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Public participation in decision making: A three-step procedure

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Abstract. This article introduces a novel model of public participation in political decisions. Structured in three consecutive steps, the model is based on the view that stakeholders, experts, and citizens should each contribute to the planning effort their particular expertise and experience. Stakeholders are valuable resources for eliciting concerns and developing evaluative criteria since their interests are at stake and they have already made attempts to structure and approach the issue. Experts are necessary to provide the data base and the functional relationships between options and impacts. Citizens are the potential victims and benefactors of proposed planning measures; they are the best judges to evaluate the different options available on the basis of the concerns and impacts revealed through the other two groups. The three-step model has been developed and frequently applied as a planning tool in West Germany. We compare this experience with the model's first application in the United States, and conclude that the three-step procedure offers a limited, but promising future for democratizing policy making in the United States.

1. Introduction

There is no ideal solution to the conflict among the legitimate demand for public participation, the need for technical and economic rationality, and the necessity for assuring accountability and responsibility of decision making bodies. A model is needed that combines technical expertise and rational decision making with public values and preferences (Stern, 1991). To accomplish such an integration, many different participation techniques have been proposed and some tested (McAllister, 1980; Nelkin and Pollak, 1979; Crosby, 1986; Crosby et. al., 1986; Burns and Ueberhorst, 1988; Chen and Mathes, 1989; Fiorino, 1990; Kathlene and Martin, 1991).

The necessity to involve the public in political decision making is hardly disputed in the literature (Rosener, 1978). There is controversy, however, over the desirable structure of and procedure for participation and the role and authority of the public to take part in the decision making process (Almond and Verba, 1963; Barber, 1984; Renn et al., 1984; Pollak, 1985; Schrader-Frechette, 1985; Fiorino, 1989).[1]

This article introduces a model for public participation for policy making

that was developed by P. Dienel in the early 1970s and further modified by O. Renn in recent years (Dienel, 1978; Renn et al., 1985). The model is an attempt to integrate expertise, values and concerns of stakeholder groups, and preferences of citizens into a procedural framework that enables the generation of consensual policy suggestions. The model has been applied many times in former West Germany for purposes ranging from urban planning to drafting regulations for information technologies (Dienel, 1986; Dienel and Garbe, 1985). The main focus of this paper is to introduce the concept behind the model, describe the various procedures and techniques involved, and to discuss its applicability and limitations. As an illustration we also report on two case studies: one about energy planning in West Germany and the other about sewage sludge management in New Jersey. The actual outcome of the two cases has been described in other papers (Renn et al., 1984; Renn, 1986; Renn et al., 1989).

2. Conceptual model for participatory decision making

Our participation model is derived from formal decision analysis (Seo and Sakawa, 1988; Keeney and Raiffa, 1976; Raiffa, 1970), but oriented toward a multi-actor, multi-value, and multi-interest situation. To integrate these multi-dimensional aspects of decision making into a practical procedure the model assigns specific tasks to different groups in society. These groups represent three forms of knowledge:

- knowledge based on common sense and personal experience,
- knowledge based on technical expertise, and
- knowledge derived from social interests and advocacy.

These three forms of knowledge are integrated into a sequential procedure in which different actors of society are given specific tasks that correspond to their specific knowledge potentials. The model entails three consecutive steps:

Step 1: Identification and selection of concerns and evaluative criteria
The first step in policy or decision making is often the identification of objectives or goals that the process should serve once a problem is identified or a political program is established (Quade, 1975, pp. 46ff). 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 important that all relevant stakeholder groups are represented and that a variety of value clusters, including economic, political, social, cultural, and religious values, is integrated into the analysis. Although strategic reasoning and hidden agendas may influence the responses of stake-

holder groups, the mere listing of concerns as expressed in values and, subsequently, the deduction of criteria helps to expose inconsistencies and to avoid hidden agendas. To elicit such values and criteria the technique of value-tree analysis has proven appropriate (von Winterfeldt and Edwards, 1986; Keeney et al., 1984). The resulting output of such a value-tree process is a list of hierarchically structured values that represent the concerns of all affected stakeholders.

Step 2: Identification and measurement of impacts of the different decision options

The evaluative criteria derived from the value-tree are operationalized and transformed into indicators by the research team or an external group. These operational definitions and indicators are reviewed by the participating stakeholder groups. Once approved by all parties, they serve as measurement rules for evaluating the performance of each option on different value dimensions, providing a common rationale for measurement and evaluation of potential options. Assembling options is also part of this step (preferably after the criteria have been defined). In principle, options can be found by brainstorming within the research team, by interviews with stakeholder groups, or by political precedent. With different policy options and criteria available, experts representing varying academic disciplines and viewpoints about the issue in question are asked to judge the performance of each option on each indicator. For this purpose, we have developed a special method called the Group Delphi (Renn and Kotte, 1984; Webler et al., 1991). It is similar to the original Delphi exercise but based on group interactions instead of individual written responses. The objective is to reconcile conflicts about factual evidence and reach an expert consensus via direct confrontation among a heterogeneous, preferably representative, sample of experts in the field. The desired outcome is a performance profile for each option. This profile specifies the range of scientifically legitimate and defensible expert judgments for each indicator, illustrates the distribution of these opinions among the expert community, and includes verbal justifications for opinions that deviate from the median viewpoint.

