

DISCURSIVE METHODS IN ENVIRONMENTAL DECISION MAKING



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Sustainable practices can be initiated or encouraged by governmental regulation and economic incentives. A major element to promote sustainability will be, however, the exploration and organization of discursive processes between and among different actors. Many analysts agree that sustainability will remain a highly desirable, but unrealistic option for development, if people do not feel a degree of ownership and identity with the goal of sustainability for their own life and a preference for its policy implications. Inviting the public to be part of the decision-making process from the beginning improves the likelihood that the resulting decision will be accepted. Participatory processes are needed that combine technical expertise, rational decision making, and public values and preferences. To accomplish such an integration, negotiation, mediation, and arbitration are potential solutions. Many different procedures and forms of mediation have been proposed and some tested. One major attempt of the authors has been the organization of round-table discourses among a wide variety of

stakeholders to develop environmental policy goals or to design local and regional waste management plans. These discourses are based on the assumption that each participant can contribute to the common good if the setting of the discourse encourages the generation of shared values and discourages strategic reasoning. The emphasis of the paper will be on the model of cooperative discourse and first applications in Germany, Switzerland and the United States. © 1997 John Wiley & Sons, Ltd and ERP Environment.

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INTRODUCTION

Sustainable practices can be initiated or encouraged by governmental regulation and economic incentives. A major element to promote sustainability will be, however, the exploration and organization of mediational processes between and among different actors. Many analysts agree that sustainability will remain a highly desirable, but unrealistic option for development, if people do not feel a degree of ownership and identity with the goal of sustainability for their

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own life and a preference for its policy implications (Redclift, 1994; Busch-Lüthi, 1990). Many targets of sustainability require voluntary collective actions by different players in society, most notably industry, government, unions and environmental groups. As long as they paralyse each other, nothing will be gained with respect to a more sustainable economic path.

Inviting the major actors to be part of the decision-making process from the beginning improves the likelihood that the resulting decision will be accepted. Unfortunately, early public involvement may compromise, however, the objective of efficient and effective sustainable development or violate the principle of fairness. As economists have pointed out, preferences of people with respect to public goods are often driven by short-term interests and objectives and reflect people's expectation of immediate pay-offs rather than of investments in a sustainable future (Cansier, 1995; Fritsch, 1995). Such a short term perspective is even more likely to occur if the alternatives for actions include options that promise immediate gains for all participants at the costs of a slowly progressing devastation of the environment. Long term perspectives have only a chance to prevail if the participants associate catastrophic potential with the respective decision alternative (Renn, 1990). As far as fairness towards future generations is concerned, many analysts claim that most participatory processes may place little emphasis on this goal since people feel more obliged towards the needs of those constituencies that they represent than towards the needs of yet unborn citizens (Frey and Oberholzer, 1996; Linder, 1990, pp. 153ff). It depends on the structure of the participatory program, however, whether participants develop moral responsibility for long-term thinking and respect for the needs of future generations (Linnerooth-Bayer and Fitzgerald, 1996; Webler, 1995).

Another problem is that the public consists of many groups with different value structures and preferences. Without a systematic procedure to reach consensus on values and preferences, the public's position often appears unclear. Participatory processes that combine technical expertise, rational as well as moral decision making, and public values and preferences are thus needed. To accomplish such an integration, discursive processes such as negotiation, mediation and arbitration are potential solutions. Many different procedures and forms of mediation have been proposed and some tested. One major attempt of the authors has been the organization of round-table discourses (named cooperative discourse) among a wide variety of stakeholders to develop environ-

mental policy goals or to design local and regional waste management plans. These discourses are based on the assumption that each participant can contribute to the common good if the setting of the round-table encourages the generation of shared values and discourages strategic reasoning. More specifically, a round-table discourse is based on a set of rules that can be specified by (Renn, 1992):

- (i) reaching a consensus on the procedure that the participants want to employ in order to derive the final decision or compromise, such as majority vote or the involvement of a mediator;
- (ii) basing their factual claims on the "state of the art" of scientific knowledge and other forms of legitimate knowledge; in the case of scientific dissent all relevant camps should be represented;
- (iii) interpreting factual evidence in accordance with the laws of formal logic and analytical reasoning;
- (iv) disclosing the values and preferences of each party, thus avoiding hidden agendas and strategic game playing;
- (v) attempting to find a fair solution whenever conflicting values or preferences occur, including compensation or other forms of benefit exchange.

This paper will address the procedures, problems and prospects of new mediational processes to facilitate a discourse among different actors. First, we will describe the levels of debate that are likely to dominate environmental debates. Based on this analysis, we will introduce different processes and discuss their problems and merits. The fourth chapter will explain our own approach and its characteristics. After a brief description of our experiences with this approach, we will articulate some conclusions about the potential contribution of mediation and similar processes for resolving environmental disputes.

THE THREE LEVELS OF ENVIRONMENTAL DEBATES

Before looking at the requirements of conflict resolving processes it is important to focus on the substance of environmental debates in general. Although topics vary from one environmental problem to the next, most environmental debates centre around three themes (Funtowicz and Ravetz, 1985; Rayner and Cantor, 1987):

- factual evidence;



- institutional performance, expertise, and experience;
- conflicts about world views and value systems.

