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Nonviolent Protest and Third-Party Public Opinion:
A Study of the June 1978, Seabrook, New Hampshire, Antinuclear Power Protest

John P. Hunt and Neil H. Katz

Introduction

Political protest and nonviolent struggle have had a long history in the United States, dating back to colonial times. During the nineteenth century, nonviolence was associated with such causes as abolition, temperance, antimilitarism, and women's suffrage. More recently, the nonviolent tactics and strategies used in the civil-rights and antiwar movements of the 1950s and 1960s spawned similar activity on a diverse array of issues, including urban poverty, Native American rights, welfare reform, homosexuality, women's rights, and environmental pollution. Although many of these movements

have been chronicled and protest has been recognized as an effective method for influencing political and social policy, less is known about the ways by which protest operates to exert such effects.

One aspect of this process, the ability of protesters to influence third-party observers, forms the focus of the present study. Surveying the data collected shortly after the 1978 demonstration against the construction of the Seabrook, New Hampshire, nuclear power plant provides an opportunity to examine the views of local townspeople toward the antinuclear protesters. Specifically, this research addresses the following four groups of questions:

1 How did third-party observers view construction of the Seabrook nuclear power plant and how did they view demonstrations against construction in terms of legitimacy and appeal?

2 Did third parties perceive the protesters as immature troublemakers or as responsible citizens, and did third parties view the protest as mostly violent or mostly peaceful?

3 To what extent did the protest group's ability to contact the public and legitimize its issue increase its appeal? Furthermore, how were the protest group's abilities to contact the public, to legitimize its issue, and to generate public appeal interrelated?

4 How did the social and ideological backgrounds of third-party observers relate to the ways in which they perceived protest?

Citizen Participation, Nonviolent Action, and the Exercise of Political Influence

A substantial amount of research has taken place concerning the ways through which individual citizens participate in American politics (see, for example, Milbrath, 1965; Verba and Nie, 1972; Milbrath and Goel, 1977). In general, these analyses start from the premise that citizens act in politics in order to exert influence. Although some findings (Verba and Nie, 1972:299-333) have indicated that such participation does have an impact on policy decisions, power should not necessarily be assumed to follow from such activity. In their review of participation research, Robert Alford and Roger Friedland argue that conventional types of participation (i.e., voting, petitioning, contacting, campaigning, etc.) tend to be ineffective means for low-status social groups to influence political decisions. They write: "Participation by the poor is encouraged at points in the politi-

cal system where policy making does *not* take place, thus limiting the potential effects of participation to spasmodic challenges of the ways public policies are conventionally implemented" (Alford and Friedland, 1975: 464). Their inability to influence decisions through conventional means has caused some people to seek other, nonconventional ways for obtaining a voice in policy deliberation. One nonconventional method whereby low-status people have achieved influence on policy is through political protest and nonviolent direct action.

Several analyses have looked at political protest and nonviolent action techniques in terms of their ability to help groups obtain tangible political ends. James Wilson examined protest as a means through which groups can establish bargaining positions. He defined protest as "the exclusive use of negative inducements (threats) that rely, for their effect, on sanctions which require mass action or response" (Wilson, 1961:292). Through these means, otherwise powerless groups can obtain the necessary power with which to bargain with more powerful adversaries. Gene Sharp sets forth a theory of nonviolent action based on the view that "power is pluralistic, and that political power is fragile because it depends on many groups for reinforcement of its power sources" (Sharp, 1973:18). From this theoretical basis, Sharp argues that nonviolent action offers a concrete response to the problem of how to act effectively in politics, especially how to wield power effectively.

One of the ways through which nonviolent action confers power onto its users is through its activation of third-party sympathy, support, and, at times, active participation on behalf of the grievance group. Sharp refers to this process, in which nonviolent action operates to turn the power of a stronger opponent against itself, as political jujitsu. Due to political jujitsu effects, according to Sharp, "wider public opinion may turn against the opponent, members of his own group may dissent, and more or less passive members of the general grievance group may shift to firm opposition" (Sharp, 1973:658).

