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SOME OBSERVATIONS ON ALTERNATIVE MECHANISMS FOR PUBLIC INVOLVEMENT: THE HEARING, PUBLIC OPINION POLL, THE WORKSHOP AND THE QUASI-EXPERIMENT

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When trying to respond to public needs and requirements for public involvement the natural resource manager is hard pressed to determine the most effective means to obtain such input. Large scale efforts to discover public sentiment may be expensive and time consuming and may yield little new information. On the other hand, failure to involve the public may seriously misguide projects or lead to delays and increased costs if a project is halted by court or administrative actions. The goal of this paper is to review several alternative mechanisms for public involvement and to discuss their strengths and weaknesses to help managers choose the technique most useful for their needs. The analysis will be qualitative, based on observation of both public and private attempts at public involvement and on the relatively meager secondary sources available.

Two things ought to be noted at the outset. Public involvement will not make the decision for the manager. If anything, the competing and conflicting desires illuminated by citizen involvement are likely to make decisions even more difficult. Second, even in the absence of formal mechanisms for direct involvement, such as public hearings, decisions are not made independently of the public will. Agency mission and funding are established by pluralistic processes at the legislative level where competing interests of established groups are taken into account. When the agency's mission is stable and well defined and when public values are stable and interest groups established, this level of public involvement is probably optimal. Public sentiment also affects policy through the roles played by the decisionmaker. As a member of society, the manager is aware of public opinion directly and has internalized the major norms and values of society. In a general sense this will define broad policy directions and suggests changes where relevant. He is also subject to interpersonal "lobbying" from friends, family, coworkers and others. While the manager's own opinion is not necessarily a good indicator of public opinion nor a good predictor of his actual intentions,¹ he nevertheless will have some "feeling" for public opinion.

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1. G. White, *Formation and Role of Public Attitudes*, in *Environmental Quality in a Growing Economy* (H. Jarrett ed. 1966).

This paper is primarily concerned with citizen involvement in the execution of a specific project or policy. This kind of involvement tends to be managed by the agency, rather than the legislature, and is usually what is meant by the term "public involvement." The demand for this sort of public involvement does not occur with regard to all matters that affect the public. In fact, there is usually very little such demand. As Reidel has pointed out, "There is no widespread clamor for an expanded public role in fixing standards for the licensing of surgeons or plumbers, even though these matters touch the lives of most people at one time or another."² Under what circumstances is it demanded? According to Reidel, "Concern for participation arises almost entirely in the context of real or imagined failure of government to respond appropriately to the more competitive needs and demands of citizens, some of whom feel that the response would have been more satisfactory had their values been given and assured their hearing. In short, the real issue connotes criticism of the existing system of representation."³

This same issue can be expressed in terms of trust. As long as individuals trust the decisionmaker to act in their best interest, they have no need to participate; however, as trust erodes, the demand for participation tends to increase.⁴ The public trusts that those who set standards for plumbers and surgeons will act in their best interests and, thus, feels no need to participate.

In natural resource related decisions there seem to be two factors which reduce the level of trust and lead to an increased demand for public participation. The first of these is the variety of potentially conflicting uses of a natural resource. Almost any decision will leave some group feeling that the organization did not respond to their needs. In Wisconsin the Department of Natural Resources (DNR) to meet this demand for public participation has evolved more techniques than any other state agency. Among these are the DNR Board appointed by the Governor, 25 citizen advisory councils to offer guidance on selected programs, a conservation congress with elected members from each county and several in-house hearings examiners who conducted 179 formal public hearings in the last year alone.⁵

The second factor inducing participation in natural resource related decisions is the rapid change in public values associated with the environmental crisis. New nontraditional interest groups have

2. Reidel, *Citizen Participation: Myths and Realities*, 32 Pub. Ad. Rev. 211-219 (1972).

3. Reidel, *supra* note 2.

4. W. Gamson, *Power and Discontent* (1968).

5. Interview with W. Blumquist, Wisconsin Department of Resources, 1974.

recently emerged with little trust that the administration will act in their best interest. Moreover, the policies affecting them had been worked out in the legislative-agency interaction long before their emergence; hence, the pluralistic mechanism was not sufficiently responsive to their needs. The managers themselves did not come from these interest groups and were not viewed by the participants as being responsive or even knowledgeable about their perspective.