Figure 1 is a graphical representation of this model using a modified version of the original categories (taken from Renn and Levine, 1991). The first level involves factual arguments about evidence of environmental damages, risks and potential side effects. If the conflict is clearly focused on these topics. i.e. factual evidence, the discourse organizer can help to resolve this conflict by using the following suggestions:

- Refer the disputed question to an expert or group of experts who have high credibility among all discourse participants.
- Have each participant select a group of experts; ask each group to develop a response to the disputed question; organize a workshop for all experts; identify issues where experts agree and specify the range and scope of their disagreements.
- Involve a third party to conduct a research project that would be appropriate to provide answers to the question in dispute.
- Find an agreement on the methodology and analytical procedure which is regarded as appropriate for the question in dispute and evaluate all studies on the basis of the methodological criteria (peer review).

It is not advisable to allow each party to have their own scientific advocates and feed these advocacies into the discourse. Rather the discourse organizer should try to employ the methodological rules and evaluative criteria that are accepted in the respective science field to evaluate factual claims.

This can be done in expert workshops (for example using the Delphi procedure) or through peer review. The discourse participants should have the right to co-determine the experts and the methodologies used for evaluation.

The second, more intense, level of debate concerns institutional competence to deal with environmental problems. At this level the focus of the debate is on the distribution of risks and benefits, and the compatibility of the proposed solution with current economic and social conditions. This type of debate does not rely on technical expertise, although reducing scientific uncertainty may help. If the conflict is on the second level, resolving conflicts about factual evidence is not sufficient. The major question here is trust in the experience, commitment and expertise of the risk managing institutions. Even if risks are perceived as low, doubts about competence or impartiality of the risk management agencies may lead to firm opposition. The conflict resolution mechanisms must focus in second level conflicts on the past record of institutions, the structure of checks and balances (mutual control), the openness of the institution to incorporate public concerns and demands, and the effectiveness of monitoring and control over the lifetime of the risk generating facility. The discourse organizer can provide information on these questions by:

- asking a group of independent experts to evaluate institutional performance;
- investigating past failures of the respective institution and analysing the responses to avoid future mistakes;
- organizing a panel discussion with representatives of the managing institution and its critics;
- suggesting structural changes, such as including more public control of the institutional

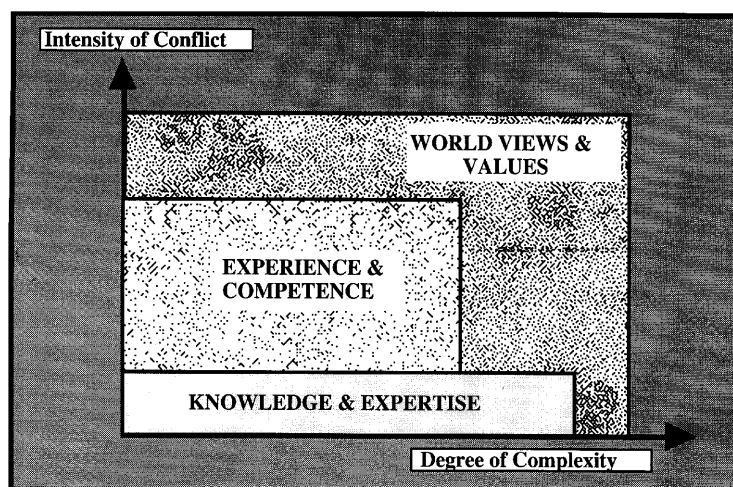


Figure 1. The three levels of environmental debates.



- performance or establishing a better system of checks and balances;
- (v) establishing a continuously operating oversight board consisting of representatives of each party in the discourse.

Conflicts on the second level will affect administrative agencies as well as private companies. The private sector is often associated with profit-seeking behaviour beyond economic reason and dishonesty with respect to environmental performance. Private companies are often accused of lip-service to the environment while their actions speak a different language. The competence in the ability of company officials to understand environmental risks and to manage them effectively is rarely disputed. Rather the focus is on the credibility and trustworthiness of companies when they reach out for public support. The most important lesson here is to unify rhetoric and reality. Trust depends on the potential congruency between public expectations and perceived performance (Renn and Levine, 1991). Corporations are well advised to promise not more than they can deliver. This includes the task of refuting unrealistic expectations and of monitoring actual performance according to the corporate's public statements. Openness to public demand is crucial in gaining or regaining public trust. Inflexibility to respond to public demands has been one of the predominant reasons for failed attempts to conflict resolution. Representatives of institutions should therefore clarify in advance which changes they are willing to accept and which not. Complete inflexibility is an invitation to disaster.

At the third level the conflict is defined along different social values, cultural lifestyles, and their impact on environmental management. In this case, neither technical expertise nor institutional competence and openness are adequate conditions for public involvement. Decision making here requires a fundamental consensus on the issues that underlie the environmental debate. Conflicts on the third level are most difficult to resolve since they are not grounded in empirical evidence or past history. Discussion about values and lifestyles are highly individualized and idiosyncratic. An intensive exchange of arguments can be very beneficial first to clarify the positions of each party and second to design compromises that avoid strong value violations for any of the parties involved. Compromises for third level conflicts require that value violations in one area can be offset by value fulfillment in another area. However, the two value sets must be perceived as equivalent. This is the major reason why monetary compensation is often rejected as

unacceptable or even cynical. Salient values cannot be compensated by gains in non-salient values. So compensation can be materialized in form of risk reduction, better access to resources, more control options, improvement of environmental quality, and others. Some of these options can be offered by private companies other need the approval of political bodies such as environmental agencies or parliaments. A discourse organizer may suggest the following strategies to find viable compromises:

