

# IMPLICATIONS OF RESEARCH ON SMALL-GROUP PROCESSES FOR ENVIRONMENTAL PUBLIC PARTICIPATION

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Public participation processes often feature group interactions of various kinds, some of them involving repeated interactions of the same set of individuals over time. Basic research on the general functioning and performance of small groups may in principle offer valuable insights for understanding environmental public participation. Research on specific decision-related processes, such as communication and conflict dynamics and resolution, may also shed light on the functioning of groups engaged in environmental public participation activities.

The results from basic and process-related research should, however, be interpreted with caution. The most rigorous (i.e., experimental) research on group behavior comes from the study of small groups that have no past history (e.g., prior positions, perceptions of each other) and whose tasks do not strongly involve personal commitments to ideas, values, or interests. Findings from studies of such groups may not apply to groups that have histories and that are discussing issues of great personal importance to group members. Observational research involving real-life groups tends to come from specialized settings (e.g., trial juries; labor-management relations; international conflict negotiations). Even though these settings are often similar to environmental decision settings in that they involve interests, values, personal commitments, and sometimes past histories of interaction, they are different from environmental decision settings in other ways, such as the extent to which it is important for participants to understand scientific and technical information. Thus, the extent to which findings from such settings generalize to environmental decisions is unknown.

Because of these differences, the research reviewed here is considered as offering suggestive hypotheses about what may be expected in environmental public participation settings. When considered alongside the results of studies of environmental public participation, these findings can help provide insight about the generality of findings about group processes across settings.

This discussion draws heavily on a few literature reviews as sources (Levine and Moreland, 1998; Tyler and Smith, 1998; Bazerman, 2000; Mendelberg, 2002; Birkhoff and Bingham, 2004; McComas, 2004). It is organized around three functions of environmental decision processes that are often considered to be elements of success. They are: *providing needed information* for well-informed decisions, *making acceptable decisions*, and *improving capacity* for future decision making.

## Providing Needed Information

Research on small-group decision making can offer insights into the conditions under which environmental public participation processes yield well-informed decisions, even though the concept of a well-informed decision is not prominent in this line of research. Researchers commonly distinguish between judgmental tasks (i.e., there is no correct answer) and intellectual ones (i.e., there is a correct answer, typically one that can readily be demonstrated).

Environmental decisions are usually both: there is a need for considerable intellectual effort to get to a well-informed choice, but judgment is also centrally important because no one can be sure whether or not there is a correct answer and there are many defensible ways to interpret available information. The basic research has not devoted much attention to decision situations in which the facts, their meanings, and even the nature of the decision problem, are contested.

Small-group researchers distinguish between two kinds of factors that affect group processes and decisions: social factors (e.g., conformity, status of the group members who express opinions) and cognitive factors (e.g., strength and relevance of arguments). In these terms, groups that provide the needed information for environmental decision making are presumably those in which social factors promote, or at least do not interfere with, the cognitive work of seeking out and considering the relevant information. Research has identified some of the social factors that can affect this cognitive work and has investigated some to influence these factors so as to improve decision making.

### Minority Influence

Individuals in a numerical minority can enhance the performance of a group by providing relevant information or insights that might otherwise go unconsidered. This positive effect can be felt if it is possible for minorities to sway the numerical majority on cognitive grounds. Research on minority influence processes in groups has identified some conditions favoring such influence, although because the research has been conducted primarily in “noninteracting or minimally interacting groups” (Levine and Moreland, 1998:434), the results should be generalized with caution.

There is some evidence that *group norms* affect the possibility of minority influence. When norms emphasize the need for agreement, people tend to go along with the majority, at least in public, for the sake of approval. However, when group norms value originality, innovative individuals are influential and can bring about opinion change in others (Moscovici, 1985). One mechanism for minority influence is that minority ideas enhance the majority’s efforts at information search and processing (e.g., Nemeth and Rogers, 1996). Minority influence on majorities tends to affect judgments on facts more strongly than on values, and tends to be more evident in majority members’ private opinions than in their open expressions in the group (Wood et al., 1994). The reason may be that minorities’ views are stigmatized in the group, so that majority members choose not to adopt these views overtly.

The evidence seems to indicate that the ideas of numerical minorities can have influence particularly when the task is focused on finding and assessing facts and making a correct decision and when minority positions are presented in that context (e.g., with reference to those group goals). Minority influence is more likely when the problem has a correct answer and when minority members have high status.