Step 3: Aggregation and weighting of expected impacts by randomly selected citizens and elicitation of citizens' peferences

The last step is the evaluation of each option profile by one group or several groups of randomly selected citizens (Dienel, 1978; Dienel, 1980). We refer to these panels as 'Citizen Panels for Policy Evaluation and Recommendation.' The objective is to provide citizens with the opportunity to learn about the technical and political facets of policy options and to enable them to discuss and evaluate these options and their likely consequences according to their own set of values and preferences. The participants are informed about the potential options and the corresponding consequences before they are asked to evaluate these options on each dimension identified in the value tree

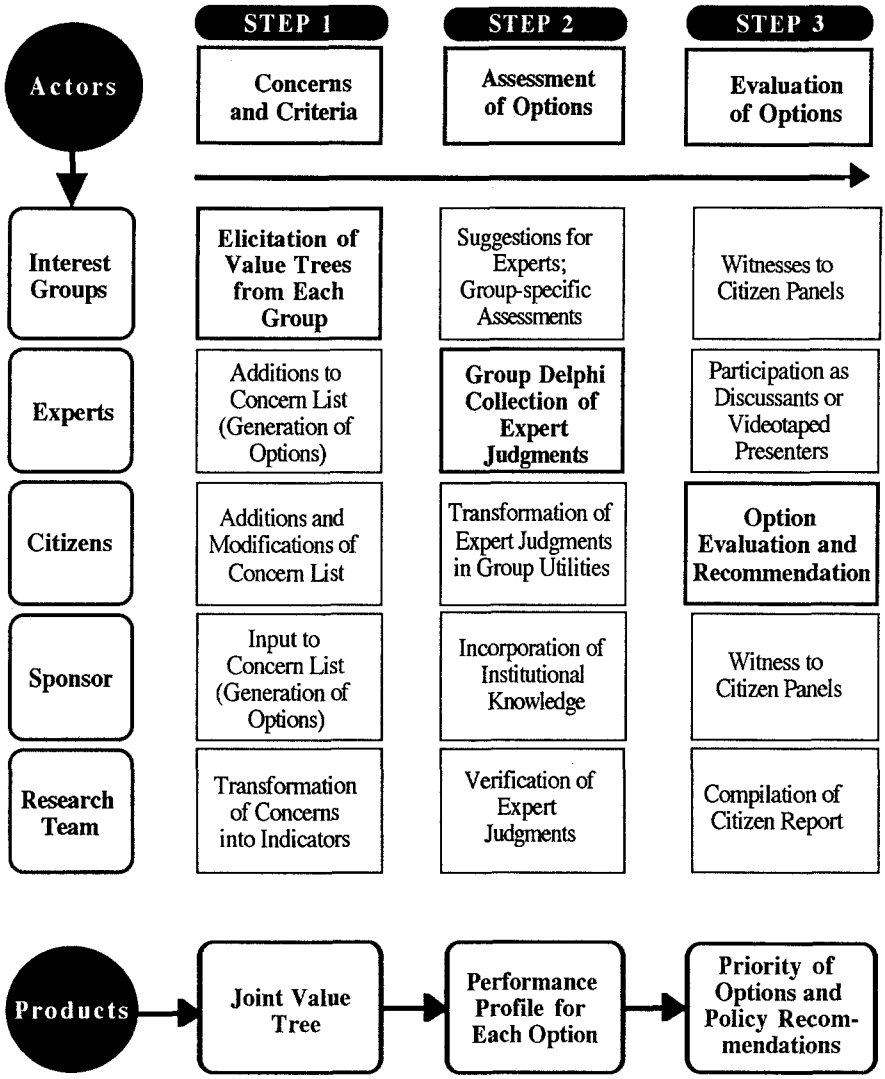

Fig. 1. Basic concept and elements of the three-step model.

process. If deemed necessary by the participants, the list of concerns can be augmented or restructured. Since the process requires time for the educational program and the evaluation of options, the panels are conducted in seminar form over three to five consecutive days. All participants are exposed to a standardized program of information, including hearings, lectures, panel discussions, videotapes, and field tours. The idea is to conduct a process loosly analogous to a jury trial with experts and stakeholders as witnesses and with advisors on procedure as 'professional' judges.

The functions and procedure of our policy model are illustrated in Figure 1.

The figure shows that all actors involved (the experts, the stakeholder groups, the citizens, the sponsor, and the research team) play a role in each step, but their influence is channeled to the type of knowledge and rationality that they can offer best (these are highlighted in bold face in Figure 1). The stakeholders are the principal source for building value-trees, but the other parties may augment the joint tree. Experts are principally responsible for constructing performance profiles for each option, but also the institutional knowledge of the sponsor and the specific knowledge of the various stakeholder groups are taken into consideration. The major task of the citizens is to evaluate options and generate or modify policies. They are assisted in this task by expert and stakeholder witnesses. The role of the sponsor is limited to making suggestions about options and to providing testimony to the citizen panels. Finally, the research team has the primary task of providing first drafts of the three products (Joint Value-tree, Performance Profiles, and Citizen Report), to gain approval for these products from the respective actors, and to feed them back into the process. This division of labor introduces checks and balances into the process and constitutes a structural order that is logical and transparent.

3. The methodology

3.1. Value-tree analysis

A value-tree structures the elicted values, criteria, and corresponding indicators of an individual or group into a hierarchy, with general values and concerns at the top, and specific criteria and indicators at the bottom (Keeney et al., 1984; Keeney et al., 1987). Values in this context are abstractions that help organize and guide preferences (von Winterfeldt, 1987). In the process of structuring a value-tree, representatives of different stakeholder groups are asked to identify their criteria and objectives for evaluating different options. Depending on the political context and the nature of the decision to be made, the values of the various stakeholder groups may vary considerably. By giving each group the right to assign a weight of zero to each criterion that they regard irrelevant, it is possible to construct a joint or combined value-tree that accounts for all viewpoints and can be verified by all participants. Table 1 illustrates the six consecutive steps of eliciting value-trees.

In opposition to many users of the value-tree technique (e.g., von Winterfeldt, 1987), we perceive little benefit in having the stakeholder groups do either the evaluation of each option on each indicator or the assignments of trade-offs between the various independent criteria. Both tasks are extremely prone to strategic game playing and would likely end in a process by which each group would rationalize its latent preference for one of the decision options available. We prefer to have the participating groups leave the actual measurement to a group of independent experts (in step 2) and the weighting

Table 1. The six steps of eliciting value-trees.