- (i) invite philosophers and conceptual thinkers to debate value issues and show the legitimacy of different value clusters for addressing the same problem;
- (ii) use structuring techniques (such as value tree analysis) to identify the relevant values, issues, and interests of each party;
- (iii) focus first on the shared values of all parties in order to give them the feeling that they are not as far apart as it seemed from the outset;
- (iv) identify or even quantify the degree of value violations caused by the proposed technology or facility;
- (v) identify or construct solutions that minimize strong value violations;
- (vi) suggest compensatory measures for each party using a type of compensation that increases one of the salient values of the respective party (for example, provide additional environmental benefits to a group concerned about environmental impacts);
- (vii) in the case of a deadlock, suggest an arbitration procedure by which a third party makes the final decision based on their evaluation of potential value violations.

Conflicts on the third level may require most time of the discourse. Their resolution is contingent on finding a viable compromise. First and second order conflicts will not be resolved unless some agreement is reached on the third level. However, resolution of third level conflicts require some agreement on the first and second level. This dilemma can be overcome by starting the discourse on third level issues (identifying values and potential value violations), then turning to conflicts on the first and second level, and finally addressing the value problems again (identifying compromises and designing compensatory measures).

There is, however, a strong tendency for management agencies and company officials to re-frame higher level conflicts into lower levels ones: third level conflicts are presented as first or second level conflicts, and second level conflicts as first level. This is an attempt to focus the discussion on tech-



nical evidence, in which the official spokesperson of an agency or a company is fluent (Dietz *et al.* 1989). Citizens who participate in the discourse are thus forced to use first level (factual) arguments to rationalize their value concerns. Unfortunately, this is often misunderstood by environmental managers as "irrationality" on the part of the public. Frustrated, the public retreats to due process and routinization of the process, abscising it of substance, and departs with disillusion and distrust of the system.

FORMS OF DISCURSIVE PROCESSES: NEGOTIATION, MEDIATION AND ARBITRATION

Once the level of the debate is established, an interactive method for resolving the conflict needs to be organized and structured. The first crucial question for organizing such a discourse is: who is allowed to participate to what degree? The first part of the question refers to the problem of selection and representation, the second to the degree of power that the representatives of the public or other constituencies can exercise in the process. Furthermore, models of involvement vary considerably in the structure of the decision-making process itself and its integration into the existing political institutions. Finally, the question of the role and power of the process facilitator has to be addressed.

With respect to selection procedures, there are three generic types of selection procedures for appointing representatives for the negotiation process:

- (i) self-selection based on the volunteer principle (such as public hearings);
- (ii) determination of social groups or constituents by the regulatory agency or a third party (invitation of stakeholder groups to the process);
- (iii) systematic or random selection of members of the relevant public (such as surveys, focus groups, consensus conferencing, town meetings).

Self-selection is the most popular approach in the United States, while invitation of organized stakeholder groups is the predominant method in most European countries (Renn, 1988). The three types of selection can be combined or structured sequentially. For many environmental problems, a combination of at least the first two selections processes is almost inevitable because opposition is likely to

evolve from the pool of local residents and from a variety of non-local, environmental conscious groups who feel affected by a decision that impacts on the environment.

The degree of power given to the representatives of either stakeholder groups or the public depends on the structure of the process and the issue at stake. The following classification lists the degree of empowerment on a scale from low to high (Pollak, 1989):

- (i) informing the public about a pending decision;
- (ii) communicating to the public the reasons, procedures and potential impacts of the respective environmental policy;
- (iii) inviting the public to express their concerns with the understanding that the decision making bodies will incorporate these concerns into their final decision;
- (iv) asking the public representatives to take part in the deliberations and evaluations of decision options, but leaving the final decision to the responsible decision makers in private companies or political agencies;
- (v) giving the public representatives the right to make recommendations for the final decision, but leaving the decision makers the option to override this recommendation;
- (vi) giving the public representatives the right to co-determine the final decision (various voting procedures);
- (vii) giving the public representatives the exclusive right to determine the final decision (binding decision for the public authorities).

Similar to the selection process, these stages in empowerment can be combined or structured sequentially. In addition, some of these rights may be given only to some representatives (such as organized stakeholders or clearly affected abutters of facilities). While in many European countries, the legal process of involvement is structured by law and does not leave many choices in the selection of processes or participants, the American tradition of participation is less rigid in structure and encourages public expectations that, without prior consent, decisions cannot be implemented.

The structure of the process also varies considerably from arena to arena. Most popular in the United States and Europe is the hearing procedure in which participants are given the right to express their concerns and to question the technical experts of the other parties (for example the proposer of a facility). Since the hearing does not include a direct participation in the decision-making process, i.e. does not empower the participants to actually co-



determine the decision, controversial proposals are usually taken to court. Litigation, however, is not only costly and time-consuming, it also results in often unsatisfactory resolutions of the conflict, since the legal system is not prepared to adequately cope with problems in which highly technical aspects are at the center of the controversy. In the United States, procedures of mediation have gained more and more popularity as a means to incorporate public concerns into the decision process without sacrificing technical expertise or rational reasoning (Amy, 1987). Mediation is also less expensive and time-consuming than litigation.

