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Discussion Paper



PUBLIC HEARINGS AND ATTITUDE-PERCEPTION STUDIES:
AN EVALUATION OF THEIR ROLE IN THE
PLANNING PROCESS

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*PUBLIC HEARINGS AND ATTITUDE - PERCEPTION STUDIES:
AN EVALUATION OF THEIR ROLE IN THE PLANNING PROCESS*

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MARCH 17, 1969

ABSTRACT

Due to the present structuring of public hearings, the people affected by a particular water resource are not truly represented. A better way of ascertaining public views is to survey perception and attitudes regarding the water resource and the means of managing it.

RÉSUMÉ

La formule actuelle des auditions publiques ne permet pas aux personnes directement touchées par une ressource hydraulique particulière de faire valoir leurs opinions. Un meilleur moyen de sonder l'opinion publique serait de faire enquête sur le degré d'information et l'attitude de la population à l'endroit de cette ressource et de la façon dont elle est administrée.

When making and justifying decisions that would change or maintain water resource practices, the planner and policy-maker should promote a program aimed at approximating the optima in each of the following areas:¹

- (1) What is possible? (based on physical and ecological considerations)
- (2) What is gainful? (based on economic considerations)
- (3) What is adoptable? (based on social and cultural considerations)

The physical and economic areas have received due consideration in Canadian planning; however, social areas have often been neglected. In cases, where consideration has been given to social needs, it has generally been in the form of what planners *assume* the public wants, usually without empirical investigation to test those assumptions.²

"To some, the question, 'What kind of public consultation in the planning process?' immediately, and almost unconsciously, translates itself into the question, 'How can we get the plan across to the public so it will be followed?'

To others, the question is the opposite: 'How can the public leave its imprint on the plan so that the planners do not impose *their* preferences on the public?'"³

Resource programs must be seen as "gainful" by the population and must harmonize with vested interests if they are to be accepted. Plans which fail to achieve public consent will succeed only through coercion.⁴

At the recent Water Workshop in Victoria,⁵ W.R.D. Sewell stated that, "More attention will need to be paid to determining what the public wants and how it is likely to respond to what is provided."⁶

First and foremost, then, there must be an accurate way to determine what problems are seen by the public and what attitudes exist towards these problems. The purpose of this paper is to examine and evaluate public hearings and attitude-perception studies, two existing methods through which the planner may seek to gather this information. Since the planner can also make reference to the mass media as a source of knowledge about public views, this method will be very briefly examined.

The purpose of the mass media is to provide a channel for the public exchange of information and opinions. As such, the planner has often looked to the media to determine public feelings.

Lundberg, Schrag and Larsen,⁷ in summarizing many of the conclusions in mass communications research, note that there is a reciprocal character to mass communications so that public views are influenced by the media and, likewise, content decisions for the media are responsive to public views. Therefore, the overall effect reinforces the present stage of public opinion. This would seem to indicate that mass media releases are a good guide to the planner of what the public really thinks. However, while news producers are alerted to public thought to help them set up a general content policy, the specific content of a release is subject to many social and mechanical influences before it reaches the audience.

First, the event or object of the news release often originates in, or is sponsored by, an organization like the government, a business association, labor union, etc. Thus the reporter is surrounded by many "special interests" as he begins. Also, what he sees and says about the event depends on many factors - e.g., his position in space and time, his training, his personal interests, the interests and standards of his employer, etc.

From the first report, the content moves through various media channels and is influenced by treatments and policies en route - e.g., some details are sharpened, others are screened to fit the news media on the basis of space allotment, etc. More often than not, news is received through other people rather than directly from the media itself; thus news may be further altered in the interpretation.

Finally, news is put through one's own screen of attitudes, interests, experiences and identifications so that what he actually perceives may not be that intended by the communicator.

These general statements about the process of mass communication would seem to point out the shakiness of the assumption of a direct correspondence between mass media releases and public opinion; however, the media can be used as a take-off point for more exacting study (e.g., as a possible source of statements for attitude scales, which will be discussed later).