Step no.	Description of the step
1.	Personal interview(s) between the analyst(s) and several representatives of the respective stakeholder group.
2.	Structuring the values, criteria, and attributes into a hierarchical order by the analyst(s).
3.	Feedback of the value-tree to the stakeholder group is satisfied with the final product.
4.	Iteration of process until stakeholder group is satisfied with the final product.
5.	Combination of all group specific value-trees into a single 'megatree.'
6.	Validation of the megatree by all participating groups (with the option of assigning zero weights to criteria that they dislike).

to an unbiased jury of uncommitted citizens (in step 3). However, stakeholder groups may inform the experts about potential impacts that they expect as a result of any one option and they can contribute their evaluation of these options to the citizen panel through testimony.

Value-trees have proven to be useful instruments in structuring the underlying dimensions of a debate and in linking the general concerns of groups with the concrete options that they favor or disfavor. In this respect value-trees help to focus attention on issues that seem to underlie conflicts about the selection of options and to develop a mediation program between conflicting groups. Value-trees are, however, contingent on the basic assumption of decision analytic models: namely, that the task of generating criteria for evaluating options can be analytically separated from the task of assessing the performance of each option on the according to those criteria (von Winterfeldt and Edwards, 1986).

3.2. Group Delphi

The second step of the analysis incorporates expert judgment about the performance of each identified option on the indicators specified in the first step of the analysis into the decision making process. For this purpose, we use the Group Delphi (Renn and Kotte, 1984; Webler et al., 1991), a modification of the traditional Delphi exercise (Dalkey and Helmer, 1963). The major objective of a Group Delphi is to divide a group of experts into smaller working groups, to compare the judgments of these groups in a plenary session, and to identify the areas of uncertainty and dissent among the experts. The more one of the group's ratings deviate from the median of all other groups the more time is allocated to this group to defend and substantiate its judgment. This justification procedure assures that relevant information is shared among the participants so that differences in evaluations are not based on ignorance but

Table 2. Sequence of a group Delphi.

Step	Description
1. Development of questionnaire	Based on the criteria and options, a numerical scale should be developed that is best suited to elicit expert judgments on the performance of each option on each criterion.
2. Selection of experts	Selection of experts with different points of view about the subject and representing relevant, but diverse disciplines.
3. First plenary session	Introduction into the Group Delphi process and the issue in question. The procedure of how the options and the criteria were derived is explained to the participants.
4. First group session	All participants are randomly divided into groups of 3–4 people. Each group is asked to complete the questionnaire. Group consensus is the goal, but minority votes are allowed.
5. Second plenary session	The results of the group assessments are handed out to all participants. The groups whose ratings deviated the most from the median values of all groups are asked to defend their point of view in front of all participants. The defenses are openly discussed (and taped for evaluation).
6. Second group session	The participants are divided in small groups again, this time according to the principle of systematic rotation. The groups are asked to complete the same questionnaire, taking into account what they learned in the plenary discussion.
7. Iteration of plenary sesion and group work	Steps 5 and 6 are repeated until no further changes occur in the responses of groups or the positions of the participants are established and all arguments have been exchanged.
8. Evaluation of results	The ranges of the numerical results of the last round are taken as the best expert estimates for the impact analysis. The (video)tapes provide arguments and evidence for the final scale values or explain the distribution of expert opinions.
9. Validation	The results and the justifications are sent to all participants for final comments or second thoughts on the subject. In addition, the results can be peer-reviewed by other experts who did not participate in the process.

on different interpretations of the existing data. There is direct testing for dissent in a 'peer review' process. In addition, the Group Delphi produces not only numerical values and distributions, but also verbal explanations for deviations from the median. Each round contributes to the clarification of the issues and leads either to a consensus or the formation of dissenting camps with diverging views and corresponding argumentation. The typical sequence of a Group Delphi is shown in Table 2.

As in other Delphi processes, considerable time is spent selecting the expert panel, preparing the list of options, gathering existing data, and composing a questionnaire for the workshop. This package is subject to review by

an independent panel. A Group Delphi encompasses the traditional elements of the conventional Delphi such as feedback of responses into the successive round, assessment of group judgment, and opportunity for participants to revise their views, but anonymity is not preserved. Another difference between the Group Delphi and the conventional Delphi is time. The Group Delphi is accomplished in one or two days whereas the conventional Delphi may take several months.

In spite of these two shortcomings of the Group Delphi process, it provides four major advantages that are not offered by the traditional Delphi method: (1) a clearer picture of disagreements on the expert panel; (2) reasons for the disagreements; (3) direct testing of different positions through peer review; and (4) the ability more clearly to distinguish substantive disagreements from incidental misunderstandings.

3.3. Citizen panels for policy evaluation and recommendation

Our model of citizen panels is based on a model developed by Peter Dienel in the 1970s. Dienel defined similar panels as 'groups of citizens who are selected by a random process and are given paid leave from their workday obligations for a limited period of time in order to work out solutions for given, soluble planning problems with the assistance of advisors on procedure' (Dienel, 1980). All participants in West Germany received an honorarium as value consultant and/or were freed from their work obligation for several days. This working contract served as an indicator for the seriousness of the participation effort expected and created also an atmosphere of discipline and dedication to the task. Each panel included 20 to 25 individuals who worked on the predefined task in a group process. To encourage them to participate, they were assigned the highly esteemed role of a 'value consultant' in the public planning process.

