably greater success working collaboratively with the impacted public to find a solution that will enjoy broad support. [6] This approach does not always result in agreements. Sometimes all that occurs is that the positions are clarified through interaction, and everybody understands why the decision is made the way it is. Sometimes enough agreement is built that the agency is able to proceed with sufficient legitimacy that there is tacit acceptance even by those who do not support the action.

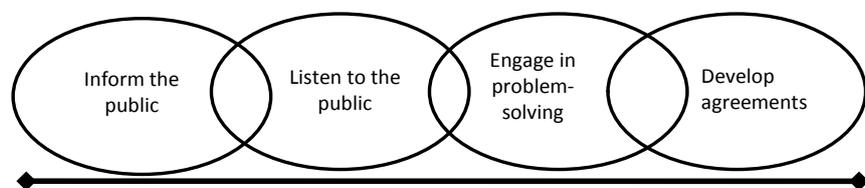


Figure 3. Continuum of participation.

The resource manager seeks as high a level of consensus as possible, but doesn't always get a consensus and reserves the right to make a final decision if consensus is not reached. When the process is over, the public has usually "influenced" the decision even if there is no final agreement and the agency retains the ultimate authority to act. The public's influence may have impacted how the problem was defined, the range of alternatives that were considered, the evaluation criteria that were applied, and the process by which the decision was made, even if there is not agreement upon the final result.

Why do agencies have the right to "make the final decision?" Agencies are legally required to make a decision and are held accountable for implementation of the decisions. Agencies are often paying for the project or for implementation of the plan. Someone has to pull together all the technical information. Someone has to pull together all the conflicting opinions. But often, if the agency has done a good job of collaboration, it will be able to implement decisions that enjoy broad popular support.

Getting Agreement/Consensus-Building

The term "consensus-building" is increasingly used for processes that have the goal of reaching full agreement. Consensus building is a process of seeking unanimous agreement. But often it means that everyone can tolerate whatever is proposed after every effort had been made to meet the interests of all stakeholding parties.

The clear advantage of the "agreement" approach is that—if there is really genuine agreement—the agency can proceed with reasonable confidence that implementation is assured. This assumes, of course, that agency itself concurs with the decision being made, and has the legal and budgetary authority to implement the consensus decision. It also assumes that those who signed on to the agreement do, in fact, represent the constituencies they claim to represent, and can deliver the support of these constituencies for the agreement. If these preconditions are not met, the agreement-seeking approach can create expectations that, if unfulfilled, may sour the relationship between citizens even more.

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RISK COMMUNICATION

The public clearly assesses risk differently than technical professionals. Many

study or project managers have had the experience of spending thousands of dollars to conduct risk assessments according to accepted professional standards only to have the public ignore or dismiss the results.

The differences in how the public perceives risk began to be particularly notable in the 1970s and 1980s. The differences were so great that some professionals simply dismissed the public as ill-informed or even stupid.

But it became clear that there was consistency to how the public assessed risk, even if it differed from professional risk assessments. Paul Slovic and others began the rigorous study of how the public perceives risk and discovered that the public was using additional criteria that were not a part of technical assessments. [7]

For example, any risk imposed by outside institutions (such as a utility company or government agency) will be seen as significantly greater than a risk resulting from engaging in a voluntary behavior, such as choosing to drive a car. Any man-made risk will be perceived as greater than a naturally occurring risk, such as flooding, an earthquake, or a hurricane. Any risk that primarily affects children is seen as much greater than a risk affecting the adult population. Any risk that uniquely affects just a segment of the public is seen as a much greater risk than a risk that is distributed across the entire public.

Based on this research—and several thousand academic papers on the topic—agencies and professional associations began to prepare guides and manuals on risk communication. [8] [9] [10] Many of these guides are readily accessible on Google using the keywords “risk communication”. They contain information that any natural resource manager needs to know.

Currently there is a significant uptick in risk communication literature, created by the greatest risk communication challenge ever—communicating with the entire public about COVID risk and the need for vaccinations. Much of this research is just reaching the stage where findings are being published.

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3. Alternative Dispute Resolution

A number of techniques have been developed that are designed to reach binding agreements. Collectively these techniques are known by the name “alternative

dispute resolution” because they are primarily intended as an alternative to litigation. [11] [12] Many of the techniques have been developed by lawyers and have usefulness only when there are a limited number of parties to the dispute, and the parties are able to commit to signed agreements.