It is likely that this demand for direct citizen involvement will decrease as agencies and institutions begin to respond to these new interests, consult with them informally at the beginning of any plan, and learn their positions, goals and constituencies. When the new interests are accommodated in a similar manner as established groups, they will become involved in the pluralistic process at the legislative level, and the demand for direct citizen involvement should decrease.

In the meantime agencies have been hard pressed to develop more effective techniques for public involvement. The goal of this paper is to review the strengths and weaknesses of three different approaches: the public hearing, the public opinion survey and quasi-experimental methods. None of these is without its own set of problems. Their utility depends on time, money and the role such information will have on an actual decision. There are at least four criteria of effectiveness which may be used to evaluate the adequacy of any method: 1) The individuals involved should be representative of all groups affected; 2) The individuals involved should be well informed, with knowledge of implications and alternatives; 3) The method should be interactive (i.e. action, response, reaction); 4) Where possible, input should be based on actual experience and behavior.

THE PUBLIC HEARING

When there is a demand for public involvement in a project or a legislative mandate for such involvement, the kneejerk reaction is to hold a public hearing. The public hearing is a traditional, ubiquitous and ill-understood institution in American society. Public hearings take place in all sectors of government—state, local and federal—and have been an important means of communication between legislators and the public.⁶ It appears that open meetings between agency

6. Given this, it is incredible how the hearing as an institution or a process has been neglected by social scientists. There appears to be almost no literature on the distribution of hearings, who attends hearings, who participates, the style of participation or the impact of such participation. This is particularly striking in contrast to the vast literature on voting behavior. While hearings are much more frequent than elections, they have not received nearly the scholarly attention. Given this lack of research, the observations in this paper

personnel and the general public, which fall under the rubric of public hearings, have four distinct functions. These functions may overlap, and a single meeting may serve multiple functions to varying degrees; however, it is usually possible to identify a single dominant function from among them.

The *informational function* is served when a public hearing is a meeting where the local citizens are informed about the nature of the project. At such a meeting a presentation is made, often with slides and pictures showing the project, describing the nature and extolling proposed advantages of the project or policy. The public is given an opportunity to ask questions. In an informative hearing the decisionmakers are telling the public about their program and explicitly have no plans to react to public opinion and concern.

A second function which has been observed by Burke⁷ and Selznick⁸ is “. . . to involve citizens in an organization in order to prevent anticipated obstructionism. In this sense citizens are not seen as a means to achieve better planning goals nor are they seen as partners in assisting an organization achieve its goal; rather they are viewed as potential elements of obstruction or frustration whose cooperation and sanction are found necessary.”⁹ This process, called cooptation, usually involves citizen representation on boards or committees. But in a somewhat loose way the term fits the hearing process as well. A public hearing serves a *cooptation function* when the goal of the hearing is to let irate citizens and interest groups let off steam and complain about the project. The posture of the decisionmakers may be one of responsiveness. While it is implicit that public input will have no impact on the program or policy, people are formally given a chance to have a say, so they may not take the agency to court for failure to provide public involvement. By attending and presenting their case to an unresponsive agency, the opposition has been unwittingly coopted into serving the goals of the agency. They have lost the future opportunity to claim that their views have not been heard.

A third function of the public hearing is the *ritualistic function*. A hearing has this function when it is required by law or administrative code, but there is no general demand for public involvement. The action to be reviewed is often minor, and either no one shows up or only those who have a direct interest in the project attend. This is

should be viewed as an attempt to specify the relevant issues rather than an exhaustive analysis of the hearing process.

7. Burke, *Citizen Participation Strategies*, 34 J. Am. Institute of Planners, 287-294 (1968).

8. P. Selznick, *TVA and the Grassroots* (1963).

9. Burke, *supra* note 7, at 291.

similar to the ritualism in a wedding ceremony where the minister asks for any who can show cause why the ceremony should not take place to come forward. No one expects or anticipates public involvement.