*Attributes of the individuals* who present minority ideas also affect the influence of those ideas. For example, some findings indicate that numerical minorities who belong to a salient outgroup lose all influence (David and Turner, 1996). Also, individuals who know more of the arguments on the issue than most others in the group are more influential in their arguments, regardless of the quality of these arguments (Kameda et al., 1997). Individuals high in “need for cognition,” a tendency to think in depth about the merits of issues, are more influential than other group members, although they also are more resistant to changing their own views on the basis of meritorious arguments (Cacioppo et al., 1996; Shestowsky et al., 1998).

*Group process phenomena* can sometimes act to suppress the presentation of important minority views. Sometimes individuals suppress their own ideas, perhaps out of a desire not to appear deviant, in what has been called a spiral of silence (Noelle-Nuemann, 1984). Consequently, these ideas are not considered, regardless of merit. Considerable research on public opinion phenomena documents that this process occurs (Glynn et al., 1997; Shanahan, Glynn, and Hayes, in press), but suggests that it does not overwhelm other influences on individuals' expressions of their views. Pressures for group cohesiveness and unanimity can lead to the suppression of discussion of minority viewpoints in a process commonly called "groupthink" (Janis, 1982; Keyton, 1999). This type of group dysfunction is more likely when the group leader is biased and has power over other group members, when the group is isolated from outside sources of input, and when there are no established procedures that require elicitation of alternate views.

### Group Polarization

Groups that start out inclined toward one alternative choice (e.g., a high jury award to a plaintiff) tend to emerge from deliberation with an amplified opinion in that direction (Myers and Lamm, 1976). This polarization may result from a social mechanism, in which individuals far from the group's average shift their views for reasons such as solidarity, or a cognitive mechanism, in which polarization results from persuasive arguments made by those whose views approximate the groups' central tendency. The evidence indicates that the informational mechanism is more likely to operate when situations call for factual analyses and less likely with value-laden decisions (e.g., compensatory damages vs. punitive damages in jury cases; see Kaplan and Miller [1987]). Mendelberg (2002) concluded that deliberation may be counterproductive on matters of value and where there are long-standing severe conflicts and suggested that in such situations, it might be best to use negotiation or other conflict resolution methods. It is reasonable to hypothesize that conditions of serious conflicts of values or interests will make it more difficult for groups to make optimal use of information, just as it may make it more difficult for them to reach agreements (see below).

### Social Inequality and Influence

For a group to do good cognitive work, the influence of participants' ideas should not be dependent on their social status. Nevertheless, research (e.g., on jury decision making) finds that influence is stronger among members of higher-status social groups. People of higher occupational status and educational attainment speak more and their ideas are more influential, even though their information is not necessarily more accurate than that of other group members (Hastie et al., 1983). Education may give people better cognitive tools and increase their willingness to think beyond individual interests (Nie et al., 1996), but it may also bring with it class- or race-based perspectives that could bias deliberation. This possibility is potentially important for deliberative processes that include scientific specialists or other elites, particularly if they offer arguments that other participants cannot fully understand. Although the research associates high status with increased influence, it is also plausible that experts who are perceived to be promoting special interests may have *decreased* influence, even if they are presenting valuable information. Research bearing on this hypothesis appears to be absent.

### Shared and Unshared Information

Groups tend to talk most about what all members already know (“shared” information); much less on what only one member knows (Stasser, 1992; Larson, Foster-Fishman, and Franz, 1998), with the result that unshared information that could lead to a better choice is ignored. The quality of group decision improves when the discussion focuses on unshared information (Winqvist and Larson, 1998), but that outcome is not guaranteed, even in groups advised that there is important unshared information (Stasser and Titus, 1985). In one study (Larson et al., 1998), leaders with participative styles (i.e., who share power, encourage broad participation, and mute personal preferences) produced better discussions, but poorer decisions than directive leaders (who emphasize consensus and seek agreement with their own preferences). The purported reason was that directive leaders repeat unshared information more—both their own information and that introduced by others.

### Intra-Group Diversity

Heterogeneous groups tend to communicate less and to form cliques, but to be more flexible and innovative. There is evidence that groups can minimize the negative impacts and enhance the positive ones by appropriate tactics (see Levine and Moreland, 1998:423). Groups of homogeneous opinion tend to have more positive dynamics, but poorer performance (e.g., Jackson, 1992). One reason may be that homogeneous groups have a tendency (i.e., are more prone than individuals) to search for information that confirms their prior beliefs (Schultz-Hardt et al., 2000).