The planner can refer to public hearings regarding environmental problems and/or development, and proposed solutions and plans of action, in an attempt to find: (1) the public's ideas of the situation (as *they* see it), (2) their attitudes toward it and (3) their choice of policy and action. Since the Boundary Waters Treaty of 1909, the International Joint Commission has been holding public hearings each time they have received a reference for investigation of an international water resource. Therefore, they have had wide experience in holding such hearings and thus their hearings have been chosen to be examined for the purposes of this paper.

Two types of hearings are held by the International Joint Commission:

- (a) Preliminary hearings are held after a request has been

received to examine a water problem or to investigate possibilities in water development. The stated purpose of these is to give an opportunity to all interested public bodies and private individuals or private associations to indicate their interests and to express their views as to what measures might be practicable and in the public interest.

- (b) Final hearings are held after the Boards have carried out investigations and have submitted proposals on the results. The purpose of these is to make known, to the public, the investigations and proposals of the Boards and to again, give an opportunity to the public to express its views.

To make public participation possible, the hearings are held in the region which is directly involved. If a large area is concerned, hearings are held in several central cities. Individual notices of the time and place of the hearings are sent to all persons who have presented statements in response to the Commission, as well as to the applicant(s) and Governments. Notices are placed in all local newspapers in the various areas involved as well as in the Canada Gazette and Federal Register. However, no assumption can be made that these communications will reach all of those who are directly involved with the issue of the hearing.

All persons who wish to give testimony are verbally encouraged to do so either by speaking during the hearing, by presenting a written report, or both. However, many individuals and small organizations must feel discouraged by the hearings' requests to file 15 copies of written statements with *each* Secretary ten days in advance of the hearing and to

deposit 30 copies with the secretaries at the hearing. Witnesses may be examined and cross-examined and may be required to give testimony under oath although this is usually dispensed with as the formality of the situation is found to be inhibiting to the witnesses. In general, the rules of relevancy of the testimony are applied very leniently to let the witnesses, some of whom may be unpractised public speakers, give their testimonies freely. All of these hearings are open to public audiences.

For the purposes of this paper, verbatim transcripts of six public hearings were examined. These particular hearings were simply chosen on the following basis:

- (1) All were held relatively recently.
- (2) They provide some variety of:
 - (i) type of region
 - (ii) size of area
 - (iii) scope of project

Four concerned the regulation of the Great Lakes water levels and were held at the following places and times:

- (1) Toronto, Ontario, May 10, 1965
- (2) Sault Ste. Marie, Michigan, May 11, 1965
- (3) Windsor, Ontario, May 25, 1965
- (4) Chicago, Illinois, May 26, 1965

The other two were as follows:

- (5) Re: Improvement of Champlain Waterway in Burlington, Vermont, May 18, 1966
- (6) Re: Development of the Pembina River in Manitou, Manitoba, June 9, 1965.

Also, brief discussions were held with Mr. D.G. Chance, Secretary of the Canadian Section, International Joint Commission, who was personally present at each of these hearings.

The following chart indicates the categories of persons expressing themselves either verbally or through written statements.

Category Place of Hearing	International Associations	Provincial (State) Depts/Agencies	Municipal Depts/Agencies	Universities	Businesses	Local Organizations	Individuals	Totals
Toronto	1	5	3	0	0	3	1	13
Sault Ste. Marie	0	2	1	0	2	0	3	8
Windsor	1	4	4	0	6	0	2	17
Chicago	0	8	4	1	2	2	4	21
Burlington	0	12	1	1	3	3	1	21
Manitou	0	12	11	0	0	0	6	29
Totals	2	43	24	2	13	8	17	109

In the above hearings, it is interesting to note that almost 2/3 of the witnesses represent governmental departments or agencies. About 1/8 represent their own business concerns and less than 1/4 represent themselves or some local organization. Although the number of public hearings that have been examined here is few, the overall trend (that of having a large proportion of governmental witnesses) was endorsed by Mr. Chance as being common to most public hearings; however, he mentioned

that there seems to be a regional difference in that more non-governmental individuals are willing to testify in the rural areas (Prairies and Maritimes) than in the Central Provinces of Ontario and Quebec. He mentioned that the size of the audience also varies regionally (i.e., larger groups in the Prairies and Maritimes), but that the emotive quality of the issue is also a factor.