The fourth function a public hearing can serve is an *interactive function*. A hearing serves this function when the agency tries to use the hearing to discover what the people want and to respond to the needs of the people as expressed in that hearing. Here, what is said and done by the public at the hearing is likely to have a major effect on action. In this case the agency is explicitly committed to determine public needs and to respond to these needs. This is often regarded as the ideal function of a public hearing, but it is rarely an accurate description of how a hearing works.

The most serious problem of the public hearing is that views presented are likely to be unrepresentative of the range of individuals who are affected by the project. Analyzing the participation at a 1967 hearing on Wisconsin river water quality, Fox and Wible concluded, “. . . waste dischargers had a much more active voice in the process by which the standards were established for the Wisconsin River than any other nongovernmental group.”¹⁰ Gilbert White, reflecting on the role of public opinion in environmental quality, made a similar observation—“. . . the hearing procedure tends to reflect only the known views of well identified members of interest groups.”¹¹ To the degree that these interest groups are part of the established clientele of the agency, the public hearing is unlikely to shed new light on decisions. The function of the hearing will be ritualistic.

There is a set of sociological and psychological factors which influence the biased representation at public hearings. These involve knowledge and motivation. The individual who believes the issue affects him, has knowledge of the time and location of the hearing, is free from competing demands, views himself in a responsible role, is knowledgeable about the project and believes his presence will have an impact will be likely to attend a hearing. The general public is less likely to be aware of the time and location of the public hearing than an interest group which is more closely tied into the agency communications net. Hearing notices are usually obscure. Moreover, the interest group has a clear idea of what actually affects it, while the individual citizen has many more concerns than water quality standards or flood plain zoning.

10. Fox & Wible, *Information Generation and Communication to Establish Environmental Quality Objectives*, 13 Nat. Res. J., 134-149 (1973).

11. G. White, *The Role of Public Opinion*, in *Environmental Quality and Water Development* (McGoldman ed. 1973).

Competing demands on an individual's time and role requirements may also affect attendance. In the hearing that Fox and Wible described, the recreation interests may have been underrepresented because the hearing was held during the Wisconsin deer hunting season. We may ordinarily assume that the general public has to work during the weekdays and that these demands limit their ability to participate in a hearing scheduled during normal working hours. It is notable that at the hearing described by Fox and Wible, the participants were performing in work related roles. The industrialist who is working attends the hearing. The recreationist is at work also, but his work related activities do not include attending hearings to protect his nonwork related interests. Hearings during working hours tend not to reflect such nonwork concerns. In Wisconsin, for example, of 170 formal hearings held by the DNR from June 18, 1973, to June 17, 1974, all but two were held between 8 a.m. and 5 p.m. on weekdays.

Finally, representatives of an interest group are likely to be more knowledgeable about the project and accurately believe that the agency will be responsive to their input. The private citizen is knowledgeable about his own feelings toward the project but is often uninformed about technical details and other implications of the proposal. Moreover, it is not unreasonable for him to feel that his individual input will have no effect.

These factors not only limit attendance at a hearing; they also limit participation. Most people at a public hearing do not participate. Under normal circumstances people tend to communicate with each other face to face, either individually or at most in a small group. Standing up at a hearing in front of an audience and giving an oral monologue to a board of hearing examiners is not an everyday occurrence for most people, who are naturally reluctant to make an appearance. The lack of participation by private citizens in the hearing room is in great contrast to the flurry of activity which takes place in the hallways during coffee breaks or in nearby bars or homes after the hearing. It seems that many who have sufficient motivation to attend would be quite willing to participate if the setting were less intimidating.

Since those who do participate are few, it is probable that they will be different from society as a whole. From observation at hearings it appears that there are at least three identifiable groups who participate. First are the professional experts: lawyers, engineers, professors, legislators and others who represent the interests of established groups. They are not intimidated by the setting and generally

contribute high quality information. The second group are those private citizens who have sufficiently high motivation to overcome the inertia of the setting—individuals who are directly and severely affected by the project or policy. The third group is composed of individuals who are not particularly aware of the behavioral norms of the hearing or, if aware, are not intimidated by these norms. The testimony from this third group tends to be long, rambling, often impassioned and generally of low quality.