Other researchers have reached similar conclusions concerning the importance of third-party opinion in determining the outcome of nonviolent struggle. Louis Kriesberg writes that "insofar as one side can garner support from previously uncommitted groups, it has a better chance of getting the outcome it seeks" (Kriesberg, 1973:226). Irving Janis and Daniel Katz (1959) point to favorable attitude changes among spectators as an important aspect in the operation of nonviolent struggle. According to Michael Lipsky (1968), the activation of third-party leverage is the pri-

mary means through which protest groups can exert influence. Sidney Perloe et al. (1968) discuss a number of psycho-sociological mechanisms through which nonviolent action can produce favorable attitude changes among both participants and observers. Finally, Neil Katz and John Hunt (1979) found third-party opinion change to have exerted significant influence in the resolution of a nonviolent conflict in Albany, Georgia.

Thus the use of political protest and nonviolent direct action is one of the ways challenging groups in American society can obtain political influence. In addition, the literature suggests that one of the more important mechanisms by which nonviolent action operates to confer power upon its users is through its impact on third-party observers and public opinion.

The Public Perception of Political Protest

Ralph Turner (1969) has suggested five factors that are useful in explaining the ways in which people perceive public events. These include perceived credibility, appeal and threat messages, conciliation, coalition, and bargaining. Concerning credibility, Turner states that for observers to perceive protesters as credible, those taking action must be seen as part of a group whose grievances are already well documented, who are believed to be individually or collectively powerless, and who show some signs of moral virtue that render them deserving. Perception of appeal and threat messages, according to Turner, involves combinations of personal involvement, proximity, and the ability to perceive the events realistically. Conciliation, coalition, and bargaining all concern third-party assumptions about the existence of a conflict situation and the grievance group's ability to project itself as an influential actor.

Marvin Olsen's (1968) analysis of data from a 1965 Ann Arbor, Michigan, survey found that educational attainment and two measures of political alienation (political incapability and political discontentment) were related to the acceptance of social protest actions. A curvilinear relationship existed between education and approval of protest with the level of approval increasing with greater amounts of education until a point was reached where it leveled off. On both alienation measures, the less alienated showed more acceptance of protest. In their 1971 publication, Vincent Jeffries and his colleagues developed and tested measures of protest definition, credibility, appeal, threat, and conciliation. Their findings are most consistent and strongest in the case of credibility theory involving

a sensitizing experience or predisposing ideology (Jeffries et al. 1971:450).

In a different study of the credibility of protest, David Altheid and Robert Gilmore (1972) examined survey data concerning reactions to a student demonstration in Colorado. They found support for Turner's contentions that perceived credibility increases the willingness to evaluate a group's actions as protest. Employing a similar analytical framework, Franklin Wilson and Robert Day (1974) found perceived threat to be the most important variable mediating protest interpretation. In their examination of survey data collected in the United States and Sweden, Marvin Olsen and Mary Anna Baden (1974) concluded that education, age, media exposure, association participation, and political efficacy are all positively related to the willingness to grant legitimacy to protest activities. Finally, Stan Kaplowitz (1977) presented national survey data findings concerning the influence of moral considerations on the perception of civil-rights actions. His results show that as the perceived morality of an action increases, so too does the perception that it will help the actors achieve their goals.

In sum, the above literature suggests that the public perception of political protest depends on a number of factors. The ability of the protest group to project appeal and legitimacy to its actions are the most immediate precursors of a favorable view toward the protest. However, predisposing ideologies and favorable social positions vis à vis the protest group may also help sway third parties to the grievance group's side during the course of a protest action.

The Seabrook Study

During the weekend of June 24, 1978, an antinuclear power demonstration involving approximately four to six thousand protesters, and at times up to fourteen thousand other participants, occurred at the site of a nuclear power plant in Seabrook, New Hampshire. Organized by the Clamshell Alliance, an umbrella organization of New England area antinuclear power groups, the June 1978 demonstration was the largest antinuclear power protest in North America up to that time.