### Decision Rules

The impact of decision rules (e.g., majority, unanimity) on outcomes seems to be highly contingent. At least in jury-like settings, unanimity decision rules seem to promote more extensive discussion, compromise, opinion change, and member satisfaction (Miller, 1989), and a more thorough hearing of minority views. Research on experimental groups tends to confirm the observation that establishing a consensus decision rule improves group members’ satisfaction (Sunwolf and Seibold, 1999).

### Interventions to Improve the Cognitive Work of Small Groups

The evidence discussed above suggests that small groups might do better at eliciting and considering the available relevant information if they establish norms and procedures that favor doing this, if they open themselves to outside influence, if they seek out unshared information, and if their composition is sufficiently diverse. Research could examine such hypotheses by testing various interventions intended to enhance groups’ success at performing cognitive tasks. Unfortunately, research of this type has not been guided by well-specified theories, so that accumulation of knowledge has been difficult. Moreover, the relevance of the research to real-life decision making is questionable because the typical studies have been on groups consisting of college students with no collective history, meeting only once for 30 minutes or less, and working on inconsequential tasks (Sunwolf and Seibold, 1999). As a result, strong evidence is lacking on propositions such as the above: for example, most of the experimental groups do not meet for long enough to establish group norms. Some of the more frequently studied procedures have had surprising effects. For example, brainstorming, a procedure that elicits ideas from everyone in a group systematically before any discussion is allowed on any of the ideas, has been advocated as a way to generate as many ideas as possible for consideration. Research reviews

indicate that it actually has the opposite effect (Mullen et al., 1991; Stroebe and Diehl, 1994), most likely because group members may forget their ideas while listening to other speakers.

Research guided by theoretical frameworks based on decision research and drawn from empirical studies of individuals' decision making done better in terms of providing a systematic knowledge base for improving group decision processes. This research and its implications for interventions are discussed by North and Renn (2005) and DeKay and Vaughan (2005).

### Making Acceptable Decisions

The body of research reviewed above has not given much attention to the conditions under which groups are more likely to reach decisions or under which such decisions are acceptable to participants. The reason may be that it is relatively easy to arrive at acceptable decisions in low-stakes group discussions among strangers with no prior shared history. These questions have received much more attention in research that focuses on group situations involving conflict or perceptions of injustice, both of which can create serious barriers to reaching acceptable decisions. This section examines that research for insights on the conditions for reaching acceptable decisions. It also briefly notes other sources of relevant insight not reviewed here, including research deriving from game theory, studies of experimental simulations of social dilemmas, and studies of real-life resource management settings, all of which typically involve motives for both conflict and cooperation.

### Perceived Justice and Injustice

Social-psychological research on justice includes both experimental studies and analysis of naturally occurring situations (e.g., jury decisions, conflict mediations, salary comparisons among workers) (Tyler and Smith, 1998). It concerns how aspects of situations affect participants' judgments of justice and fairness and how these judgments in turn affect attitudes, beliefs, emotions, and behavior. This research generally supports the conclusion that people who experience procedural justice when dealing with authorities are more likely to view the authorities as legitimate and to accept their decisions (Tyler and Lind, 1992). Interestingly, concepts from this literature have been applied only rarely to environmental public participation (for an exception, see Maguire and Lind, 2003).

Distributive versus procedural justice. Researchers often distinguish between distributive justice (perceptions of the fairness of outcomes) and procedural justice (perceptions of the fairness of the ways decisions are reached). Researchers have proceeded from different presumptions about which is more important. Social exchange theorists presume that selfish and instrumental motives predominate in people and expect that justice perceptions will be dominated by considerations of personal outcome (e.g., Thibaut and Walker, 1975). Some other theorists presume that intrinsic concerns for justice sometimes take precedence. Many of these researchers expect that fair procedures and positive social relationships may have a stronger influence on perceptions of justice than personal outcomes (e.g., Tyler and Lind, 1992). Whether personal gain or broader concerns dominate may be situationally determined: there is evidence that if members of a decision making group identify with the whole group rather than a subgroup, they show decreased concern with personal or subgroup gain, and consensus is easier to obtain (Huo et al., 1996; Smith and Tyler, 1996).

People react to the fairness of procedures in a wide variety of settings (Lind and Tyler, 1988). Of particular relevance to public participation is the conclusion of a recent review (Tyler and Smith, 1998:620) that “procedural concerns dominate [distributive] justice concerns in groups and organizations.” It seems reasonable to expect, however, that both procedural and distributive justice concerns matter in environmental public participation processes. Procedural concerns may be the more important in shaping people’s reactions to, and willingness to accept the results of, any single process. But both kinds of justice might be important in a series of processes, especially when the processes are administered by the same organizations, because perceptions of either distributive or procedural unfairness may carry over from one decision process to the next and affect people’s willingness to participate, and to be cooperative when they do.