The different forms of negotiation, mediation, and arbitration are usually defined in terms of the role and influence of the process facilitator. Although the definitions for these terms are not consistently used in the literature, most authors use the three terms in the following meanings:

- *negotiation*: parties are invited to communicate with each other and to design potential compromises on their own; the facilitator acts as communication specialist who structures the process without interfering into the negotiation;
- *mediation*: parties are invited to communicate with each other and to help the mediator to design compromises; the mediator plays a more active role here by proposing solutions of the conflicts and have the parties vote on his suggestions;
- *arbitration*: parties are invited to exchange arguments and try to convince the arbiter that their viewpoint is correct; the arbiter articulates a compromise at the end; participants vote for or against the arbiter's judgment; in some models arbiter has voting rights and produces the decisive vote if a tie occurs;
- *binding arbitration*: same as arbitration except that arbiter does not need the approval of any party, but is free to make a binding judgment at the end of the process.

These four forms of conflict resolution can also be combined. For example, the participants may agree to use negotiations to set an agenda and to define a procedure of how to reconcile factual disputes and value conflicts, but they may prefer arbitration to draft the content of the final agreement. Distinguishing between arbitration and binding arbitration may appear superfluous, but non-binding arbitration is often used in labour disputes (in which the arbiter may cast the decisive vote in a tie), while binding arbitration is almost exclusively used as an alternative or substitute to legal suits. In the economic literature, the term bargaining is also used

in connection with mediation (O'Hare, 1990). Bargaining means negotiations about the appropriate compensation of those who have utility losses by those who reap benefits from the planned intervention. Since all types of conflict resolution may entail some form of bargaining, regardless whether compensation is explicitly addressed the term bargaining should be reserved for one method of conflict resolution within negotiation, mediation, or arbitration.

CONDITIONS FOR SUCCESSFUL CONFLICT RESOLUTION

What are the conditions or prerequisites for a successful mediation or other forms of conflict resolution? Success can be measured in two ways: first, was the objective of the conflict resolution process accomplished; and second, are all participants satisfied with the outcome and the process itself? Both indicators of success depend on the structure of the process. In the literature, structural requirements are often discussed by referring to the concept of rational discourse. A rational discourse is defined as a communication process in which all affected parties resolve a conflict by a specific set of rules. The success or failure of a rational discourse depends on many factors. Among the most influential are (cf. McCarthy, 1975; Habermas, 1984; Kemp, 1985; Bacow and Wheeler, 1984, pp. 190–194; Burns and Überhorst, 1988; Fiorino, 1990; Renn, 1992; Renn *et al.* 1995):

(1) *Time*: A discourse cannot be organized in a week or even a month. It is advisable to allocate sufficient time for a discourse before the actual decision has to be made. This is not always politically feasible, because many decisions have to be made instantaneously. Most siting conflicts, however, have provided enough evidence that insufficient consultations with the affected parties delay the decision process much longer than the preparation time needed to organize a discourse prior to the decision (Kasperson, 1986).

(2) *Openness of result*: A discourse will never accomplish its goal if the decision has been made (officially or secretly) and the purpose of the communication effort is to "sell" this decision to the other parties. Individuals have a good sense whether a decision maker is really interested in their point of view or if the process is meant to pacify potential protesters (Fiorino, 1989).

(3) *Equal position of all parties*: A discourse needs the climate of a "powerless" environment (Haber-



mas, 1984). This does not mean that every party has the same right to intervene or claim a legal obligation to be involved in the political decision making process. However, the internal rules of the discourse have to be strictly egalitarian; every participant must have the same status in the group and the same rights to speak, make proposals, or evaluate options (Kemp, 1985). Two requirements must be met: First, the decision about the procedure and the agenda must rely on consensus; every party needs to agree. Second, the rules adopted for the discourse are binding for all members and no party is allowed to claim any privileged status or decision power. The external validity of the discourse results are, however, subject to all legal and political rules that are in effect for the topic in question.

(4) *Willingness to learn*: All parties have to be ready to learn from each other. This does not necessarily imply that they have to be willing to change their preferences or attitudes. Conflicts can be reconciled on the basis that parties accept other parties' position as a legitimate claim without giving up their own point of view. Learning in this sense entails:

- Recognition of different forms of rationality in decision making (Perrow, 1984; Habermas, 1984);
- Recognition of different forms of knowledge, be it systematic, anecdotal, personal, cultural, or folklore wisdom (Habermas, 1971);

Willingness to subject oneself to the rules of argumentative disputes, i.e. provide factual evidence for claims; obey the rules of logic for drawing inferences; disclose one's own values and preferences vis-à-vis potential outcomes of decision options, and others.

(5) Resolution of allegedly irrational responses: Discourses in which the public stakeholder groups or affected individuals are represented frequently demonstrate a conflict between two contrasting modes of evidence: the public refers to anecdotal and personal evidence mixed with emotional reactions, whereas the professionals play out their systematic and generalized evidence based on abstract knowledge (Lynn, 1986; Keeney and von Winterfeldt, 1986; Dietz *et al.* 1989). A dialogue between these two modes are rarely accomplished because experts regard the personal evidence as a typical response of irrationality. The public representatives perceive the experts often as uncompassionate technocrats who know all the statistics, but couldn't care less about a single life lost. This conflict can only be resolved if both parties are willing to accept

the rationale of the other party's position and to understand and maybe even empathize with the other's party view (Bacow and Wheeler, 1984, p. 191). If over the duration of the discourse some familiarity with the process and mutual trust among the participants have been established, role playing can facilitate that understanding. Resolving alleged irrationalities means to discover the hidden rationality in the argument of the other party.