After reaching agreement with the State of New Hampshire and the Public Service Company of New Hampshire to hold a weekend rally and alternative energy fair (open to the public on Sunday, June 25), Clamshell Alliance protesters occupied an eighteen-acre parcel of land adjacent to the

Seabrook nuclear plant. Following the weekend actions, the demonstrators peacefully left the Seabrook site, thereby upholding the controversial negotiated settlement and contradicting claims of opponents that the Clamshell Alliance could not keep its "lawless mobs" from initiating violence. [1]

In order to assess the impact of this nonviolent action on local public opinion and to explore the public perception of protest, a telephone survey was conducted between June 28 and July 11, 1978, using a random sample of residential listings drawn from the Seabrook area telephone directory. Interviewers spoke to one person eighteen years old or over at each phone number, attempting to maintain an equal sex ratio among respondents. The original sample of 242 residential listings yielded 144 complete interviews (completion rate = 60 percent).[2]

Table 1
Percentage Distributions for Items Measuring the Perception
of the Protest Issue and Events

Questions	Responses	Percent*
Would you say that the recent actions taken by the Clamshell Alliance in Seabrook have been violent, have most of them been peaceful, or have some been violent and others peaceful?	(1) Most violent	0.0
	(2) Some violent, some peaceful	16.9
	(3) Most peaceful	83.1
Would you describe the recent actions of the Clamshell Alliance at the nuclear power plant site in Seabrook as	(1) an attempted revolution	0.9
	(2) a rebellion against authority	1.5
	(3) a few troublemakers causing trouble	0.0
	(4) a bunch of people out to have a good time	4.4
	(5) a demonstration or protest	93.2
Do you strongly favor, favor, oppose, strongly oppose the construction of a nuclear power plant in Seabrook, or do you feel neutral ?	(1) strongly favor	5.9
	(2) favor	22.6
	(3) neutral	32.8
	(4) oppose	19.0
	(5) strongly oppose	19.0

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Questions	Responses	Percent*
Do you think that the recent actions taken in Seabrook by the Clamshell Alliance have on the whole helped their cause or hurt their cause?	(1) helped	58.3
	(2) helped some, hurt some	11.8
	(3) hurt	17.4
The recent actions taken by the Clamshell Alliance have made local people more opposed to the construction of the Seabrook nuclear power plant. Do you	(1) strongly agree	5.3
	(2) agree	37.0
	(3) feel neutral	28.0
	(4) disagree	21.2
	(5) strongly disagree	4.5
The Clamshell Alliance has stimulated local people to take action against the Seabrook nuclear power plant. Do you	(1) strongly agree	9.6
	(2) agree	40.0
	(3) feel neutral	20.7
	(4) disagree	24.4
	(5) strongly disagree	1.5
The Clamshell Alliance does not have respect for the law. Do you	(1) strongly agree	0.7
	(2) agree	5.9
	(3) feel neutral	12.6
	(4) disagree	59.3
	(5) strongly disagree	17.8
In their opposition to the Seabrook nuclear power plant, the Clamshell Alliance has a legitimate grievance. Do you	(1) strongly agree	23.1
	(2) agree	51.5
	(3) feel neutral	11.2
	(4) disagree	8.2
	(5) strongly disagree	1.5
The Clamshell Alliance has sincerely attempted to use legal means in its efforts to stop construction of a nuclear power plant in Seabrook. Do you	(1) strongly agree	18.7
	(2) agree	49.3
	(3) feel neutral	15.7
	(4) disagree	6.0
	(5) strongly disagree	0.7

*Not sure, no opinion, and "refuse" responses are not presented; thus, percentages may not total 100.

These results show that the Seabrook area residents in our sample tended to oppose more than favor the construction of the nuclear power plant. With regard to their perception of the protest events, 83.1 percent of the respondents saw them as mostly peaceful. Similarly, an overwhelming majority of the people in our sample called the actions a demonstration

or protest as opposed to an attempted revolution, a rebellion against authority, or a bunch of people out to have a good time. These findings are in stark contrast to Clamshell's opponents' characterization of the demonstrations and the findings of David Altheide and Robert Gilmore (1972) who reported much less acceptance of a student protest.

Regarding appeal, a majority of our sample thinks that "the recent actions taken in Seabrook by the Clamshell Alliance have on the whole helped their cause." Almost twice as many agree or strongly agree, rather than disagree or strongly disagree, that "the recent actions taken by the Clamshell Alliance have made local people more opposed to the construction of the Seabrook nuclear power plant." To the statement "The Clamshell Alliance has stimulated local people to take action against the Seabrook nuclear power plant," third parties answer "strongly agree" or "agree" about twice as often as they disagree or strongly disagree.