Concerns about justice may be more salient in some contexts than others (e.g., when rules are being created, when participants do not share a common perspective or belong to the same organization). Also, there may be change across situations or over time in the range of people to whom justice principles such as equality are applied. A current instance is people who may pose terrorist threats.

Perceived distributive justice. People apply a variety of principles in evaluating distributive justice, including equity, equality, and need, depending in part on the goals or context of a decision process. For example, there is a broad consensus among U.S. samples that equality applies in political settings, and need in family settings (Tyler, 1985). There are differences in emphasis, however, as a function of individuals’ political values. Cross-cultural studies report consistencies, but also some differences. There is some evidence that concern for fairness is a stronger consideration in U.S. samples making ethical judgments, whereas in similar situations, Indian and Japanese samples place more emphasis on whether people fulfill role responsibilities (see Tyler and Smith, 1998:618-620 for further discussion).

Distributive injustice is not only a matter of whether or not people get an equal share or what they consider to be a fair share (just desserts). Attributions of responsibility for unequal or unfair outcomes are also critical. When people experience important, unexpected, and negative outcomes, they search for explanations (e.g., Weiner, 1995). In particular, someone who receives less than what he or she believes is deserved tends to search for causal explanations that attribute responsibility for the outcome, with judgments of justice dependent both on outcomes and attributed responsibility (e.g., Crosby, 1976; Folger and Cropanzano, 2001; Miller, 2001). One recent study (Mikula, 2003) provided evidence for a model linking justice judgments to responsibility, blame, and outcomes as follows: (1) the other person in an interpersonal situation is judged responsible for an outcome if judged to have caused it, to have acted intentionally, and to have had control over the action; (2) the other person is blamed if the outcome violates the perceiver’s sense of what he or she deserved and if the other person is judged responsible and to have acted without justification; and finally, (3) injustice is experienced only when an outcome is less than subjectively deserved and the other person is judged blameworthy.

Such models of perceived injustice, focusing on attributions of responsibility and blame, may be useful for understanding and addressing the attitudes and emotion-laden responses associated with claims of environmental injustice, which is in researchers’ terms a type of distributive injustice. Anger, resentment, and aggression are among the outcomes commonly associated with experiences of injustice in which intention and responsibility for harm are attributed to particular harm-doers (e.g., Quigley and Tedeschi, 1996; Geen, 1998; Miller, 2001).

It is reasonable to hypothesize that when people attribute blame for environmental inequities, their participation in processes involving those they blame will be problematic, and that when they do participate, issues of responsibility and blame will surface readily. The participatory processes will contain strong elements of conflict, in which justice arguments will likely be used in somewhat predictable ways to argue positions on either side of the conflict (Mikula and Wenzel, 2000). The organizers of public participation processes should be prepared to deal with such reactions and the underlying justice issues, and when they arise, participatory processes may need to deal explicitly with attributions of blame and associated mistrust by seeking resolutions that will address the attributions of blame that underlie experiences of injustice (e.g., planning for credible monitoring of activities that have led to attributions of blame in the past).

Some research how the concept of environmental justice is used in “framing” or socially constructing environmental choices (e.g., Taylor, 2000). This research addresses how framing these choices in terms of justice mobilizes support for environmental justice movement organizations and for their policy positions. Participants in environmental decisions who frame the decisions in terms of justice may disagree fundamentally with participants who see the decisions in other frames, for example, as problems of efficient resource allocation or risk management. A justice framing is likely to increase awareness of the moral dimensions of decisions and to lead participants to consider decisions in terms of doing the morally right thing (Schwartz, 1977; Stern et al., 1999) and avoiding injustices. It is likely to increase the emotional tenor of the decision and the discussions for those who use a justice frame, and as a result, it to sharpen conflict between participants who do and do not consider moral issues as central. Organizers of public participation processes will need to be aware of such differences in framing and may need devise ways for them to be addressed explicitly.

Perceived procedural justice. Although perceptions of justice may be affected by perceived control over outcomes or over processes (Thibaut and Walker, 1975), much evidence suggests that process control is the more important factor and that it is important even when it does not influence decision control (see Tyler et al., 1985). Perceptions of procedural justice are also affected by attributes of processes, the participants, and their relationships (Leventhal, 1980; Tyler and Lind, 1992). Of the attributes identified in this research, at least the following seem potentially important in environmental public participation: *representativeness* (having a voice in the process, having one’s concerns considered throughout), *respectful treatment* of participants by authorities and other participants, perceived *lack of bias* on the part of authorities, *consistent treatment* of all parties and over time, *accuracy* (i.e., decisions that are consistent with information), and *correctability* in the face of new information. The strong overlap of this list with lists derived inductively from research and practice with environmental public participation suggests that these attributes have considerable generality because the situations from which this list is derived are quite different from those in environmental policy.