Litigation has become so expensive and lengthy that most agreements that can be reached between parties are cheaper than the litigation itself. Also, litigation often ends up with a legal resolution, but with the parties still adversaries. In many cases, the parties cannot afford the destruction of the relationship. [13] For example, a natural resource agency and an environmental regulatory agency may have a dispute over a specific cleanup action but be very anxious to continue to work together to complete the overall cleanup program. A manufacturer and the supplier of a component part may have a dispute about a specific issue but still be almost desperate to maintain a continuing working relationship.

The common theme among the alternative dispute resolution techniques is the use of a “third-party neutral.” The role played by the neutral party varies considerably. At one end of the scale is the mediator, who is given responsibility for how the parties communicate with each other but is expected to remain neutral on the content of the issue. The minute a mediator is perceived as favoring one of the “sides,” his/her value as a mediator is diminished.

At the other end of the scale is binding arbitration. Parties agree in advance that they will all accept the ruling of the arbitrator. They “present their cases” in front of the arbitrator then accept the arbitrator’s ruling, whatever it is. Sometimes instead of an arbitrator the parties will retain the services of a retired judge to rule on the legal merits of a case.

Natural resource managers are not usually faced with situations where alternative dispute resolution techniques will be useful. They are not useful when there are hundreds, maybe even thousand, of interested parties. Among the various alternative dispute resolution techniques two techniques—partnering and mini-trial—may be useful for minimizing or resolving disputes between the agencies managing the study or program. They are discussed below.

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4. Problem Definition

How you define a problem can open up or constrain the range of alternative solutions you consider. It also defines the range of values impacted by your actions. As a result it can also determine which segments of the public are concerned with the problem or proposed actions.

Yet natural resource managers often accept the definition of the problem handed to them without careful analysis of that definition. Wise resource managers are advised to stop and take the time to do a careful problem definition.

Recently an electric utility realized it was in danger of being unable to provide adequate quantities of electricity to a rapidly growing town located at the end of a peninsula. The company could generate additional electricity at a generating plant located about 40 miles away. So it defined the problem as “where to locate a transmission line that could deliver the available power to the town.”

This was not a simple problem. The peninsula was surrounded on three sides by a lake. The heart of the peninsula was a national park. Federal law does not allow anything like a transmission line to be built in a national park; in fact, some people even object to a transmission line that can be seen from a national park. The problem was complicated further by the need to avoid impacting several protected species. The transmission line could be located between the national park and the lake, but this area was filled with luxurious second homes owned by wealthy individuals. In fact, one of the homes was owned by the state’s Governor. The company was going to have a very difficult time finding a route through this area that would not stir up immediate protests from powerful people.

In discussions with potential stakeholders the company realized it needed to re-define the problem. The new definition was “how to provide adequate quantities of electricity to the town at the end of the peninsula.” The transmission line was still an alternative. But the new problem definition opened up options for on-site generation of electricity. It also opened up consideration of alternatives that could be supported by groups who opposed the transmission line.

There are numerous processes for conducting a more rigorous problem definition because problem definition is now recognized as critical not only in resource management, but also in product development and technological innovation. [14] [15] [16] At its simplest, problem definition may involve talking with stakeholders and asking their definition of the problem. Other approaches involve a major structured analysis. Two of these processes are referenced below.

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5. Stakeholder Mapping/Identifying Publics

Stakeholder mapping is the visual process of laying out all the stakeholders of a product, project, or idea on one map. The main benefit of a stakeholder map is to get a visual representation of all the people who can influence your project and how they are connected.

Initially the idea of stakeholder mapping came up during the design of public participation programs. There was a tendency to think of stakeholders as those people who received a direct economic or use benefit or cost. But as projects or programs became more controversial it became obvious that decisions could bestow benefits or costs on people's values, even if there was no economic connection. Values stakeholders may participate as energetically (or more) than economic stakeholders. The decisions you make may bestow a benefit or a cost on their sense of the way things ought to be, and that can be worth fighting for.