Third parties tend to rate the Clamshell Alliance high on questions concerning legitimacy. Over 77 percent disagree or strongly disagree with the statement, "The Clamshell Alliance does not have respect for the law." Almost three-quarters of the respondents agreed or strongly agreed that "in their opposition to the Seabrook nuclear power plant, the Clamshell Alliance has a legitimate grievance." Finally, by a more than ten to one margin, respondents agree or strongly agree with the assertion that "the Clamshell Alliance has sincerely attempted to use legal means in its efforts to stop construction of a nuclear power plant in Seabrook."

Bivariate correlations among the two dependent variables (attitude toward the protest actions and attitude toward the Seabrook plant), the intervening social, psychological, and political orientations, and the independent demographic variables are presented in table 2. Among the four demographic variables, only age and sex show significant relationships with any of the measures of the perception of protest issues and events. For these variables, the bivariate results suggest that opponents of constructing the plant tend to be female ($r = .20$), and that younger respondents experience greater appeal ($r = -.20$), had more contact with the protest organization ($r = -.19$), identify more strongly with the Democratic than with the Republican party ($r = -.24$), and hold more liberal ideology positions ($r = -.23$).

Legitimacy possesses the strongest bivariate relationship with view toward the plant ($r = .42$). Appeal ($r = .32$), ideology ($r = .32$), contact ($r = .21$), and party ($r = .19$) also hold significant correlations with this variable. These results indicate that opponents of the plant tend to be

female, politically liberal, to have had contact with the Clamshell organization, have considered the protest legitimate, and have received some appeal from the actions.

For appeal, these bivariate results suggest connections to high legitimacy (r = .33), contact (r = .19), and a Democratic party orientation (r = .16). Results for legitimacy show correlations with contact (r = .21) and liberal ideologies (r = .25). In addition, contact also correlates with liberal ideologies (r = .20), as does Democratic partisanship (r = .26).

Table 3 sets out multiple regression coefficients for attitude toward the Seabrook plant, legitimacy, and appeal. These measures provide a view of the impact of each independent variable on the dependent variables while controlling for other variables. In addition, the R^2 provides a measure of how much of the variation in each dependent variable is explained by a set of independent variables. These multiple regression findings indicate that women and political liberals tend to oppose the plant more than men and conservatives. In addition, both appeal and legitimacy have significant impact on view toward the plant. Contact, however, has only an indirect

Table 2
Zero-Order Correlation Coefficients for Social and
Political Position, and Perception Variables*

Attitude toward

Plant (X₁)	X_1	X_2	X_3	X_4	X_5	X6	X_7	X_8	X_9
Appeal (X₂)	.32[3]								
Legitimacy (X₃)	.42[3]	.33[3]							
Contact (X₄)	.21[1]	.19[1]	.21[1]						
Party (X₅)	.19[1]	.16[1]	.10	.03					
Ideology (X₆)	.32[3]	.12	.25[2]	.20[1]	.26[2]				
Social Class (X₇)	-.04	-.11	.00	.06	-.06	.03			
Age (X₈)	-.09	-.20[1]	-.15	-.19[1]	-.24[2]	-.33[3]	.03		
Education (X₉)	-.02	-.02	.12	.14	-.01	.08	.27[2]	-.21[1]	
Sex (X₁₀)	.20[1]	.12	.02	-.05	-.14	.20[1]	.03	-.03	-.07

[1]Significant at 0.05 level.

[2]Significant at 0.01 level.

[3]Significant at 0.001 level.

*N= 122.

impact on attitude toward the Seabrook plant, through its effect on legitimacy.

In addition, the data show direct linkages between age and ideology and age and appeal. Younger respondents tend both to be more liberal and to perceive more appeal from the protest events. Respondents' ideological orientations influence their degree of contact with Clamshell activities and their willingness to grant legitimacy to the protest actions. Further, the regression results indicate that contact with the Clamshell organization influences the degree of perceived legitimacy, and that increased legitimacy engenders increased appeal.