People’s judgments of processes in terms of these attributes tend to be correlated, although some attributes are often seen as conflicting with other objectives, such as efficiency of a process. The bulk of empirical research on the effects of these factors has focused on opportunities for voice and demonstrates that the presence or absence of voice consistently affects perceptions of fairness (e.g., Brockner et al., 1998; Van den Bos, Wilke, Lind, and Vermunt, 1998). Consistent with these findings are some studies of public meetings on environmental issues that have found that participants were more satisfied with meetings that they perceived as including more discussion and dialogue and as welcoming multiple viewpoints

(McComas, 2003a, 2003b). Research on the effects of other aspects of process, such as bias and accuracy, is in early stages (see, e.g., De Cremer, 2004).

Trustworthiness may be a key variable for conceptualizing how the above attributes affect justice perceptions. The Tyler and Smith review (1998:613) concludes that “trustworthiness is typically the most important relational factor shaping evaluations of authorities.” Researchers are only beginning, however, to explicate how it relates to other variables. Trustworthiness may represent a higher-level construct that includes more specific factors, such as whether the authority is neutral (lack of bias) and competent (accurate). It may also be an intervening or mediating variable, in the sense that judgments of it are shaped by judgments about more specific factors and in turn influence perceptions of justice and reactions to decision processes. There is beginning to be experimentally based evidence to support the latter, mediational view. DeCremer (2004) found that when an authority was perceived to be unbiased, judgments of accuracy affect trustworthiness, which in turn affected judgments of procedural fairness and positive emotions about the process. When the authority was perceived as biased, however, perceived accuracy had no influence on judgments of trustworthiness or fairness, or on emotional response. If this result is general, it implies that trustworthiness is not the sum of more specific factors but an interaction effect--a judgment influenced by those factors in more complex ways. It suggests an explanation for the common observation that trust is much easier to lose than to restore.

#### Empirical Studies of Conflict Management and Dispute Resolution

Studies of real-world conflict management have included studies of environmental conflict, although more research attention has probably been given labor-management, international, and interethnic conflicts. Studies of these conflict situations can be instructive for environmental public participation, particularly when the decision groups must deal with histories of conflict or mistrust or with currently conflicting interests, priorities, or value systems among the participants. These conflict situations also resemble environmental decision settings in that small-group interactions occur in the context of conflicts at larger scales, with individual participants often acting implicitly or explicitly as representatives of organizations, interest groups, or governments. Like environmental conflicts, they often have an emotional component, generated by participants’ ethnic, national, or social class identity and histories of perceived injustice. They are different from many environmental decision situations in that social criteria such as acceptance and effective implementation are usually sufficient measures of success. It is not usually important that the decisions are compatible with the best available scientific and technical information about complex biophysical processes.

Researchers distinguish between bargaining situations involving the parties to a dispute or their representatives and third-party intervention situations, such as mediation. We discuss these situations separately before addressing other relevant areas of conflict management research.

Bargaining and negotiation. Much research on bargaining and negotiation focuses on the behavior and sometimes also the beliefs of the parties (e.g., Walton and McKersie, 1965; Bartos, 1974; Gulliver, 1979; Pruitt, 1981; Raiffa, 1982; Lewicki and Litterer, 1985; Fisher and Ury, 1991; Pruitt and Carnevale, 1993; Hopmann, 1997; Bazerman et al., 2000).<sup>1</sup> Researchers distinguish situations in which participants bargain for themselves and representative bargaining,

in which some participants act for constituents in negotiations. People who bargain as representatives are less flexible than people who bargain on their own; when their constituents are watching, this tendency increases (see Pruitt and Carnevale, 1993, for a review).

Researchers also distinguish between distributive bargaining, aimed at accommodating conflicting interests by compromising or negotiating tradeoffs, and integrative bargaining, in which participants reframe issues or create new options that benefit all sides more than might be obtained by compromise from their initial positions (Lewicki and Litterer, 1985). Although both types of bargaining are relevant for environmental decisions, the possibility for creative solutions arising from integrative bargaining has often been put forward as an argument for broader public participation.