The practice of enlisting citizen panels for policy evaluation and recommendation has been applied to many policy problems in the Federal Republic of Germany (cf. Dienel, 1978; Dienel and Garbe, 1985; Renn et al., 1985; Dienel, 1986; Dienel, 1991), but to our knowledge has never been implemented in the United States except for our pilot project in New Jersey (Renn et al., 1989). Similar panels with randomly selected citizens have been organized by the Jefferson Center in Minneapolis, Minnesota (Crosby, 1986; Crosby et al., 1986; cf. Fiorino, 1989) and by a group of local transportation planners in Boulder, Colorado (Kathlene and Martin, 1991). In addition, the traditional jury system in the United States has adopted the principal idea of using common sense and public values as input for the judicial decision making process (Bownes, 1990).

Our model of citizen panels rests on a set of conditions specified in Table 3. These conditions help to ensure a working climate that can produce innovative results and viable compromises.

Table 3. Conditional characteristics of citizen panels.

Structure	Condition
Composition	Random selection of directly and indirectly affected citizens (Percentage of each can vary according to the potential impacts.) Involvement of stakeholders and public officials as witnesses, not as participants.
Tasks	Evaluation of different decision options in accordance with personal values and preferences. Clear political mandate to draft recommendations for legal decision maker.
Operation	Continuous meeting over several days. Education process of participants about likely consequences of each option. Incorporation of uncertainty and dissent through public hearings and videotapes.
Roles of participants	Identification of participants as 'value consultants.' Need for external, neutral, and unbiased facilitator. Low involvement of sponsor (confined to witness role similar to stakeholders).
Organization	Payment of an honorarium to each participant for working as a value consultant. Local organization committee for facilitating the invitational process.

Citizen panels are organized into three major components: reception of information through lectures, field tours, videos, written material, etc.; processing of information through small group discussions, plenary sessions, and hearings; and evaluation of impacts of options through small group discussions, personal judgments, and consensus-building exercises in the plenary. Table 4 lists a typical sequence of a citizen panel. This is only a guideline and can be altered as the policy problem requires.

The Group Delphi provides reliable and appropriate information to the participants about the planning options and their likely consequences. The major requirement is that all expert camps be equally represented in the information package and that they be allowed to present their own case (Renn, 1991). The impacts identified by the experts and the ratings of each option are the raw material for the written or videotaped information that the participants of the citizen panels receive.

The second major component of the citizen panel procedure is the elicitation of values, criteria, and indicators and the assignment of relative weights. The procedures used for this purpose are derived from Multiattribute Utility Theory (Humphreys, 1977; Watson, 1980; Schoemaker, 1982; von Winterfeldt and Edwards, 1986). The respondents are first asked to use the criteria of the joint value-tree to rate each decision option. The participants are free to add new values to the tree, but they may not delete any of the criteria elicited from the stakeholder groups. They also may modify the existing decision

Table 4. Typical sequence of a citizen panel.

Steps	Activity in citizen panels
1.	Introduction to issue through lecture and field tour.
2.	Background knowledge through lectures, written material, self-educating group sessions, audio-visual information, field tours, etc.
3.	Presentation of conflicting interpretations of information through videos or hearings.
4.	Introduction to decision options through lectures (non-controversial) or hearings (controversial).
5.	Problem-structuring with respect to each option through small group sessions and plenary discussions.
6.	Introduction of value-tree and, if desired, addition of values to the existing tree.
7.	Evaluation of options elicited through individual questionnaires and group discussions (captured in group response forms).
8.	Drafting of recommendations through work-groups and facilitated plenary sessions.
9.	Articulation of recommendations in a citizen's report by the facilitator after the completion of the citizen panels.
10.	Feedback of citizens' report to participants (usually in an evening meeting two months after the citizen panels).
11.	Presentation of the citizens' report to the sponsor, the media, and interested groups.

options or add a new ones to the list. The rating of each option then proceeds on the basis of the profiles that the experts generated during the Group Delphi. Finally, each criterion is weighted against each other criterion resulting in a matrix of relative weights and utility measures for each option and each criterion. Both tasks, the transformation of the expert data into utilities and the assignment of trade-offs are performed individually and in small groups.

During the deliberations, the research team provides numerically derived preferences for the decision options. Deviating from the established multi-attribute utility model procedure, the numerical results (i.e., for each option, the sum over the utilities of each dimension multiplied by the weight of each dimension) of the decision process are *not* used as expression of the final judgment of the participant, but as a structuring aid to improve the participant's holistic, intuitive judgment. By pointing out potential discrepancies between the numerical model and the holistic judgments, the research team encourages the participants to reflect upon their opinions and search for potential hidden motives or values that might explain the discrepancy. The final recommendations are always based on a holistic judgment by individuals or groups.

4. Integration into the political decision process

A major problem of all citizen participation models is the legitimation of the citizen recommendations vis-a-vis competing claims by interest groups and elected or appointed decision makers. In any democratic system legitimation of power is linked with due process and ultimately public approval through elections (Almond and Verba, 1963). Citizen participation should be an integral part of this process, but not replace it.

The three-step procedure provides three products: criteria to evaluate policy options, performance profiles for each decision option, and citizen recommendations. Each of these products may serve a specific and often independent function in the decision process. The results of the value trees can be used by agencies or other decision making bodies to incorporate the interests and values of stakeholders in their decision process; the performance profiles can play an integrative role in negotiations among stakeholders since they represent the present knowledge about factual consequences of decision options including the range of uncertainty associated with them; and the citizen recommendations can be used as a measurement of public preferences of an informed group of citizens. Depending on the issue and the policy arena, these three outcomes may have more normative or explicative value.

The early applications of citizen panels in Germany were devoted to urban planning. Community governments wanted to give citizens the opportunity to contribute to community planning. 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. In one case a relocated community decided to entrust citizen panels to do energy planning for the community (Friedrich and Garbe, 1983). In another case, the city of Cologne asked citizen panels to review plans for urban renewal of one of the central districts (Bongardt et al., 1985). These two cases were not characterized by major social conflicts or pre-structured ideological positions of stakeholders. The community government welcomed the citizen input and adopted the recommendations to the degree that they were technically feasible.