Table 3
Standardized Multiple Regression Coefficients for Predicting
Perceived Legitimacy, Appeal, and Attitude toward Plant*

Dependent variable:		Legitimacy	Appeal
Independent variables:	Sex	-.017	.122
	Age	-.051	-.168[1]
	Ideology	.199[2]	.004
	Contact	.161[1]	.166[1]
	R^2	.090	.082
Dependent variable:		Attitude toward Plant	Attitude toward Plant
Independent variables:	Sex	.153[1]	.137[1]
	Age	.036	.082
	Ideology	.263[3]	.201[3]
	Contact	.172[2]	.094
	Legitimacy		.306[3]
	Appeal		.175[2]
	R^2	.146	.288

[1]Significant at 0.05 level.

[2]Significant at 0.01 level.

[3]Significant at 0.001 level.

*N= 122; class identification, education, and party had no significant betas and were dropped from the analysis.

Discussion and Conclusions

For the most part, the data presented in the above section support and further refine the general conclusions for the public perception of protest discussed earlier. Consistent with Olsen and Baden (1974), age plays an important role in the way people perceive protest. The present data do not, however, point to education as having a significant role. Possibly this is due to the fact that nonviolent struggle had been going on in Seabrook for over two years and the protest group had affected people at many different educational levels. The finding that women tend to oppose the plant more than men follows findings by Allan Mazur (1975) that women were more likely than men to oppose technological innovations.

Among the intervening psycho-sociological variables, legitimacy emerged as the central factor. It had the strongest impact on appeal and on attitude toward the Seabrook plant and is in turn significantly influenced by both ideology and contact. Indeed, we have a contact-legitimacy-appeal hierarchy. Thus, along the lines of both Turner (1969) and Wilson and Day (1974), the ability of protesters to move third-party observers revolves largely around their ability to convey credibility and legitimacy to their actions. This finding also supports Stan Kaplowitz's (1977) conclusion that the perceived morality of an action influences the perception that it will help the actors achieve their goals. That political liberals are more likely than conservatives to view the protest as legitimate follows from a similar finding by Jeffries et al. (1971). A new finding in the present study is that contact with the grievance group through literature and personal discussion does influence the tendency to view protest action as legitimate.

In general, the data presented in this paper suggest that the Seabrook protest did have an impact on local public opinion. Although respondents were fairly evenly divided on support or opposition to the plant, they viewed the demonstration as mostly peaceful and rated the protesters and their actions high on measures of appeal and legitimacy. The protest group's ability to convey both a sense of legitimacy and appeal is the most important factor mediating a favorable issue evaluation. Thus, the data demonstrate the ability of nonviolent action to influence third-party behavior and attitudes and suggest that political protest may operate most effectively when it can be interpreted on a broad scale as credible and supporting a legitimate grievance.

The importance of ideological orientation suggests that grievance groups would do well to take into account the types of appeal their actions

will have to people from different political viewpoints. In the data presented here, people with liberal ideologies were more favorably influenced by the protest actions. The data, however, do not supply sufficient information from which to judge whether holding a liberal ideology connects more to approval of protest in general or to the approval of the specific protest issue. Were the latter the case, we might expect conservatives to incline more favorably toward protest used to pursue goals more in line with a conservative orientation.

In addition, the findings point to a highly significant role for contact. Particularly, the interrelationships among ideology, contact, and legitimacy suggest that contact with the activist group may act to reinforce and strengthen ideological predispositions toward perceiving protest actions as legitimate. The results indicate that persons with predisposing ideological orientations in support of the protest issue tend to experience greater contact with the activist group. People so contacted, in turn, more often view protest activities as legitimate. The importance of contact in this linkage between ideology and perceived legitimacy suggests that grievance group actions of a grassroots nature can have a significant impact.

In conclusion, four points deserve mention. First, in general, third parties viewed the Seabrook protest favorably in terms of legitimacy and appeal. Second, in the explanation of the public perception of protest, these data indicate that perceived legitimacy plays the most crucial role. Third, important linkages among ideology, contact, legitimacy, and appeal suggest that protest groups would do well to place emphasis on direct contact with third-party observers. Fourth, protest issues may attract support from particular population segments (in this case, women and youth). Thus, when examining or planning protest, researchers and activists should consider the multiplicity of factors that influence a favorable impression of protest by third parties.