During the 70s, politicians began to claim the "silent majority". The silent majority was anybody who wasn't active on a particular issue. The concept of the silent majority allowed politicians to claim support for their positions even though the loud noisy people didn't support them. The fundamental fallacy of the concept of the silent majority is the assumption that because they are silent, the public is in agreement. There is, of course, no evidence for this. Just because they are silent doesn't mean they agree. In fact there is every reason to see the public as a collection of interests, positions and values rather than a monolithic thing.

We also learned that there were both internal and external stakeholders. Parts of agencies are so associated with a particular value that they become an advocate for that value. Changes in programs can reallocate the power or influence of different parts of the organization. Internal stakeholders often kill an innovation as dead as do external stakeholders.

When starting a new planning process or new program it pays to identify the stakeholders for that project. Your analysis of potential stakeholders should take into account both the power and influence a particular stakeholder exerts in this particular situation, as well as their level of interest. [17] [18] That way you end up putting stakeholders into four categories:

- High power, highly interested people
- High power, less interested people
- Low power, highly interested people
- Low power, less interested people

Obviously, stakeholders who are both powerful and interested will try to exert maximum influence, so your public participation program needs to be designed to accommodate that level of interest. Low power/high interest stakeholders are also likely to participate. Other stakeholders need to be kept informed, in case their level of interest changes.

You also need to update your list of stakeholders as the program moves along. As you consider new alternatives, for example, you may also add new stakeholders. Similarly, as you drop alternatives, some stakeholders may lose interest.

Stakeholder identification is important to ensure that you have not left out some important stakeholder. It is extremely frustrating to go through a whole process only to have a stakeholder emerge who claims they have been excluded from the process. To the extent you are able, identify stakeholders upfront so they can't claim exclusion.

People in private industry have expanded the idea of stakeholder mapping quite substantially because it is a very useful concept at the beginning of building support for new products or new procedures. [19] In particular, people in industry have emphasized displaying stakeholders visually, such as on a large whiteboard. They've found that working visually helps them understand how stakeholders are interconnected and where there are common interests.

Once you have identified stakeholders it is time to design a participation process. This process needs to allow for different levels of interest, and provide opportunities for participation that recognize differences in power or influence.

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6. Alternative Futures Planning

Every plan or project rests on assumptions about what the future will be like, what demands will need to be met, what requirements will need to be accommodated. But predicting the future is not easy, particularly with climate change in the wings, global epidemics, and social upheaval. Alternative futures planning attempts to address this problem by not resting on a single set of assumptions, but consciously projecting several scenarios of what the future could be like, and testing how will your plan or project will perform in each of those scenarios. [20] [21]

For example, a study of total water requirements for a major region of California, considered five scenarios: low growth/environmental values, medium growth/current trends, high growth/pro-development values, worldwide food

shortage, and worldwide fuel shortage.

There are two basic stages in alternative futures planning: scenario development and plan development. Scenario development is the “fun” part of the process. The public can work with you to identify which themes have the most salience in your circumstance. This is an excellent opportunity to consult with the public. They get to advocate for the kind of future they would like to see, but they also have to think about other possible futures. The goal is not to predict which alternative future will occur, but to “bracket” the possibilities so that what actually occurs has been addressed in one of more of the scenarios.

Once the scenarios have been developed, there’s the challenge of formulating a plan or project which is sufficiently “robust” that it can be responsive no matter which alternative future actually occurs. There are a number of approaches to plan formulation. One approach is to identify the general outlines of realistic plans to address the requirements of each scenario. Then these plans are tested for each scenario. One or more plans may be robust in most of the scenarios. Another plan may do an excellent job in one or two scenarios, but be very weak in meeting the requirements of the other scenarios. Based on this analysis it is possible to develop a plan that meets the requirements of your situation.

Another more complex approach is to take all the plans and analyze how each action impacts all the other actions. In other words, decisions you make may “kill off” some options but enhance your ability to implement other actions. This analysis will allow you to develop a decision guide which addresses such questions as: What decisions should be made before you make this decision? What conditions should exist before you make this decision? What are the consequences of this decision on decisions you may want to consider in the future?

Alternative futures planning is gaining rapidly in how often it is used, and is proving to be a valuable tool.