This situation is different from a national or regional issue in which the decision stakes are high and stakeholder groups have formed strong positions on the issue. In the 1980s, citizen panels were organized to make recommendations for energy policies (this study is described in more detail below), for consumer protection policies, and for regulating the information and communication industry (Renn et al., 1985; Garbe and Grothe, 1989; Dienel, 1986; Dienel, 1991). The three studies had different goals. The energy study was commissioned by the Federal Government and designed to measure preferences of informed citizens. The consumer protection study measured preferences of consumer policies and of testing procedures practiced by the German Consumer Association. In this case, a stakeholder group used the method to revise its own policies and to be more in line with its clients. The third major study was originally funded by the Federal Government (Ministry

of Science and Research) but later continued by the German Post Corporation. The government owned Post Corporation has the exclusive right of operating cable networks and regulating the telephone system. The citizen panels were asked to recommend regulations concerning citizen access to data banks, protection of privacy, pricing policies, and range of services required to make data networking accessible and attractive for private consumers.

Achieving the delicate balance between decision making bodies, affected stakeholders, and citizen panels is the main challenge facing the three-step procedure. Many governmental agencies in Germany endorse the approach because it provides a conflict resolution method that produces results. Administrators often do not favor the substantive qualities of one option over another because they are not directly affected. Their judgments are guided by the concern that they may become entangled in a social conflict that might jeopardize their public image, and they are attracted to participation models that help them meet their mandate or mission and at the same time produce popular support. Elected officials, on the other hand, are more sensitive to the problem of legitimizing decisions through formal democratic procedures (such as parliamenary debates and voting) and to the problem of accountability and liability once the citizen panels are dissolved (von Alemann, 1985). They emphasize that direct participation cannot be a substitute for legal routes of decision making, but concede that the elicitation of public preferences may help them to incorporate public concerns into their policies. Our own experience with the model has shown us that it can be integrated best into a procedure in which the law leaves administrative agencies considerable room for interpretation and implementation.

The main opposition to our model comes from stakeholder groups. Stakeholders are less likely to hand over responsibility or influence to a group of randomly selected citizens. In the United States, stakeholders have a long tradition of being included in decision making. The role and function of stakeholder participation may differ from one policy arena to another, but the common understanding among stakeholders is that they have a right to be involved and that this right is not to be given up lightly. Nor do we argue that that is necessarily desirable. Citizen panels do not propose to replace the existing mode of decision making, where it performs well, but are intended as a supplement when traditional solutions fail or seem inadequate to resolve a conflict. We identify four conditions under which stakeholders are likely to agree to the arrangement of citizen panels:

- When none of the stakeholders is able to resolve the conflict in their favor and a political paralysis exists. In this case, all groups who are hurt by the stalemate may want to involve an uncommitted mediator or jury to resolve the issues. Citizen panels reckon with a stalemated system by bringing previously uninvolved citizens into the scene.
- When the stakeholders are convinced that their arguments and evidence

will sway the panels in their favor. This strategy may give the stakeholders more political legitimacy, however, if the panel decides otherwise, legitimation problems are likely to arise.
- When the decision making agency is powerful enough to force the model on the stakeholders. This situation is rather typical for many European countries in which stakeholder participation is not legally mandated or ensured through tradition. In the eyes of stakeholders, citizen panels are still better than having no influence at all.
- When the social and political climate demands involvement of citizen panels. If stakeholders do not represent the affected population, a procedure that values equal representation may gain public support and political momentum. Stakeholders have to play along if they don't want to lose their support in the public arena.

The model of citizen panels may be attractive for stakeholders as an alternative to the prevailing methods of mediation and arbitration. Finding a single trustworthy person or an institution to serve as mediators is often cumbersome since mediators themselves have preferences and political alliances (Brooks, 1984). A jury of citizens may be more attractive because it assures more variety in viewpoints and political commitments and may carry more legitimacy as a consequence. Often it may help to reach prior agreement among all relevant parties to pursue the three-step-procedure as a joint venture (legitimation by procedure).

5. Experiences with citizens panels

Observations from Germany. The experiences with our participation model in former West Germany were encouraging – although it is difficult to measure and evaluate the success of the various projects. Most prominent among the projects was a national study on energy policies. In August 1982, the German Ministry of Research 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. 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 directed by one of the authors (O. Renn, then at the Jülich Research Center in Germany) conducted a three-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 was designed in accordance with the three-step-procedure outlined above.

1. Values and criteria to assess and evaluate energy options were identified by interviewing representatives of 13 major stakeholder groups in West Ger-

many (Keeney et al., 1987). In total, the groups generated 141 criteria to evaluate energy policies.

2. Approximately 30 energy experts were asked to give their best scientific estimates for the performance of each energy scenario on each of the revealed criteria (Renn, 1986). The social, political, and psychological impacts were assessed by expert rating using the Group Delphi technique; the technical, economic, environmental, and international impacts were assessed by independent sub-contractors, such as the Prognos Institute in Basel (Switzerland) and the Institute of Foreign Policies in Bonn (Germany).
3. The resulting profiles of each energy scenario were conveyed to randomly selected citizens for evaluation and comment (Dienel and Garbe, 1985; Renn et al., 1985). The major tasks of the panels were to review the assessments, include their own values, and to make policy recommendations in accordance with their own preferences.

The study operated with 24 citizen panels (each including approximately 25 participants) drawn from seven communities in different parts of West Germany. The panel meetings were held in public buildings for four consecutive days. Naturally not all persons who were asked to take part in the procedure were able to attend. Only 20 percent of all invited persons did participate and a true representation of the West German public was not accomplished. But a comparison of the basic demographics of our participants with the national average revealed that our sample was a good representation of the different age groups, gender, and educational backgrounds. The only clear bias involved the distribution of professions and consequently income levels. Hardly any self-employed persons were able to sacrifice four days, whereas housewives, retired people, and public servants were slightly over represented. Unlike most other participation models, our citizen panels are likely to over represent low income classes.