Notes

1 For a discussion of the controversial negotiated settlement (commonly referred to as "the Rath Agreement,") and for a discussion of Clamshell's opponents' predictions of violence, see Katz and List, 1981.

2 The full breakdown on completion rate is as follows: complete or partially complete—60 percent (N= 144); no answer—6 percent (N= 14); refusal—34 percent (N=84). Towns in New Hampshire and Massachusetts from which listings were drawn included Amesbury, Byfield, Newbury, Newburyport, Plum Island, Seabrook, and West Newbury. The

authors would like to thank Christopher Kruegler, David Goldsman, and David List for their help in the data collection phase of this project.

For the most part, our sample appears relatively representative of the Seabrook area population as it was measured in the 1970 census. Women, older people, and more educated people appear slightly overrepresented.

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Afterword

James C. Petersen

The dozen chapters in this work provide both theoretical assessments and empirical accounts of the diverse means by which citizens may attempt to influence issues with strong scientific or technical components. Some of these means are highly formalized, including the legislative hearings discussed by Jane Kronick, the governing boards of Health Systems Agencies reviewed by Barry Checkoway, and the devices—such as litigation, referenda, public hearings, and advisory boards—examined by both Dorothy Nelkin and Sheldon Krimsky. Others are more emergent, as in the grassroots Chipko protests described by Jayanta Bandyopadhyay and Vandana Shiva or in the Seabrook antinuclear demonstration studied by John Hunt and Neil Katz. A few of the mechanisms remain proposals that have yet to receive a full trial. Among these are Frederick Rossini

and Alan Porter's notion of adversary technology assessment and such approaches as the science court and citizen court.

It seems clear that many of the authors expect the demand for significant citizen input in policy making on scientific and technical matters to intensify. Despite the traditional hostility of those who have dominated the science policy process toward public involvement, the authors perceive a broad and growing base of support within society for citizen participation in this sector. Among the sources of this support are the public's changing image of science and expertise, the increased recognition of the risks posed by technology and by some scientific inquiry, and the expectations developed by citizen participation programs and participatory movements in other sectors of society. Some political leaders and scientists have also contributed through the public interest science movement, through recognition of the contributions that citizens can make to problem identification, and through pragmatic acceptance of the need for greater public involvement to attain increased legitimacy for policy decisions.

Twenty years ago sociologists were describing faith in science and rationality as a dominant American value. Today, many Americans are agnostics, if not nonbelievers, on the question of whether science will save us. With increased recognition that science and technology produce significant risks along with their obvious benefits, the view that those who bear the risks should have a say in the decisions that create them has attracted many supporters. The rise of "big science" with huge expenditures of public funds creates a further justification for a more democratic decision-making process.

This intensified demand for citizen input has the potential of yielding real benefits for science, technology, and the larger society. At the same time, we should acknowledge, as I and several other authors have done in our chapters, that public involvement can carry with it costs in the form of delay and unwise decisions. Still, the benefits clearly outweigh these risks. Krimsky and Diana Dutton have provided extensive analyses of the justifications for public involvement and the common arguments used to limit public access. That in a democratic society one is still compelled to develop justifications for citizen participation in decisions that are of great importance to much of the public is itself an indication of the extent to which technical experts continue to dominate the resolution of science-related issues.

The central argument against citizen participation in issues of a scientific or technical nature, although often cloaked in more muted tones, is that

such decisions must be left to technical experts because the issues are too complex and the public too ignorant. Such statements are a convenient justification by those who currently dominate decision making and wish to retain power. As several of the chapters point out, the boundaries between the technical and the political are, at best, indistinct in many technical controversies and science-related issues. Furthermore, citizens have shown remarkable capacity to deal successfully with highly complex issues. The Cambridge (Massachusetts) Experimentation Review Board that examined the public health hazards of recombinant DNA research is but one example. This citizen review board, described by both Krimsky (a member of the board) and Dutton, contained no practicing scientists; at the beginning of their deliberations most members knew nothing about recombinant DNA work. The report issued by the board after much self-education, presentation of expert opinion, and debate, has been widely praised for its intelligence and fairness.