Biased representation is most serious when the hearing has an interactive function. It is of little consequence when the hearing is a ritual, a slight problem when the mission is cooptation and of greater significance when the function is informational, since the appropriate public may not get the message. However, when the agency is trying to be responsive to the public and an unrepresentative public shows up, the resulting decisions may be contrary to the interests of the broader group.

An example of this interaction may have occurred recently in Wisconsin when the DNR began to develop administrative rules to regulate animal waste disposal.^{1 2} A fifteen-member panel of farmers, water quality experts and politicians developed a set of proposed rules, which were announced over the media and mailed to more than 11,000 individuals and firms. At the six public hearings held around the state there was substantial opposition. In response, the agency began to reduce the standards in the proposed rules.^{1 3}

After learning of these hearings, I spoke with some individual farmers who are opinion leaders in counties near Madison. They were informed about the standards and had copies of the proposed rules and were favorable to the standards and felt that they should be established. In their opinion the standards were consistent with sound agricultural practices, and they felt that most farmers in their areas held the same opinion. Because of these perceptions, they did *not* attend the hearings. The level of commitment was not sufficient for them to take an afternoon or evening off to make an appearance. They appeared to feel that the DNR, since it had proposed the rules, would represent their interests. These farmers had supposed that the hearings had some function other than interactive and did not bother to attend. The unrepresentativeness of those who attended the hearing contributed to the outcome. Had a representative group been present, the outcome might have been different.

12. Wis. Ad. Code DNR 130.

13. Interview with P. O'Leary, Wisconsin Department of Natural Resources, 1974.

THE PUBLIC OPINION POLL

One strategy to eliminate the unrepresentativeness of participation at the public hearing is the public opinion poll; whatever its other limitations, a carefully conducted survey can insure a representative sample of a given population within statistical estimates of probable error. Suppose the DNR in Wisconsin had selected a random sample of Wisconsin farmers and had surveyed them about the animal waste standards. This might have given very different, and perhaps more appropriate, information to decisionmakers than that which was presented at the hearing. This technique has been used particularly in outdoor recreation to determine user preferences.¹⁴ Elsewhere I have discussed the theoretical issues related to user attitude studies and the problems of these sorts of data for management decisions.¹⁵ Others have also indicated problems with using surveys as a means of public participation.¹⁶ In this section I would like to note some of the more pragmatic issues which are involved in conducting a survey as a public participation technique.

Initially, the opinion survey is very appealing. It appears both easy and reasonable to "ask the public a few questions." This is an illusion. The proper collection of survey data requires high levels of expertise, which is almost always unavailable in a government agency and is very expensive to purchase. Since a list of the population is not usually available, complex sampling procedures must be employed. Then there is the art and science of question writing. Unless they are written by someone with experience, knowledgeable about the issue in question and in the techniques of item writing, the items on a questionnaire are likely to be sufficiently ambiguous as to create serious problems of interpretation. Small differences in question wording can lead to quite different results.¹⁷ Data collection is likely to be very expensive. Contracted surveys can range up to 50 to 60 dollars per interview, although using telephones and WATS lines can reduce costs to 10 dollars per interview. An in-house survey may

14. See, e.g., J. Hendee, *et al.*, *Wilderness Users in the Pacific Northwest—Their Characteristics, Values and Management Preferences* (U.S. Forest Service-P.N.W. 1968); ORRRC, Report No. 3 (1962); R. Lucas, *The Recreational Capacity of the Quetico Superior Area* (U.S. Forest Service—I.R.S. 1964); G. Stankey, *Visitor Perception of Wilderness Recreation Carrying Capacity* (U.S. Forest Service-I.R.S. 1973).

15. Heberlein, *Social Psychological Assumptions of User Attitude Surveys: The Case of the Wilderness Scale*, 5 *J. of Leisure Res.* (1973); *The Three Fixes: Technological, Cognitive and Structural*, in *Water and Community Development: Social and Economic Perspectives* (Field ed. 1974).