(6) *De-moralization of positions and parties*: The individuals involved in a discourse should agree in advance to refrain from moralizing each other or each other's position (Renn, 1992). Moral judgments on positions or persons impede compromise. Something cannot be 30% good and 70% bad; either it is good, bad, or indifferent. As soon as parties start to moralize positions, they cannot make tradeoffs between their allegedly moral position and the other parties' immoral position without losing face. A second undesired result of moralizing is the violation of the equality principle stated above. Nobody can assign equal status to a party which is allegedly morally inferior to the other parties involved. Finally, moralizing masks deficits of knowledge and arguments. Even if somebody knows nothing about a subject or has only weak arguments to support his/her position, assigning blame to other actors and making it a moral issue can help to win points in the public arena and to be a respected participant in the dispute (Scheuch, 1980). Many parties in a discourse try this route if they feel they are not taken seriously or their rationality is not accepted. Given the conditions 1–5 are met, there is a good chance that participants voluntarily agree to refrain from the "unfair" instrument of moralization. The absence of moralizing other parties or their position does not mean to refrain from using ethical arguments, such as "this solution does not seem fair to the future generation" or "we should conserve this ecosystem for its own sake".

In addition to the above mentioned requirements that help structure the deliberation process and provide rules of argumentation and behaviour for all participants, it is important that the process meets specific requirements with respect to its legitimizing effect vis-à-vis the outside world. Among the most important aspects that discourse organizers need to consider are:

A clear mandate for the discourse participants: What are topics of discussions? What is the product that they are asked to deliver?



A clear understanding of the options and permissible outcomes of such a process: If for example, the site for a risk producing facility is already chosen, the discourse can only focus on issues such as choice of technology, emission control, and compensation.

A predefined time table: It is necessary to allocate sufficient time for all the deliberations, but a clear schedule including deadlines is required to make the discourse effective and product-oriented.

A mutual understanding of how the results of the discourse will be integrated in the decision making process of the regulatory agency: As a pre-decisional tool the recommendations cannot serve as binding arbitrations in most cases. Rather they should be regarded as consultancy reports similar to the scientific consultants who articulate technical recommendations to the legitimate public authorities. Official decision makers need to acknowledge and to process the reports by the discourse panellists, but they are not obliged to follow their advice. However, the process will fail its purpose if deviations from the recommendations are neither explained nor justified to the panellists.

A THREE STEP MODEL OF PUBLIC INVOLVEMENT

Is there any procedure that would meet the requirements for such a discourse and at the same time assure the incorporation of expertise and social values? Many models for public participation have been suggested in the literature that promise to facilitate a rational discourse (Crosby *et al.* 1986; Kraft, 1988; Burns and Überhorst, 1988; Chen and Mathes, 1989; see reviews in: Nelkin and Pollak, 1979; Pollak, 1985; Fiorino, 1990).

This is not the place to discuss these models in detail. We would like to focus on one hybrid model of citizen participation that we have termed "cooperative discourse". With several modifications, this model has been applied to studies on energy policies and waste disposal issues in West Germany, for waste-disposal facilities in Switzerland and to sludge-disposal strategies in the United States (Renn *et al.* 1985; Renn *et al.* 1989; Renn *et al.* 1991; Renn *et al.* 1993; Renn *et al.* 1995). The model entails three consecutive steps:

(i) *Identification and selection of concerns and evaluative criteria.* The identification of concerns and objectives is best accomplished by asking all relevant stakeholder groups (i.e. socially organized groups that are or perceive themselves as being affected by the decision) to reveal their

values and criteria for judging different options. It is crucial that all relevant value groups be represented and that the value clusters be comprehensive and include economic, political, social, cultural and religious values. It seems obvious that protection of human health and environment is the predominant goal, but the specification of this goal as well as the identification of constraints (costs, aesthetics, employment, local culture, etc.) involve a selection of additional evaluative dimensions, such as economic consequences, equitable risk sharing, community cohesion, or individual satisfaction. As soon as more than one dimension is selected for analysis, tradeoffs have to be assigned to each dimension. Both processes, identification of values and determination of their relative weights, rely on subjective values and should therefore be grounded in public consensus. The identification of concerns and objectives is best accomplished by asking all relevant stakeholder groups (i.e. socially organized groups that are or perceive themselves as being affected by the decision) to reveal their values and criteria for judging different options. Although strategic reasoning and hidden agendas may influence the responses of these groups, the mere listing of concerns as expressed in values and, subsequently, the deduction of criteria does not predetermine the potential outcome of the evaluation process. It is thus less susceptible to strategic game playing. It is crucial that all relevant value groups be represented and that the value clusters be comprehensive by integrating into the analysis economic, political, social, cultural, and religious values. To elicit the values and criteria for such a list the technique of value-tree analysis has proven appropriate (Keeney *et al.* 1985; von Winterfeldt and Edwards, 1986; von Winterfeldt, 1987). The resulting output of such a value-tree process is a list of hierarchically structured values that represent the concerns of all affected parties.