The propensity for distributive or integrative bargaining has often been thought to be dependent on structural aspects of the situation, such as the relative payoffs for conflict or cooperation, which are beyond participants' control. More recently, researchers have examined the effects of factors that can affect the ability to reach acceptable decisions independently of context. One is emotion. Anger, for example, makes people more self-centered in their preferences while positive moods enhance participants' abilities to find gains from integrative solutions (e.g., Carnevale and Isen, 1986; Pillutla and Murnighan, 1996).

A provocative notion coming from recent research is that the ability to reach acceptable outcomes depends on the "frames" participants bring to a negotiation. Pruitt and Carnevale (1993) proposed that participants follow "scripts" such as a working relationship script, which carries with it expectations of reciprocity. Fiske and Tetlock (1997) proposed that people see relationships as based on community, authority, equality, or market mechanisms, and act differently toward each other depending on these frames (for example, in terms of their willingness to deceive others). There is evidence that participants' frames mutually reinforce each other and converge, sometimes after only a little interaction (Pinkley and Northcraft, 1994; Valley and Keros, cited in Bazerman et al., 2000). There is also evidence that when participants begin with different frames, with one party analyzing the situation in terms of gains and the other in terms of losses, they tend to converge on a loss frame (DeDreu et al., 1995). The research suggests that acceptable solutions are more likely in situations in which it is possible to promote positive emotions, the concept of a working relationship, trusting rather than competitive scripts, and a focus on gains rather than losses. The other side of this coin is the insight often drawn from negotiation research that the longer the parties have been in conflict and the more punishing the consequences they have imposed on each other, the greater the investment in conflict management that will be necessary to achieve constructive outcomes. Unequal power relationships and the possibility that some parties can achieve their objectives in forums other than a negotiation also make conflict resolution more difficult (Birkhoff and Bingham, 2004).

Recent negotiation research has examined the media of communication (e.g., face-to-face, in writing, by voice, by e-mail) as a factor affecting the likelihood of reaching agreement. A review by Bazerman et al. (2000) concludes that the medium changes the nature of the negotiation game and that the best medium depends on the situation. Face-to-face communication tends to increase rapport and decrease deception and misunderstanding. Under some conditions, though, such as when tension is high or when rapport is strong, audio-only communication may reduce the use of pressure tactics. And when arousal levels are low, computer-based communication may allow for more evenly distributed participation.

Mediation. Mediation and its cousin, facilitation, are typically used when the parties have been unable to reach agreement on their own or when it is presumed that they will be unable. Research on mediation includes attention to the effect of the presence of a third party and to what mediators can do to increase the likelihood of a settlement (e.g., Walton and McKersie, 1965; Bercovitch, 1984; Pruitt and Rubin, 1986; Kolb, 1994). The presence of a third party affects the parties' perceptions of the dispute and their behavior, simply because of the "audience effect" (Deutsch, 1974). The parties may, for example, seek to ally themselves with the third party or act so as to create a favorable impression with the third party. Creating a forum may also escalate conflict, as the parties argue their positions to the third party. Mediators may try to frame the issues in ways that promote solutions, structure communication processes, divide disputes into smaller pieces to promote partial solutions, bring external resources to bear, and propose solutions. These functions can in principle be performed by insiders to a negotiation, but in situations using mediation, relations among the parties are often too strained for insiders to be credible in performing these roles.

Interactive conflict resolution. Interactive conflict resolution refers to "small-group, problem-solving discussions between unofficial representatives of identity groups or states engaged in destructive conflict" (Fisher, 1997:8), typically facilitated by a third party. Since the 1960s, such discussions have been held, out of the glare of publicity, among members of groups engaged in intense conflict in major global hotspots, including Israel-Palestine, Northern Ireland, Cyprus, post-Soviet Tajikistan and Estonia, and others. Experience and research on these efforts have produced some well thought-out strategies for improving group interactions under conditions of severe conflict and mistrust that may be relevant to the most difficult settings for environmental public participation (Saunders et al., 2000; Rouhana, 2000).

Interactive conflict resolution discussions differ from negotiations and mediations in that the participants speak only for themselves and are free to explore their overall relationship without pressure to arrive at a formal agreement. They typically pursue such micro-goals (i.e., within the workshop) as reducing mutual stereotypes, improving understanding of the other side's positions and constraints, creating new frameworks for solving problems, training participants in conflict resolution tools or integrative negotiation strategies, and getting participants to identify things they can do, individually or together, to solve some of the problems between the groups (Rouhana, 2000; Saunders et al., 2000). Success in achieving these micro-objectives depends on following ground rules for discussion that create a climate of dialogue rather than one of adversarial confrontation, on preserving confidentiality from outsiders, and on focusing the discussion on the human dimensions of the conflict rather than on set positions; progress from confrontation to productive interaction is claimed to pass through a progression of stages (Saunders et al., 2000).