16. O'Riordan, *Public Opinion and Environmental Quality: A Reappraisal*, 3 *Environment and Behavior* 191-214 (1971).

17. Schuman & Duncan, *Questions About Attitude Survey Questions*, 1973-74 *Sociological Methodology* 232-251 (1974).

appear to cost less but is likely to cost more in the long run. Analysis of the data requires a computer, statistical programs and personnel to run the data. There are also considerable time lags associated with a survey. A month and a half is about minimum time for a small survey contracted by a research organization. Substantial surveys with large samples may take years from start to finish. Finally, even under the best of conditions interpretation of the results is difficult.

In spite of these practical problems, the public opinion survey is likely to elicit more representative views than the hearing. Unfortunately, these gains in representativeness are accompanied by certain losses. It is to be expected that the public at large is generally uninformed about any particular program and its implications. They may form their opinions at the time they fill out the questionnaire. Such opinions are extremely unstable and are rarely good indicators of "true" preferences formed once individuals have had experience with the project itself. The public which turns out at hearings is quite likely to be much better informed than those individuals who are surveyed by a pollster.

Moreover, people may not be aware of the effects of the project or the implications of their own preferences. In a recent study Smith and his colleagues examined the public preferences for reservoir development in Sweethome, Oregon.¹⁸ After two reservoirs had been built, Smith and his associates found that the social impact of the projects was to improve the quality of service to the local taxpayers, especially in terms of schools. However, the financial burden of these improved services was reflected in substantial increases in the local property tax. Overall the net effects were deemed to be quite negative for the community. However, a subsequent interview with people in the community asked them if they were in favor of further dam construction in the area, and a majority of over 70 percent said they favored further developments. Although they were not asked if they were in favor of higher property taxes, we may assume that they were not. The point is that the effects of a project are so complex that it is difficult for a person to sort them out and integrate them without a good deal of study. In the hypothetical world of the questionnaire there is no reason for people to be consistent; they may well favor both improved services and lower taxes, mass transit and better roads, etc. In the face to face setting of a hearing or other public meeting, priorities and tradeoffs can be established; on a questionnaire this is far more difficult.

18. Smith, *et al.*, *Economic Development: Panacea or Perplexity for Rural Areas?* in *Rural Sociology* 173-186 (1971).

Another problem with both the poll and the hearing is that these often happen before the program takes place. People are asked to report how they feel about hypothetical future events. Do they favor such and such a plant? How would they like to see it built? and so on. In point of fact, it is likely that these people have no very clear idea of what will result. They are trying to tell decisionmakers what they would or would not like in the future without having very much experience with that alternative future. It is probable that their judgments would change upon having actual experience with the facility. Both at a public hearing and in a public opinion survey, it is likely that people are being asked hypothetical questions about hypothetical futures with which they have no real experience.

ALTERNATIVES: WORKSHOPS AND QUASI-EXPERIMENTS

The central notion of a workshop is to involve the public actively in the planning process. The idea is to bring the public and the planners together in serious working sessions. The public can be given sufficient amounts of information to make a meaningful input. Workshops are often held on weekends or evenings when the relevant individuals have the time to get together. The workshop method used in the Susquehanna River Basin has been described in several published sources.¹⁹ Workshops can easily achieve the interactive function which is lacking in the public hearing format. They are superior to the public opinion poll because they provide public input based on a relatively high level of information. Meetings between planners and the public early in the planning process allow direct and immediate feedback between public and planner. A series of meetings where members of the public can go back to communicate with other citizens is ideal. This workshop technique has also been used with some success on the West Coast.²⁰

A potential problem that the workshop technique shares with the hearing is the lack of representativeness. There are two strategies to minimize this problem. In the Susquehanna study a concerted effort was made to locate community opinion leaders and others with an interest in water resources. Four groups were selected: 1) those holding positions of formal authority and organizational responsibility for water resource decisionmaking; 2) those who from newspaper file

19. Borton & Warner, *Involving Citizens in Water Resources Planning: The Communication-Participation Experiment in the Susquehanna River Basin*, Environment and Behavior 284-306 (1971); Borton, *The Susquehanna Communication-Participation Study. Selected Approaches to Public Involvement in Water Resources Planning* (NTIS AD 717 023 1970).