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7. Computer-Aided Dispute Resolution/Shared Vision Planning

Computer-aided dispute resolution addresses fundamental problems that exist in many disputes: 1) people cannot agree on the basic facts about how the natu-

ral system actually operates; 2) people understand only one part of the resource puzzle, and do not understand how decisions in one part of the system affect other parts of the system; 3) people do not trust natural resource management agencies to evaluate alternatives fairly, believing they use study methodologies with hidden assumptions that favor the approaches these agencies favor, and 4) they are not confident that agencies are considering all the alternatives. [22]

But what if the stakeholders could be directly involved in developing the computer model used to analyze the issue, even testing alternative assumptions using the model they co-develop?

A set of tools has now been developed which can make this possible. These tools go by numerous names, among them Shared Vision Planning, Collaborative Modeling, Participatory Modeling, Group Model Building, Computer-Aided Negotiation, and Mediated Modeling. The goal of all the techniques is to conduct analyses at sufficient depth to be used as a basis for decision making.

Shared Vision Planning is the “brand name” used by the US Army Corps of Engineers Institute for Water Resources (IWR), which has been a major proponent in developing the field, and has successfully applied the techniques on major water studies internationally. The name “shared vision planning” comes from the belief that the process of working together to build a model or at least verify its inner workings will lead to increased understanding and discovery of each others’ mutual interests and values, a shared vision.

Shared Vision Planning, and all the other variants of CADRe, combine the use of standard planning steps with the engagement of stakeholders in developing and utilizing a computer model to understand the natural system and test alternatives. The whole point of engaging in a transparent process to develop a model is so that people will trust it when it comes time to evaluate alternatives. [23]

To gain credibility, potential stakeholders involved in the decision are invited to be part of the team that develops and uses the model. While there is often a core team that includes experts from participating agencies and stakeholders with the expertise to understand the technical complexities of the actual model, there are also opportunities for those who are not technical experts to participate in identifying the underlying assumptions, define the issues that need to be addressed by the model, and use the model to evaluate numerous scenarios and alternatives. Practitioners of shared vision planning describe a series of concentric circles with modelers at the center, then reviewers of the modeling, then commenters on the work that has been done.

IWR identifies certain criteria that the model must meet for use in Shared Vision Planning: [24]

- The model must be user-friendly, with an intuitive interface;
- The model must be interactive and transparent to people who are not programmers,
- The model must execute quickly, permitting *real time* evaluation of options and scenarios,
- The output must address all the interests of the stakeholders, and

- The model must be sufficiently reliable and detailed that it can provide a basis for actual decision making.

The participatory process involves careful management to ensure communication between the modelers, reviews, and commenters. Leadership of the process requires skill both in facilitation and modeling. Some individuals possess both skills, but it is common to have both a facilitator and a modeler.

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8. Partnering

Increasingly large-scale environmental management plans and programs require the engagement of four or five federal or state environmental agencies. For example, the plan may be developed by a federal resource management agency such as the US Forest Service, the Bureau of Land Management, or the Corps of Engineers. Typically the plan requires the approval of the US Environmental Protection Agency, or possibly the US Fish & Wildlife Service. Then this same combination of agencies is replicated with state agencies.

In theory these agencies have similar if not identical values and missions. Yet not infrequently this collection of agencies results in a “train wreck,” with huge delays, cost overruns, even open antagonism between the agencies. In many cases this disaster results from an “arms length” relationship that the agencies assume must be maintained to avoid any appearance of collusion or corruption. But this combination of an arms-length relationship and the natural tendency of agencies to “protect their turf,” results in bureaucratic disasters instead of environmental protection. The result is added cost for taxpayers and delays in implementing effective environmental management programs.

Recently agencies have addressed this possibility with the use of a technique or process known as partnering, or sometimes as joint stewardship. There have been many successes in completing plans and implementing programs more efficiently and more effectively through the use of partnering. The technique is also widely used in the construction industry. [25]

The fundamental concept of partnering is that the environmental agencies need to operate as a team. This is the exact opposite of the “arms length” approach. So long as work is being done with transparency, more good can be accomplished for the environment by working together rather than at odds with each other.