The objective of the panel meetings was to elicit the preferences of the participants and to lead them to evaluate the different options by taking into account the best scientific estimates of the likely impacts of each option, the political judgments of stakeholder groups, and their personal value judgments. The task for each participant was to rate each energy system according to the given criteria, to assign relative weights to each criterion, and to come up with a balanced recommendation as to which energy scenario should be implemented to meet future energy demands.

The outcome of the process consisted of three products: a joint value tree with evaluative criteria to evaluate energy systems or scenarios; a performance profile of different energy systems and scenarios; and policy recommendations drafted by the 24 citizen panels. 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 panelists 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).

The project was scrutinized by a scientific advisory board consisting of scientists, administrators, and representatives of stakeholder groups. Whereas the value tree analysis and the Group Delphi process were viewed as valuable and important elements of a rational planning process, criticism seemed to center on the role and function of citizen panels (Jungermann et al., 1986). The reviewers found the panels to be helpful tools for public education, but were rather reluctant to assign any legitimacy to the actual recommendations drafted by the citizens. Arguments against the participatory function of our model referred to the lack of experience of citizens in planning, the lack of accountability, the possibility of manipulation, the neglect of organized interest groups, and particularly the ability of untrained citizens to understand and process complex scientific data and arguments (Michaelis, 1986; Bechmann and Gloede, 1986; von Alemann, 1986).

Other reviewers were more enthusiastic about the potential of the citizen panel technique. Schäfer compared citizen panels with policy consultants who do not replace the legitimate policy makers but enrich their knowledge and help them design policies in reference to public preferences and values (Schäfer, 1986). Jungermann, though acknowledging the problem of accountability, described citizen panels as suitable instruments for anticipatory conflict detection and management (Jungermann, 1986). Wiswede referred to citizen panels as an appropriate method for reducing complexity and making complicated policy issues 'manageable' (Wiswede, 1986). Finally, Fritsch claimed that citizen panels are learning cells in which citizens experience public life and responsibility and are able to overcome the alienation towards the traditional political process (Fritsch, 1986). All reviewers agreed that citizen panels are ideal research instruments (similar to focus groups) and that panels show competence for local issues in which direct experience is vital (such as siting a highway or a supermarket, both of which have been done with the aid of citizen panels). They differed considerably in their opinion about the normative validity of the citizens' recommendations for regional or even national issues.

In summary, the West German citizen panels on energy policies provided us with the experience that our three step procedure was a rewarding and successful method to elicit preferences and educated responses of citizens in a rather short time period. At present, several projects utilizing citizen panels are being conducted in West Germany (Dienel, 1989; Dienel, 1991). 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.

Observations from the United States. Is our participation model applicable in and appropriate for the U.S. political culture? The German experiences with the model proved so interesting and promising that in July 1988 the Department of Environmental Protection of New Jersey asked a research team of Clark University directed by O. 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. The first step of eliciting stakeholder concerns was replaced by a review of the relevant literature and personal interviews with local stakeholders. This alteration was made because of the low level of stakeholder interest. A Group Delphi on land application of sludge was conducted with nine experts from all over the country attending the workshop (Webler et al., 1991). They rated and commented on the risks and regulatory provisions of land application of sewage sludge. In the third phase, 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 program 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 faciliator and formulated recommendations that were forwarded to the sponsor (New Jersey Department of Environmental Protection). The proposed sludge project at the Rutgers Experimental Farm was rejected by the citizen panel. 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 with valuable information about citizen concerns and values. Whereas the experts who participated in our Group Delphi were convinced that citizen concerns focused on issues such as odor, traffic, and contamination of groundwater, 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. Apparently, the citizens felt that simply allowing land application would endanger their values and interests.

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 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 (Steward et al., 1984). Given the demands of the participants to have control over the process, we think that it is advisable to have a meeting with the participants two weeks before the actual citizen panels 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. These opportunities would likely prevent surprise discussions or rebellions during the actual citizen panel procedure.

6. Discussion

Our three step model is based on the belief that, if stakeholders, experts, and citizens each contribute to the planning effort their particular expertise and experience, the decision making process will be improved. Stakeholders are valuable resources for eliciting concerns and developing evaluative criteria since their interests are at stake. Experts are necessary to provide the data base and the functional relationships between options and impacts. Citizens, as the potential victims and benefactors of proposed planning measures, are the best judges to evaluate the different options available on the basis of the concerns and impacts revealed through the other two groups. This model is less decisionistic than it may appear at first sight. Stakeholders and experts are invited to express their opinions and values to the citizens during the citizen panel procedure just as citizens are given the right to question the criteria of the stakeholder groups or the assessments of the experts. The main thrust of the model is, however, that the three sets of groups contribute to the decision making process in a manner which exploits their positive potential and which respects their legitimate rights.

There is hardly any controversy among social scientists that the first two steps, the value tree analysis and the Group Delphi process, are viable methods to elicit social responses to policy making. Most objections refer to the inclusion of citizen panels. The argument has been made that ordinary citizens are not capable of understanding and using scientific results in articulating rational recommendations (cf. Michaelis, 1986; Hammond et al., 1983). In line with this argument, it may be claimed that political decision maker will never listen to recommendations of non-experts. From a pragmatic perspective, critics contend that the citizen panel method is vulnerable to community dynamics and strategic game playing (von Alemann, 1986), a claim which suggests that participation models should be 'custom-designed' for each case and each community.