20. McKenzie, *The Grass Roots and Water Resources Management* (Wash. Water Res. Center 1972).

searches appeared to have assumed important roles in the past; 3) those identified by members of groups one or two as future participants in water resource decisions; and 4) those not included in the first three groups but whose interests seem relevant based on interviews with members of these groups. In short, the study team made a concerted effort to contact all possible relevant individuals. Although the study team appeared not to have determined formally whether the nearly three hundred individuals identified were opinion leaders concerning water resources, their hope was that all these were included among the participants. Opinion leaders are important in the transmission of information since people form their opinions more by what others say than through formal mechanisms.²¹ Identification of these leaders no doubt increased the interactive communication between planners and public.

Another strategy which might be attempted experimentally is to combine the advantages of the survey which yield representativeness with those of the workshop which bring opinion influentials into face to face discussions. Individuals could be selected from the jury rolls or from voter registration lists to serve as "expert" representatives of public review. They could be reimbursed for their time and effort (just as are the technical experts who attend workshops or jury members). Twenty to thirty such individuals could give the planners a relatively good reading on public opinion concerning the project. To my knowledge this mix or some variant of it has not been tried.

Another method similar to a workshop but with the advantage of the representativeness of a survey is to use a workbook of some sort which presents the alternatives, a visual display of the impact, information about costs and a postcard reply. These can be mailed out to random samples from voter registration lists or other lists or to other appropriate publics. A nice example of this is currently being used by the American Falls International Board, in which several alternative proposals for the future of the American Falls are available for public scrutiny.²² The proposals are pictured on scale models of the Falls and cost and alternative information is presented. After reading the document one can select an alternative and return a postcard. The Dane County Regional Commission has prepared a similar document for alternative land use patterns in Dane County, Wisconsin.

An inherent problem with the hearing and workshop and even the

21. Katz, *The Two Step Flow of Communication: An Up-To-Date Report on An Hypothesis*, 21 Pub. Opinion Q. 61-78 (1957).

22. American Falls International Board, *The American Falls, Yesterday and Today and Tomorrow* (1973).

survey in determining representativeness is that the appropriate public is difficult to identify. The democratic maxim specifies that "those affected by the decisions should have the opportunity to affect those decisions."²³ Usually, relevant publics are defined as those who are temporally and geographically adjacent to the project site. A recent case in Wisconsin illustrates the difficulty of selecting only this public.

In response to public outcry and litigation over routing of a power line through Columbia County in Wisconsin, the Wisconsin Power and Light Company contracted with an environmental firm to establish new routes. Using very sophisticated computer methodology, in which more than 100 characteristics for every hectare of land in the county were evaluated and stored in the computer, the consulting firm developed complex routing models and selected the optimum route, given several sets of environmental and aesthetic criteria. However, this report was modified by hearings held by the public service commission because the consulting firm could not show that there had been public involvement.

Suppose there had been public involvement of the community on routing the power lines. People might have sat down with members of the consulting firm and worked out alternative routes based on their preferences rather than only the physical characteristics of the landscape. Operating through the medium of an interactive workshop participants could certainly have been chosen to be relatively representative of the interests in the county, and a decision might have been reached about routing the power lines which would have been more consistent with public concerns.

The largest and most substantial interests in Columbia County are currently agricultural. The central issue in power line location for agricultural interests is not visual impact—it is physical impact on fields. Farmers prefer not to have power lines that cut diagonally across fields, take crop land out of production and make tilling and harvesting difficult; rather they prefer to have the power lines run down property lines, over wetlands and along railroad tracks. If there had been substantial public involvement in Columbia County, it is likely that the power line would have taken these sorts of routes.

On the other hand, land use and demographic projections in Columbia County suggest that agriculture is going to be less and less important as the county becomes suburbanized and that subdivisions, recreation and second homes will form the primary uses of the county land. This is already starting to happen, and in the next

23. Borton & Warner, *supra* note 19.

20 years, all else being equal, there will be substantial changes in Columbia County. A power line routed for its consistency with agriculture may be very poorly routed, given new forms of land use and different values in the resident populations. The people who will have to live with the power line and will be affected by it then, are probably not going to be proportionately involved in the decision-making process. A hypothetical population which has a real stake in the action is being excluded from the decisionmaking process because it does not yet exist. An approximation to this would be residents from some other suburbanized county in the state rather than those people who actually live in Columbia County at the present time.