(ii) *The identification and measurement of impacts and consequences related to different policy options.* The evaluative criteria derived from the value-tree are operationalized and transformed into indicators by the research team or an external expert group. These operational definitions and indicators are reviewed by the participating stakeholder groups. Once approved by all parties, these indicators serve as measurement rules for evaluating the performance of each policy option on all value dimensions. Experts from varying



academic disciplines and with diverse perspectives on the topic of the discourse are asked to judge the performance of each option on each indicator. For this purpose, a modification of the Delphi method has been developed and applied (Renn and Kotte, 1984; Webler *et al.* 1991). The objective is to reconcile conflicts about factual evidence and reach an expert consensus via direct confrontation among a heterogeneous sample of experts in the field. The desired outcome is a specification of the range of scientifically legitimate and defensible expert judgments and a distribution of these opinions among the expert community with verbal justifications for opinions that deviate from the median viewpoint. At the end of this step, performance profiles for each option are constructed which reflect the strengths and the weaknesses of each option on each indicator.

- (iii) *Conducting a rational discourse with randomly selected citizens as jurors and representation of stakeholder groups as witnesses.* The last step is the evaluation of potential solutions by one group or several groups of randomly selected citizens (Dienel, 1978; Dienel, 1989). These panels are given the opportunity to evaluate and design policy options based on the knowledge of the likely consequences and their own values and preferences. The participants are informed about the options and the consequence profile generated by the experts in Step 2 before they are asked to evaluate these options on each dimension identified in the value tree process (Step 1). The participants may augment the list of concerns and criteria and may also include new options or modify the options presented to them. The representatives of stakeholder groups and the experts take part in the process as witnesses; they provide their arguments and evidence to the panels who ultimately decide on the various options. This deliberation process takes time: citizen panels are conducted as seminars over three to five consecutive days or any selected days over a period of several months. All participants are exposed to a standardized program of information, including hearings, lectures, panel discussions, videotapes, and field tours. The process is similar to a jury trial with experts and stakeholders as witnesses and advisers on procedure as "professional" judges.

Figure 2 illustrates the functions and procedure of this model. The figure shows that all three groups

(experts, stakeholder groups, and the general public) play a role in each step, but that they are encouraged to impact the decision process with the specific knowledge with which they are most proficient. The stakeholder groups have the most proficient and diverse knowledge of evaluative criteria, the experts the best systematic knowledge about factual performance, and the citizens an appropriate and legitimated deliberation potential to weigh benefits and risks. This division of labour provides a check-and-balance process and a sequential order for multiple actor involvement. Organizing a cooperative discourse requires careful planning and preparation and relies on the willingness of the communicator to learn from the participants and to adjust his/her preferences if deemed necessary. Several procedures lend themselves to organizing a cooperative discourse. However, it is not so much the structure of the process that determines the success or failure of a risk discourse as the willingness of all participants to meet the conditions of adequate time allocation, openness of the process, willingness to learn, acceptance of different rationalities, and the agreement to refrain from moralizing the positions of other participants.

EXPERIENCES WITH THE COOPERATIVE DISCOURSE METHOD

German experiences

Applications of the cooperative discourse model in Germany emerged from the early experiences with citizen panels in urban planning (Dienel, 1978). Community governments wanted to give citizens the opportunity to take part in community development. As long as the recommendations were technically feasible and economically viable, the legitimate decision maker (city or community council) had no reason to reject them. After initial test runs in the years 1972–1973 at the town of Schwelm (considering a waste disposal facility), citizen panels were established in many communities in Germany. From the 1970s to today approximately 26 cities or communities used citizen panels as a method of local planning. More than 2600 adults were involved in these panels for an average of 3–5 days each. A full run of all three steps of the cooperative discourse method was performed in two large-scale applications:

- (i) The most comprehensive study dealt with the evaluation of national energy policies. In August 1982, the German Ministry of Research

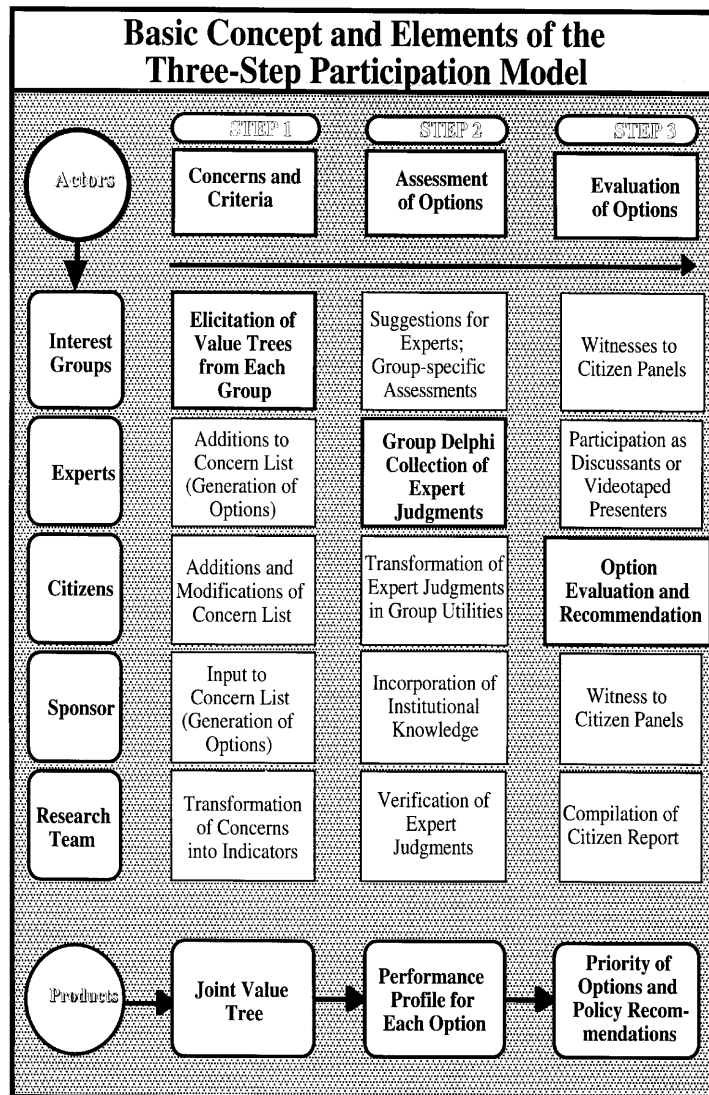


Figure 2. Basic concept and elements of the three-step participation model.