We doubt the validity of both objections. The American political system

relies heavily on the consensus of 'ordinary' citizens and has developed several institutions that are based on layperson involvement (Nelkin and Pollak, 1979; Fiorino, 1989). The same argument has been made against the traditional jury system, but the alleged accusations were unsubstantiated in most cases reviewed by experts (Bownes, 1990). The Parents and Teachers Association (PTA) is another example of the many citizen advisory groups commonplace in the United States. Since the recommendations of citizen panels were often adopted in West Germany, a country with less tradition of citizen participation, it is difficult to imagine that in the United States, with its long tradition of citizen involvement, political decision makers would ignore output provided by such panels. We also believe that the citizen panel concept is flexible enough to adapt to different situations and community structures.

Citizen panels are only one of many possible ways to involve the public in decision making and policy designing. It is characterized by several features usually not found in other proposals for citizen involvement (cf. Fiorino, 1990). In contrast to joint commissions of experts and citizens, in this model each participating group is assigned a specific function. In contrast to negotiations with stakeholder groups, our model of participation is inspired by the normative goal of a fair and impartial representation of all citizens' values and preferences, be they organized or not. The objective of citizen panels is not to include the already organized stakeholders or local officials, but to provide citizens with the opportunity to take part in a policy making process. In contrast to elected bodies, the citizen panels have a mandate to work on a single specific problem in a pre-defined time period. They do not depend on special constituencies, such as voters or interest groups. While they are certainly embedded in a social network of family members, friends, neighbors, etc., this network does not prescribe a specific position or attitude toward the project in question. The comparison with a jury may be helpful. The affected parties in a trial are certainly biased in their evaluation of the arguments presented in court, but the selected jury members have no direct affiliation with any of the interested parties and their social network is, in most cases, detached from any of the groups involved. Unlike a jury, however, citizen panels are an attempt to construct a collective definition of needs, and not merely to listen to two opposing points of view and evaluate them according to preestablished criteria. In citizen panels, the ultimate choice is based on preferences, as opposed to jury trials, where it is based on assessments of truth in accordance with legal procedural rules.

Citizen panels can help to make public decisions more rational, because they require officials to defend their decisions using arguments and evidence rather than rhetoric. Participating citizens are not easily persuaded by political jargon or unsubstantiated claims (Renn, 1991). In such a process, decision makers and citizens can learn from each other, recognizing that both have crucial contributions to make if they pursue the goal of reconciling rational decision making with democratic practices.

Our experiences with citizen panels in the United States taught us, how-

ever, that the procedure of public involvement is as much an issue of dissent as is 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. The social climate of distrust and suspicion toward governmental agencies or their contractors has created a skeptical attitude toward 'new recipes' of participation. Citizens mandate that they be consulted in the agenda making process and that they determine the timing of the process and the selection of the expertise used in the course of the procedure. To consult citizens in the design of the procedure is often difficult and may evoke conflicts before the real issue is even discussed.

The model of citizen panels has certain drawbacks and limitations. It is not well suited for issues that pose major inequities between different regions or social groups. In these cases, randomly selected citizens are not perceived as legitimate negotiators for the groups that face these inequities. Decisions involving only a yes-no alternative (such as many siting issues) are also inappropriate for citizen panels because participants tend to select the 'easy' solution of objecting to any new development, especially if the benefits are not equally shared by the affected community.

A second problem associated with citizen panels is accountability and long-term planning. Since citizens are not responsible for implementing the final decision, they may make choices that are not financially or physically feasible. Although citizen panels could be reconvened several times or different panels could be organized for the same subject over a longer period of time, it does not constitute the same public control as having elected officials who face elections and may be legally accountable for their actions. The question of how much authority these panels should be given was also a major point of criticism in a recent review of participation models in the United States (Fiorino, 1990). This is why we emphasize the complementary character of the legal decision making and participatory procedures. Citizen panels should make recommendations to the legitimate decision maker as an input to the decision process and not as an imperative binding vote. Given that these recommendations represent the most preferred option (based on informed consent) by those who will be affected by each option's outcome, elected officials have the opportunity to experience direct feedback and to design policies in line with the preferences of their clients.

A third problem of citizen panels is the processing of information prior to eliciting preferences and recommendations. The information and education process is always biased in one or the other direction regardless of the effort to provide comprehensive, complete, and objective information (Michaelis, 1986; von Alemann, 1986). To avoid biased responses, experts with different attitudes are involved to review the educational material and to help design the curriculum. Informational material is divided into three categories: basic factual knowledge that all experts agree on; interpretation of facts where all

significant viewpoints are represented; and expert opinions, which are sampled in short essays or videotaped statements. In addition to the written material and lecture outlines, experts and stakeholders with different viewpoints are invited to testify before the citizen panels. In spite of these efforts, disemination of information is never complete and unbiased. This, however, is a problem endemic to all decision making process.

These problems limit the applicability of our model and necessitate a prudent decision about whether or not the conditions for a potentially successful implementation are met. Based on our experiences with panels in Germany and the United States, the following criteria should be used to evaluate the suitability of the citizen panel procedure:

- *variability of options:* Do the participants have the choice of selecting one option out of a variety of options that are all feasible in the specific situation?
- *equity of exposure:* Are all groups of the community or the respective constituency exposed in some way to the potential disadvantages of the proposed options (to avoid a distinction between affected abutters and indifferent other citizens)?
- *personal experience:* Do participants have some experience with the problem and do they feel competent about giving recommendations after they are further educated about the problem and the remedial options?
- *personal relevance:* Do participants judge the problem as serious enough to devote several days of their time to work on solutions?
- *seriousness and openness of sponsor:* Is the sponsor willing to accept or at least carefully consider the recommendations of the citizen panels or does it pursue hidden agendas?

It also helps the process if the issue is not too controversial and has not already polarized the attitudes of the affected population. Our own experience in Germany shows, however, that even these issues can be handled by citizen panels if the majority of participants are selected by random process. The citizen panels work best in a situation in which an urgent problem has to be resolved in a short time period and different options, each posing different benefits and risks are available.