Processes that achieve the above micro-goals are presumed to help reduce the larger conflict through several possible mechanisms. For example, the discussions may create visions of peace that can be acceptable to both communities, legitimize problem-solving interactions between the parties, change the climate of opinion in the larger groups in conflict, generate ideas that can be seized when the inter-group climate improves, and build the capacity of future leaders of the groups to interact productively with each other.

Interactive conflict resolution efforts are most commonly undertaken when it appears that conditions of extreme conflict and mistrust have made it impossible to implement negotiation or mediation models and where pre-negotiation efforts are needed to improve the climate of

relationships enough for problem-focused negotiation or mediation to be fruitful. The approach is considered to be more useful when governments and other organizations have limited capacity to solve problems and when informal civil society groups are more critical to finding and implementing solutions. Practitioners emphasize the need to think about both the official and the unofficial levels of conflict resolution and to recognize the important roles of each (Saunders et al., 2000).

Effects of timing. In situations of major conflict, the ability of the participants to reach agreements, even with the assistance of third parties, is commonly observed to depend on the timing of their efforts in relation to the dynamics of the conflict. International conflict resolution researchers and practitioners use the metaphor of ripeness to address this issue (Zartman, 1985, 2000), arguing in a canonical statement of the idea that parties to conflict enter negotiations only when unilateral paths to achieving their objectives are blocked and they have reached a “mutually hurting stalemate” and then, only when ideas for compromise appear to offer a way out. Research developing this concept has addressed the practical questions of how peacemakers can induce the parties to perceive that they are in stalemate and on how they can seize on ripe moments and turn them into negotiations.

The concept of a mutually hurting stalemate seems to contradict the insight noted above that the more punishing the conflict, the more difficult it is to reach resolution. The practical implications of this contradiction of insights are unclear. Two differences between the sources of insight may help in resolving the contradiction. One is that the mutually hurting stalemate concept comes from studies of relatively large-scale conflicts (e.g., between states), whereas the contradictory concept comes mainly from conflicts at smaller scales (e.g., labor-management). The other difference is that a mutually hurting stalemate is purported to be a necessary condition for getting the parties to negotiate, and is not necessarily proposed to lead to a successful result. Successful outcomes are presumed also to require that the parties perceive a mutually enticing opportunity—a potential win-win solution (Zartman, 2000).

#### Other Sources of Insight

Game theory has provided a powerful analytical framework for analyzing small-group interactions and particularly for considering the conditions under which groups can successfully coordinate in the face of conflicting or mixed motives (e.g., Schelling, 1960; Axelrod, 1984). Particularly relevant to environmental decision making is theoretical and empirical research on social dilemmas, such as the famous prisoners’ dilemma game, in which, in the absence of group coordination, individuals are best off if they make one choice that they would not make if they could coordinate, because an alternative, cooperative choice is available that would make all individuals better off. Large bodies of research examine simulated social dilemmas in the laboratory and more complex real-life environmental choices that similarly involve choices between individual environmental exploitation and collective restraint, which could benefit all. The classical metaphor is the “tragedy of the commons” (Hardin, 1968; for reviews of research, see National Research Council, 2002).

The research on how groups manage “common-pool resources” is too extensive to be reviewed adequately here. It addresses the ways the ability to reach accepted and lasting collective solutions depends on such small-group variables as inequalities within groups (e.g., Olson, 1965; Bardhan et al., 2000; Bardhan and Dayton-Johnson, 2002), communication (e.g.,

Sally, 1995; Falk et al., 2002), other-regarding behavior, and the existence and identity of subgroups within deliberative groups (Kopelman et al., 2002).

Although studies of small-group discussions have not paid much attention to the conditions under which decisions are reached, they have considered whether a minority subgroup has greater influence on the ultimate decision by projecting unanimity without dogmatism and compromising late in the process, or by taking a rigid, uncompromising stance (Maass and Clark, 1984; Moscovici, 1980). Results have been inconsistent and may depend on the different tasks being studied. A number of studies indicate that numerical minorities are more influential when they argue for positions that do not appear self-interested and when they are perceived to share interests and norms with the majority (review of evidence in Turner, 1991).

### Improving Capacity for Future Decision Making

Researchers on small-group processes have given very little explicit attention to issues of capacity building, perhaps because this research has focused so strongly on single cases of actual or laboratory conflict, negotiation, or decision-making, rather than looking for developments over time. This research may nevertheless offer at least two sources of insight.