Regarding other sorts of projects, other publics who may benefit or be adversely affected by the project itself may be neglected. Public involvement on a reservoir project will most heavily involve those who live in the area, while the people who benefit from the project through additional cheap water supplies or as potential recreational users may live far away and, consequently, may not be involved in the processes, nor understand the protests of the local impacted groups.

The Quasi-experiment

A technique which has received relatively little attention as a method of public involvement involves the idea of an experiment. Only rarely does a social experiment meet all of the criteria of true experimental design; hence, Campbell and Stanley have labeled such approximations as quasi-experiments.²⁴ Using this methodology three of the four proposed criteria for public involvement may be satisfied, and the resource manager may gain information which is relevant to decisions. The essence of an experiment is to manipulate a factor or to take advantage of a naturally occurring change and observe its effect on public preferences and behavior. Important examples of such social experiments are the impact of a negative income tax and the effect of the crackdown on speeding in Connecticut.²⁵

A hypothetical example can show the relative utility of such a technique compared with alternative methods. Suppose the resource manager were interested in how much the public was willing to pay

24. D. T. Campbell & J. Stanley, *Experimental and Quasi-experimental Designs for Research* (1966).

25. Watts, *Graduated Work Incentives: An Experiment in Negative Taxation*, 69 *Am. Econ. Rev.* 463-472 (1969); Campbell & Ross, *The Connecticut Crackdown on Speeding: Time-Series Data in Quasi-experimental Analysis*, *Law and Society Rev.* 33-53 (1968).

for improved water quality on a particular river. A common method to determine this would be to hold a public hearing. The biases of this method, even if there happened to be sufficient demand for such a hearing, have been discussed. A more innovative technique would be to conduct a poll and ask what people are willing to pay. There are severe biases associated with this method. People may under-report, thinking that they will be charged for the improvement, or they may overreport, trying to show strong approval for a hypothetical possibility. Generally there is little relationship between what they say in such a poll and what will subsequently be approved.²⁶

A quasi-experiment could be designed to give a better reading on the willingness to pay question. Several hundred individuals could be selected from voter registration lists or city directories. They could be divided randomly among four groups. Three groups could be sent an official notice that a surcharge was going to be placed on their taxes for the specific improvement of water quality on the river. The amount of the surcharge would be different for each group; for example, \$25, \$75 and \$125 might be selected. The control group would receive a notice about water quality on the river but no mention of tax increase. The individuals who received notices could be offered a variety of avenues to protest this action—1) attend a public hearing; 2) phone a specified number; 3) write a letter, etc. Those who protest in various ways should be counted and interviewed. Furthermore, all of the individuals who received the notices should be interviewed to obtain their reactions. This would give good information about what a representative group of people are willing to pay when they are actually confronted with the situation. In accordance with usual experimental procedures, the subjects would all be “debriefed.” There are also standard procedures for obtaining the informed consent which may be necessary for such experiments.²⁷

There are few examples of such techniques in natural resources decisionmaking. Cicchetti and Smith have done a quasi-experiment to determine the impact of crowding in a wilderness setting.²⁸ The

26. See M. Collins, *The Perception of Pollution by S.P.E.C. and by the Public in New Westminster, 1972*. In a survey of willingness to pay for pollution control by residents of New Westminster, B.C., Collins found that less than half stated a willingness to pay more than \$25 for all kinds of pollution control. Three months later the municipality proposed a \$50 annex tax on all householders (\$28 on all apartment dwellers) to pay for a proposed primary treatment plant. Few protested, and the bylaw was passed.

27. American Psychological Association Casebook on Ethical Standards of Psychologists (1967).

28. Cicchetti & Smith, *Congestion, Quality Deterioration and Optimal Use: Wilderness Recreation in the Spanish Peaks Primitive Area*, Social Science Research 15-30 (1973).