The Department of Defense had issued a Partnering Guide which states: “Partnering is not just a series of steps. It is an attitude or philosophy. Some of the core values underlying partnering include: shared responsibility, common purpose, teamwork, empowered staff, commitment, dispute resolution, clarity, and shared risks and benefits.” [26]

Organizational teams develop a sense of common purpose, loyalty, and commitment by working together, sometimes for a number of years. Part of the challenge of partnering is to create the same sense of teamwork through specific activities designed to create an identity as a team. For example, most partnering teams go through a formal team building process at the front-end of working together. They also create a charter that identifies commitments to each other such as sharing of information, time limits on decisions, and groundrules for how and when issues are elevated to higher authority for resolution.

Then throughout the period the team works together they participate in periodic refresher sessions—some people refer to these as “hygiene” sessions—during which they review how they are working together, and identify improvements that can be made in their working relationship.

The Department of Defense Partnering Guide states that there are two major stages in partnering: 1) Forming the Team; and 2) Sustaining the Team.

The steps in Forming the Team include:

- Initiating the process
- Obtaining senior management support
- Identifying partnering champions
- Deciding on the participants
- Conducting the partnering workshop
- Creating a charter

The “Sustaining the Team” stage doesn’t follow a predictable sequence, but studies show that most effective Partnering includes these elements:

- Developing an implementation plan
- Setting up ways for monitoring how the team is working
- Participating in periodic follow-up sessions
- Participating in joint training or skills-building
- Creating ways to reinforce team identity
- Celebrating team successes

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9. Mini-Trial

Often there are urgent reasons why a dispute must be resolved quickly. For example, if a dispute is not resolved within a certain time frame it may not be possible to conduct seasonal field research, putting off work for a year or more.

The mini-trial has proven to be an effective dispute resolution tool when timeliness is important, the number of parties is limited (normally just two), and organizations are able to make binding commitments. [27]

Here's the procedure that is followed in a mini-trial. [28]

- Two or more organizations involved in a dispute agree to use a mini-trial as an alternative to going to court
- Each organization designates a senior manager to represent their organization. The senior managers must be able to make commitments on behalf of the organization they represent. Normally the senior managers would have had minimal or no previous involvement in the dispute
- The management representatives jointly develop a mini-trial agreement. This agreement serves as a guide for the entire process, specifying roles, time limits schedule, rules of discovery, procedures, etc. This agreement does not have to conform to court rules and procedures. It can be flexible and contain whatever guidance the management representatives think will work for them. The mini-trial agreement will include a provision that statements made during the mini-trial can't be used against participants in court if no agreement is reached during the mini-trial.
- Attorneys for the organizations go about preparing their cases. The mini-trial agreement may call on the attorneys to prepare position papers, which will be exchanged at an agreed upon time.
- The mini-trial begins with the attorneys presenting their case in front of the management representatives. Normally their time is tightly constricted, such as a half-day or single day for each attorney. Management representatives may ask questions, constrained only by the rules outlined in the mini-trial agreement.
- The management representatives are often assisted by a neutral advisor. The neutral advisor could be a retired judge or attorney who can advise on the law, or a technical expert who can advise on the technical subject matter of the dispute. Any opinions are strictly advisory.
- The management representatives then move to another room, without their staffs, and attempt to resolve the dispute. Typically the management representatives are able to arrive at some agreement.
- The agreement is carefully documented, just as would be any negotiated set-

tlement.

Typically there is external discussion before one party proposes the use of a mini-trial to the other party. Agencies often believe their positions are right, and resist any suggestion that resolution can be achieved through negotiation. Certainly if the only acceptable answer is complete surrender by the other party, this can almost never be achieved through negotiation. Also, agencies need to be sure that the mini-trial enjoys the support of any other agencies or organizations whose approval could be needed. The management representatives must be able to make binding commitments. Otherwise the other party will conclude that you were not negotiating in good faith. Finally, mini-trial do involve expense. That expense is small compared to litigation, but it is not inconsequential. Just the involvement of senior managers for several days constitutes a significant commitment.

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10. Conclusion

There's hope for the natural resource manager who wanted to be a scientist but instead spends much of his/her life in the public arena. People in the social sciences have been working hard to develop new approaches to deal with controversy and disputes. This article summarizes some of the techniques which have proven to be most effective. Natural resource managers are encouraged to identify those techniques which seem most appropriate to their situation and use the resources provided so they can begin to explore those techniques in greater depth.

Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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