and Technology initiated a large research project to investigate the preferences of the German population with respect to four energy policy options developed by a parliamentary commission in 1979 (Renn *et al.* 1985; Renn *et al.* 1986; Dienel and Garbe, 1985). The Government was interested in eliciting reliable information on which energy scenario was most appealing to the population and on what basis citizens would evaluate the policy options laid out in each scenario. A research team in which one of the authors served as senior investigator conducted a 3-year study to collect data on public preferences and to analyze the motivations and underlying reasons for the judgment process of evaluating the predefined energy scenarios. The study operated with 24 citizen panels (each including approximately 25 par-

ticipants) drawn from seven communities in different parts of West Germany. The panels unanimously rejected a high energy supply scenario and opted for an energy policy that emphasized energy conservation and efficient use of energy. Nuclear energy was perceived as non-desirable but—at least for an intermediate time period—as a necessary energy source. The panellists recommended stricter environmental regulation for fossil fuels even if this meant higher energy prices. They developed a priority list for policies and drafted recommendations for implementing high priority policies (Dienel and Garbe, 1985).

- (ii) A regional study was conducted from 1994 to 1996 in the northern part of the Black Forest (Southern Germany). The objective was to have stockholders and citizens take part in planning



a waste-management program (Akademie, 1996). A round table with 16 major stakeholder groups was organized in 1994 to develop waste reduction policies and to assess the potential recycling potential of the area. The same groups also were asked to find the most suitable technical solution for waste processing before final disposal. After these decisions were made, 200 randomly selected citizens from potential host communities were asked to find the most appropriate site for the types of facilities that had been chosen previously. The most outstanding result was that panellists were willing to approve a siting decision that would affect their own community.

In summary, the German applications of cooperative discourse method provided some evidence and reconfirmation that the theoretical expectations linked to this method can be met on the local as well as on the national level. It is a valid instrument to elicit preferences and educated responses of citizens in a rather short time period. Far from being an established planning tool, it has proven its viability and feasibility in different contexts and constitutes at least a serious alternative to other forms of public involvement.

Swiss experiences

In 1992, the Building Department (*Baudepartement*) of the canton Aargau (Northern part of Switzerland) asked a research team at the Swiss Federal Institute of Technology (including two of the authors O. Renn and H. Kastenholtz) to organize a cooperative discourse for siting one or several landfills in the eastern part of the canton. The Building Department proposed, and the Cantonal Government approved the plan to construct a 1 million m³ landfill. Before our involvement in the project, the Building Department characterized the need for new disposal facilities and chose 13 potential sites through a mapping-elimination process. Our mandate was to organize a cooperative discourse with four citizen panels asked first to develop criteria for comparing the different sites; second, to evaluate the geological data that were collected during that period; third, to eliminate the sites that should not be further considered; and fourth, to prioritize the remaining sites with respect to suitability to host a landfill. We managed to meet these objectives during the time from November 1992 to September 1993 (Webler, 1994).

In late October of 1992, we asked the representatives (*Gemeinderäte*) of the 13 communities in

which the potential sites were located to send one member of the town council to serve on an oversight committee (*Behördendelegation*). The oversight committee consisted of one member of each town council and the director of the building department. The oversight committee had the legitimate right to make the final recommendation to the Building Department. In addition, they were asked to inform the public about the site selection process, to review and critique the participation process, and to select the representatives from each of their communities for the citizen panels.

The selection of representatives for the citizen panels differed from our theoretical approach. Rather than use random selection, we gave the oversight committee the task to recruit and select citizen participants. The sponsoring agency was concerned about the legitimacy of the recommendations issued by the panels and felt that random selection would not be seen as a legitimate way of choosing representatives. Using lotteries as a political means of achieving equity is alien to the Swiss political culture. In substitution we proposed that either a town meeting or the community government nominate the representatives, with some assistance by the research team to encourage consideration of all relevant social and political viewpoints. We asked each community to select eight representatives.

Once the representatives were chosen, four panels were formed, each consisting of two representatives from each potential site community. With the exception of one community, every town sent eight people to the panels. Not one of these people dropped out during the process. Between January and June 1993 the panels met 7–9 times before they attended a workshop of two days to come up with the final decision. All participants rated each site on the basis of their self-selected evaluative criteria, their personal impressions, the written and oral information, and the results of consultations with experts.