National Park Service is proposing a substantial field experiment, either capitalizing on the natural variation in crowding on the Colorado River in the Grand Canyon or actually manipulating the level of crowding.²⁹ A recent study by Hancock demonstrates clearly the differences between verbal public input and experimental manipulation and observation of behavior. Two hundred and eighty camping parties were polled about their preferences concerning campsite vegetation.³⁰ Less than 10 percent said they favored less heavily vegetated campsites than those they occupied. "Any suggested reduction of existing vegetation within any campsite was likewise rejected by nearly all parties contacted."³¹ During this same period (July 1 to September 8) the vegetation was removed from four experimental campsites. First 25 percent of the vegetation was removed, then 50 percent, then 75 percent and finally 90 percent. After each removal, campsite use as a percent of total existing campground use *increased*. The baseline use was 51 percent and increased to 83 percent. After 90 percent of the vegetation was removed, use dropped to 25 percent of the use on other campsites.

Polling the population and basing policy on that information would lead to a decision to maintain campsite vegetation. Observation of behavior, on the other hand, suggests what level of vegetation is actually preferred by campers independent of their verbal preferences. Up to severe reductions it appears that people prefer the vegetation levels that existed in the site they selected. The public input based on the experimental and behavioral observation is in general much more useful for policymaking.

While the quasi-experiment has important possibilities, it is not easily adaptable to all settings. Particularly difficult is the problem of making realistic the hypothetical alternative futures to which the public must react. As part of a multidisciplinary team developing an environmental impact analysis for the siting of a peaking power generating facility, Murray *et al* were trying to examine the potential impact in three diverse sites, one urban, one suburban and one rural.³² To determine the potential impact it seemed most reasonable to locate three comparable sites where such a power plant had already been built and look at how the people living in these areas had evaluated the generating facility. Rather than obtaining involvement from the public actually living in the areas, we went elsewhere

29. National Park Service, Western Region. *A Call for Proposals: The River Contact Study* (1973).

30. Hancock, *Recreation Preference: Its Relation to User Behavior*, *Forestry* 336-337 (1973).

31. *Id.* at 336.

32. B. Murray, *et al.*, *Peaking Plant Environmental Report* (EAC, Sept. 1973).

to a better informed public. This procedure may be viewed as a quasi-experiment. The experimental factor was the power plant in a particular area; rural, urban, or suburban; and the dependent variables were the survey responses of those people who lived in these areas. While the results were of some interest, the utility of the approach in this case was limited by lack of truly comparable control areas even in nearby states. The point here is that there are unique aspects to site, situation and local culture that cannot be fully replicated by finding a comparable situation elsewhere.

CONCLUSIONS

The current demand for public involvement in natural resources decisionmaking is due to the diversity of interests affected by such actions and a recent emergence of new interest groups which have not yet been integrated into the pluralistic process. As decision procedures adjust to these factors, the normal mechanisms for public involvement should become more adequate and the demand for involvement decrease. Of the four techniques for direct public involvement, the workshop and the quasi-experiment hold the most promise. The public hearing often fulfills functions unrelated to the incorporation of the public needs into the decisionmaking process. Even when it attempts this function, its effectiveness is limited and may be impeded by problems of representation. Interest groups tend to be overrepresented, and a number of social psychological factors act to prevent many people with legitimate interests from attending or participating in public hearings. Although the public opinion poll solicits input from a representative public, it is costly, difficult to conduct and the responses tend to be based on low levels of information. This tends to make such response unstable and ephemeral. A workshop where the public can participate with the planners and decisionmakers is useful when augmented with techniques to insure that representative groups will be included in the meetings. Mailed questionnaires and information books may be a useful substitute for a workshop. By setting up experimental situations or taking advantage of natural variations and by observing the behavior of individuals, as well as measuring their reactions, the manager gets a form of public input that is based on actual experience rather than hypothetical situations. Through his experimental design he can act to insure representativeness, even if the relevant populations are spatially distant. None of these techniques is without flaws, nor will they take the burden of decisionmaking from the manager. However, a combination of these techniques, each countering the flaws of the other, may be far superior to present attempts at public involvement.