The future use of citizen panels in the United States is contingent on the adequacy of the issue and on the establishment of an efficient link to the community in which the citizen panels take place. In addition, it seems advisable to stick as closely to the original model as is possible since this model has emerged over a long time period and has been adapted to the needs of the participants. A better understanding of the transferability of the citizen panel process requires additional trials and programmed experiments. Trial and error are the only means to further our knowledge about the advantages and disadvantages of different participation models.

7. Conclusion

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 any agency bother to promote participation or go beyond the mandated public hearing to elicit citizens concerns? Setting aside the matter of 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 (Almond and Verba, 1963; Rayner and Cantor, 1987). The best 'technical' solution cannot be implemented if the process of decision making is perceived as unfair or biased.

The second response is more fundamental: Our experiences indicate clearly that the public has something valuable to contribute to policy making. Experts and regulators are often restricted in their assessment of a project and confine their analysis to the generalizable 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 of which the experts involved were not aware (Kraft, 1988; Fiorino, 1989).

Our aspirations go beyond the use of citizen panels as instruments of social research. We do not advocate that citizen panels replace elected decision making bodies, but we are convinced that political decisions can be improved by seriously examining the recommendations drafted by these citizens. The present controversy about the citizen panel method may boil down to the philosophical question of whether the policy maker has trust in the wisdom and judgment of ordinary citizens or perceives them as puppets of public opinion and dominant fashions. If the public is to have a role to play in the decision making process, the model of citizen panels is certainly one that provides a rational and structured approach toward this goal.

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 able to understand and process technical information and to articulate well-balanced recommendations. The citizen panel method is an attempt to design a procedure that allows citizens to take advantage of their full potential. With the addition of steps 1 and 2, sufficient knowledge is collected and processed to make prudent decisions.

The basic advantage of our model is the systematic combination of professional expertise, social interests, and public values for selecting and evaluating policies. We believe that the knowledge of stakeholder groups can enhance policy evaluation if the groups are not involved in making tradeoffs

(because of the dominance of strategic reasoning), but are constrained to identifying the issues and to explaining their points of view to the participants of the panels. Experts are usually the best informed about potential impacts of each option, but should not be involved in determining the political dimensions of the decision or in the actual process of making tradeoffs. The citizens, finally, are the ultimate decision body for determining public preferences that, when informed properly of the scientific and political dimensions of the decision options, ideally reflect a holistic weighting of this information with social preferences.

The main reason, however, for giving citizens opportunities to co-determine their natural and social environment is neither instrumental nor a prudent response to the legitimation crisis of traditional policy making. Beyond the necessity of resolving conflicts and finding 'good' solutions, participation is also an expression of our political culture. Technocratic decision making is incompatible with democratic ideals. The involvement of affected parties represents the political value of government by the people, not just for the people. If we take the ideal of democracy seriously, public participation is a normative prerequisite. It is our belief that the three-step-model is one way though certainly not the only way, to accomplish the goal of reaching better competence in planning – to integrate the best available knowledge with public preferences while accomplishing more democratic involvement of the public. We are convinced that rationality is enhanced through participation while participation is facilitated through well-structured procedures.[2]

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Notes

1. Implementation of public participation has to cope with the following problems: (1) *Representation:* The diffused nature of many political decisions often makes it impossible to identify the beneficiaries and cost bearers of a decision. Who is affected by a decision? Who is invited to participate? What does it take until one is 'affected' enough to earn the right to participate in the decision making? (2) *Inclusion of all relevant interests:* Interest groups may want to influence the opinion forming process and impose their specific interests on the agenda. As long as all relevant groups can equally express their viewpoint in a participatory process, the outcome of the process will not be corrupted. In reality, however, interest

groups are not equally represented in participation projects (Dahl, 1970; Olson, 1982). Particular interests have a better chance to dominate the decision making process. What procedure or selection rule can assure equal representation of all stakeholders in the decision process? (3) *Ignorance or misconceptions:* Individual and group preferences for decision outcomes may be distorted by misconceptions about factual cause-effect relationships and probabilities that the expected outcomes will occur. Without educating the potential participants in a participation process, the outcomes may be based on prejudices and ignorance (Slovic et al., 1982). How can an educational process be designed to assure that all necessary information is conveyed to the participants, but that the educators do not intentionally or unintentionally bias or manipulate their audience? (4) *Dissent about facts:* Scientific evidence is rarely unanimous and results are often disputed within the expert community (von Winterfeldt and Edwards, 1984; Hammond et al., 1983). Which expert assessment should be used in public participation projects? How can a lay person distinguish between a legitimate, i.e., methodologically justified, difference in expert assessments and a mere difference of opinion? (5) *Scope of permitted evidence:* Scientific assessments may not adequately characterize the nature of the decision stakes and may ignore personal experiences and perceived equity violations. Personal experience may be an important reservoir for anecdotal knowledge and often reveals a sensitivity to social and political values that experts' models would not acknowledge (Fiorino, 1990; Stern, 1991). However, personal experience is also colored by personal attitudes and unique events. How can the line between valuable personal experience and unsubstantiated prejudice be drawn? How can non-expert evidence be integrated into the decision making process? (6) *Legitimation of tradeoffs:* Even if all participants agree on the expected outcomes of a policy or decision option, different value tradeoffs cannot be structured according to objective rules, but must rely on negotiation, and negotiation is often dominated by strategic maneuvering of the negotiating parties (Susskind et al., 1978). This may easily lead to a misrepresentation of public preferences. What methods can or should be used to aggregate individual or social preferences? How can value conflicts be reconciled? (7) *Accountability:* Many participation models are one-shot programs in which citizens influence decisions, but are not responsible for their implementation or accountable for consequences. How can citizens be made part of the decision making process without sacrificing accountability and political feedback (from voters or courts)?

2. To be strengthened, this conclusion of course needs to be tested through further concrete cases of participation. In this way, designing and implementing participation techniques can serve to improve both the knowledge and practice of citizen involvement in decision making.

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