One comes from the presumption that decision processes that promote acceptable decisions might automatically improve the capacity for future decision making. This could happen because in the process of reaching a decision, negative feelings among participants are reduced, because participants have gained conflict management or participation skills, or because the experience of working cooperatively together on one issue increases participants' expectations that future cooperation will be possible. Thus, it is reasonable to hypothesize that participation processes that have such effects also build capacity.

The other source of insight comes from the research taking an evolutionary or historical approach to conflict and decision processes that considers the development over time of stable patterns of coordination or of institutional structures for governing relationships that have the potential for conflict. This includes theoretical studies (e.g., Richerson, Boyd, and Paciotti, 2002), experimental studies of repeated interactions in mixed-motive games (e.g., Axelrod, 1984), and historical studies of governance institutions that address the conditions for success, sustainability, and adaptive capacity in such institutions (e.g., Netting, 1981; Ostrom, 1990.) We note these lines of research for some future review, but do not attempt to review them here.

### Conclusions

Research on small-group processes suggests that the processes and context of deliberation can make a large difference in the results. With regard to the quality of decisions, deliberation seems to perform best when the process is focused on finding truth rather than choosing values—thus, that it may be easier to make a “good” decision when deliberating about the meaning of scientific information about an environmental choice (the strongly intellectual task of developing understanding) than when deliberating about which policy option to adopt (a more strongly judgmental task). It helps for groups to establish norms that favor eliciting and considering all available relevant information, to open themselves to outside influence, and to seek out information that is not shared all by group members. A good, unbiased leader can help

establish such norms. A rule of unanimity is useful in securing participants' attention to all information offered and also tends to improve participants' feelings about the group. Heterogeneous group composition poses special challenges to the quality of group process, but if these can be counteracted, it can promote better decisions than homogeneous groups tend to make. The research suggests that the challenges posed by heterogeneity and conflicts of values and interests may be more easily surmounted in groups seeking understanding than in groups making policy recommendations or decisions.

With regard to the ability of groups to reach acceptable decisions, research on perceived justice helps illuminate the ways that attributes of group process affect legitimacy. Participants' perceptions that they have a voice and are shown respect and that the leadership is consistent, unbiased, accurate, and correctable all affect the levels of conflict and emotionality in a group, and participants' judgments of fairness. The first set of variables combine in some way to affect perceived trustworthiness, which may be a cornerstone variable in a dynamic through which group process variables affect the acceptability of decisions.

Research on bargaining and negotiation has developed the provocative notion that the likelihood of reaching acceptable outcomes depends not only on structural factors such as the existence of competing interests, but also on factors that affect how people frame or perceive bargaining situations. A situation framed as a community discussion may be more likely to produce an acceptable solution than one framed as an authority or market relationship. It is not easy to impose a favorable frame, however. Participants bring different frames to negotiations, and there is an unfortunate tendency for the more adversarial frames to spread easily across participants, creating a negative emotions and making agreement more difficult. Power inequality is another challenge. When agreement seems especially difficult, third parties are often brought in to mediate or to train the parties in conflict management techniques. Research on interactive conflict resolution in international contexts may offer some insights for dealing with the most difficult situations.

The research on small-group process outside the environmental decision arena suggests that feelings of trust and related aspects of emotional climate are linchpins in the relationship between the conditions of group deliberation and the outcomes. Trust can be enhanced by leaders and procedures that are open to new ideas from whatever source, that treat participants with respect, and that are perceived as unbiased and open to correction. When lost, it is not easily restored by attention to accuracy; attention to procedural justice concerns seems more promising for this end. Groups with good levels of trust are more likely to arrive at acceptable decisions, and groups with attributes that foster trust, such as openness to new ideas, have an advantage in making good-quality decisions. Group heterogeneity, a history of mistrust or bad feelings, and an adversarial framing of the situation by even some participants all create challenges for group decision making that may require extra effort to overcome. These challenges may be more severe in groups facing decisions than in groups merely seeking understanding. This observation suggests that there may be advantages in performing these functions separately: if acceptable agreement can be reached on the nature of a decision problem, subsequent group decision making might occur in an improved climate.

#### Notes

1 Negotiation research also addresses contextual factors in bargaining situations and stable characteristics of participants, such as personality and cultural background. Personality and

cultural differences have not in general been strongly predictive of behavior in negotiations, though there is evidence that some stable characteristics associated with culture, such as an individualist or collectivist orientation, do affect the ways participants frame negotiation situations and thereby affect their behavior, and in the case of participants with different frames, their ability to understand other participants (see Bazerman et al., 2000).

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