The argument that nonscientists are unable to understand the issues in questions of science policy seems weak in light of the Cambridge experience. In any case, this argument is reminiscent of the attacks on the ability of the public that have always been made by those uncomfortable with democracy. As both Krimsky and Dutton point out, the participatory process provides numerous opportunities for citizens to gain knowledge and expertise. Democracies may never attain a fully informed electorate. Still, the pursuit of such a goal yields benefits for society, and the actual gains in knowledge made by individual citizens represent significant accomplishments.

It is unrealistic to demand that meaningful citizen input on science-related issues be postponed until all the public is fully equipped to handle such matters. Furthermore, such delay is unnecessary. Segments of the public are currently well informed, and the number of knowledgeable citizens can be increased through improved science education and science journalism, through greater availability of technical assistance for citizens, and through many of the participatory mechanisms described in this book.

Even in the absence of such actions, citizen participation has often helped to reshape policy questions. This book is replete with accounts of such successes. For example, Randy Rydell observes that public participation has been critical in producing a reexamination of the assumptions underlying American policies on nuclear development and control, and Dutton describes how public input on a series of biomedical issues has broadened and humanized health policy. No one could read this book,

however, and see all the cases described as success stories for citizen participation. Several of the accounts depict processes that largely excluded the public or mechanisms for input that were clearly inadequate.

If there is great unanimity on the desirability of greater public participation, there is much less certainty that a democratic science and technology policy can actually be achieved. Kronick's account of the role of public interest groups in legislative hearings on nuclear power development makes clear that the hearings have been manipulated in order to contain debate and restrict the policy impact of these groups. In his examination of Health System Agencies, Checkoway notes that even though consumers have a legal right to a majority of positions on each HSA board, effective control of these boards has often been seized by health-care providers. Rachelle Hollander's description of the short-lived Science for Citizens experiment points to the tenuous support for many participatory mechanisms. While a number of the authors remain optimistic that effective mechanisms for citizen input can be developed, none would expect those who have monopolized decision making on science and technology policy to welcome limitation of their power.

Increased recognition of the social costs attached to exclusion of the public may, however, help to bring about change. In his chapter on the United States's "War on Cancer," Daryl Chubin suggests that manipulation of the public has provoked anger and cynicism resulting in intense public criticism of current health policy. Kronick's analysis of hearings on nuclear power development demonstrates that the restriction of public interest group participation resulted in a nuclear policy that paid scant attention to the risks of nuclear power or to related issues of responsibility for accidents and reimbursement for damages. These examples, along with others provided in the book, make it clear that societies often pay high prices for practices that limit policy decisions to technical experts.

To be effective and meaningful, citizen participation must have certain characteristics. The public must be able to enter the decision-making process at an early stage. Too often citizen input follows the public hearing model, where citizens are provided with a setting in which to react to a decision that has already been made. Such procedures severely circumscribe the options of the public and may make it impossible to introduce issues of central concern. Participation of this type is often only symbolic and may contribute to increased public cynicism.

Furthermore, meaningful citizen participation requires that all segments of the public have the opportunity to participate in the policy formulation

process. Outreach efforts will be necessary to ensure participation by the poor and minorities. Care must be taken that the location or scheduling of meetings does not exclude whole segments of a community.

In some instances, technical assistance will be necessary to provide citizens access to existing scientific knowledge and to collect and analyze new data. The NSF-funded public service science centers described by Hollander provide a useful model of how such technical assistance could be provided. With the elimination of federal funding for these centers, however, new sources of support or new approaches to technical assistance will have to be found.

Finally, participatory mechanisms that provide citizens with real opportunities to influence the resolution of science-related conflicts must be institutionalized. A certain amount of citizen input will always have a spontaneous and emergent character. Scientific and technical change occurs too fast, however, to permit citizens to create a new participatory structure for each issue that must be faced. If the public is to have early and regular access to the decision-making process, the mechanisms for this input must be in place. No challenge facing citizen activists is of greater significance than the establishment of such structures.