All four panels composed a list of prioritized sites for the landfill. The most remarkable outcome was that each panel reached a unanimous decision. Even those participants whose towns were selected for the short list of recommended sites agreed with the panel's recommendations. Furthermore, the outcomes of the four groups were rather similar. The first priority site was the same for all panels. There were some minor differences in the order of the remaining priorities. To resolve this conflict, each panel appointed five representatives to a superpanel. The superpanel met in September 1993 and issued a consensual list of five sites ordered in a



priority list. This list was later approved by the oversight committee and forwarded to the Building Department. In December of 1993, the result of the participation process was made public and the canton government entered the next phase of the licensing procedure.

American experiences

Using randomly selected citizens for policy making and evaluation is not alien to the United States. The Jefferson Center in Minneapolis has conducted 14 projects with citizen panels similar to the planning cells (Crosby *et al.* 1986). Several community planners have experimented with citizen panels which were composed to reflect a representative sample of the population (cf. Kathlene and Martin, 1991). There has been one major attempt to implement the original version of the cooperative discourse in the United States. In July 1988 the Department of Environmental Protection of New Jersey asked a research team of Clark University directed by one of the authors, Ortwin Renn, to apply the model to sewage sludge management problems. The project started in August 1988 and was completed in September 1989. The objective of the project was to give citizens of Hunterdon County, New Jersey, the opportunity to design the regulatory provisions for an experimental sludge application project on a Rutgers University research farm located in Franklin Township (New Jersey).

Although much smaller in scale, the project provided many new insights and experiences that partially confirmed our German observations and partially documented the need for adjustments to the U.S. political culture. The project was organized in a fashion similar to the German energy study. We conducted the citizen panels on two consecutive weekends. The desired goal was to elicit recommendations for regulatory provisions that should be included in the permit for the land application of sewage sludge on the site in question.

The envisioned programme for the citizens panel was radically altered after the participants, in particular the land owners abutting the site, made it clear that they rejected the project of land application and that they felt more comfortable conducting their own meetings without assistance of a third party. The citizens met several times without the assistance of a facilitator and formulated recommendations that were forwarded to the sponsor (New Jersey Department of Environmental Protection). The proposed sludge management project at the Rutgers Experimental Farm was rejected by the

panellists. As a result of this recommendation, Rutgers University withdrew its proposal.

In addition to the policy recommendation to reject the proposal of land application, the process provided us valuable information about citizen concerns and values. Whereas most of our consulted experts were convinced that citizen concerns focused on issues such as odour, traffic and contamination of ground water, the value tree analysis of the citizens revealed that their major concerns were the expected change of community image from an agricultural community to a "waste dump" and the long-term effects of pollutants on farmland (Renn *et al.* 1989). In addition, the questions of equity and fairness played a major role in the citizen deliberations.

The unexpected change of the panel's structure to exclude us from further meetings was clear evidence that the U.S. audience is more sensitive to due process and methods of participation. Whereas in West Germany and Switzerland participants were almost grateful and pleasantly surprised that someone made the effort to pre-plan and structure a procedure for their participation, U.S. citizens distrust pre-fabricated participation models and suspect hidden agendas with such an approach (Lynn, 1986). In response to the desire of the participants to have control over the process we think that it is advisable to have a meeting with the participants 2 weeks before the actual planning cells to discuss the agenda and the information material. During that preliminary meeting, the participants can be informed about the process and the importance of the given time schedule. They can also add points to the agenda or change the allocated time frame. This prevents surprise discussions or rebellions during the actual planning cell procedure.

CONCLUSIONS

The objective of this paper was to review the potential of mediations and public participation for resolving environmental conflicts. The procedure of public involvement is as much an issue of dissent as a problem of the subject matter itself. Politicians, stakeholders, experts and citizens have developed a sensitivity for procedure and are aware that they can exercise power in changing or delaying projects. The functioning of public involvement is, therefore, contingent on the approval of the technique or model of participation by the affected constituencies.

Involving citizens in the decision making process requires careful planning, thoughtful preparation, and flexibility to change procedures on the demand



of the affected constituencies. One might be tempted to ask: If citizen involvement is so difficult and painful, why should anyone bother to promote participation or go beyond the mandated public hearing to elicit citizens concerns? In addition to legal requirements, the first response to this question is that social acceptance of any policy is closely linked with the perception of a fair procedure in making the decision (Rayner and Cantor, 1987). The best "technical" solution cannot be implemented if the process of decision making is perceived as unfair or biased. This is equally true for companies in their quest to expand operation and gain public support as well as public agencies in their mandate to regulate environmental performance.

The second response to this challenge is more fundamental: our own experiences from previous projects and the implementation of our cooperative discourse model indicate clearly that the public has something to contribute to the planning process. Experts and regulators are often restricted in their assessment of a project and confine their analysis to the typical risk factors. Local specifics or other dimensions of concerns are often neglected. Public participation helps to include these concerns in the decision making process and to avoid potential consequences that the experts involved were not aware of (Crosby, 1986; Fiorino, 1989).

The central tenet to keep in mind, with public participation projects, is that the public is in principle capable and wise in making prudent decisions. Public input is essential to make the right decision, and not only strategically necessary to gain acceptance. The rationality of public input depends, however, on the procedure of involvement. Provided citizens are given a conducive and supportive structure for discourse, they are capable to understand and process environmental information and to articulate well-balanced recommendations. The discourse models are an attempt to design a procedure that allows citizens to take advantage of their full potential and includes the professional knowledge and expertise necessary to make prudent decisions. It has been our conviction that a carefully designed participation program will not only be instrumental in resolving eminent conflicts among different stakeholders and public groups, but also contribute to a climate of cooperation and mutual understanding.

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