As has been stated, public hearings are being examined in this paper for their utility in directing the public's thoughts to the water resource planners. The main concern, then, should be - how representative of public thought, are the testimonies of the witnesses? Having noted that most of the witnesses are governmental representatives, and granted that Canada's system of government is one of elected representatives of *the public* it still might be asked - just how representative of the feelings and thoughts of the people is *any* elected representative on *any* one issue? It might generally be agreed that the municipal, provincial and federal governments, due to the size of the region they represent, may be arranged on a continuum of "accuracy of representation" of public thought. Supposedly then, we could look to municipal governments (and further, to the small, rural municipal government) for the most accurate view of public attitudes. But even at this level of government, it is a big assumption that the representative's own attitude or his perception of public attitudes coincides with the "real thing".

Luttbeg and Zeigler⁸ studied the degree of congruence between perceived and actual attitudes by comparing three sets of information on the Oregon Education Association:

- (a) the beliefs and attitudes of the members of the
Association

- (b) the beliefs and attitudes of the leaders of the Association
- (c) the leaders' perception of the beliefs and attitudes of the members.

The beliefs and attitudes examined concerned the following:

- (a) mandates for organizational action
- (b) expectations and satisfaction with the direction of leadership behaviour.
- (c) abstract political values
- (d) norms of teachers' political participation.

They found that the biggest discrepancy lay between the beliefs and attitudes of the members, and the beliefs and attitudes of the leaders (probably due to differing perspectives derived from their different positions). They also found a large discrepancy between the members' attitudes, and the leaders' perception of the members' attitudes. Thus, whether the leaders based their actions on their own values or on their perceptions of the members' values, they were not acting as true *representatives* of the organization.

It seems wrong then to *assume* that testimonies of governmental persons given in public hearings are actually representative of public feelings. Similarly, the people from local organizations gave no evidence that they had really identified the attitudes of the group as a whole. Sweeping statements such as the following can hardly be called representative - "I feel that there are just thousands of us over in Wisconsin, and, I know in Michigan too, that really feel that we are entitled to a lake level that is controlled and there certainly is a way of controlling it!"⁹

Another category of witnesses is that of the business concerns. The ones at the public hearings gave their views from the standpoint of

their own commercial interests. This was of value in itself but it threw no light on business or public attitudes beyond their own.

The participating universities took a purely intellectual interest in the hearings and offered technical reports concerning the water resource.

A few individuals represented themselves and their own interests. Several felt personally uninvolved with the issue but wished to present "scientific" information to the Commission (the value of which was highly doubtful in many cases). Others gave testimony of how the project (or lack of it) would affect them individually. As a source of information on public views, the value of these testimonies is limited both because of the very general nature of the statements and because of the paucity of such testimonies relative to the number of people involved. It should be noted that, although the hearings are kept as informal as possible, there is some evidence from the comments of the witnesses that a meeting with experts and officials was awesome and this may have kept many individuals from speaking.

Something should be said here regarding the relative strength of public interest and opinions. Certainly it cannot be assumed that all individuals are equally concerned with the issue nor that all individuals are equally affected by the water resource. Therefore, in an assessment of public attitudes, the opinions of strong interest groups should be weighted more heavily than the opinions of generally apathetic groups. However, it should not be assumed that those giving testimony at public hearings represent *all* or even the *strongest* interest groups. Absence of a strong interest group might be accounted for by such factors as an uninformed body of people, lack of organization and/or a voice to present its opinion, etc. Some people who did give testimony were, in no way affected by the water resource but saw the hearings as an opportunity to express eccentric views on the earth's creation, for example.

The Commission Secretary felt that, on the whole, public hearing testimonies were of little direct value to the International Joint Commission, although occasionally a useful point is gained. As seen by the Commission, the main advantages of the hearings seem to be as follows:

1. They promote good public relations in that the Commission makes the effort to come before the public in the region involved and gives the local people an opportunity to speak.
2. Public relations are further maintained if the Commission can be made aware of the opposition to their proposed actions and have a chance to explain to the opposed party just why their particular requests cannot be granted.
3. For the few who speak, the hearings may act as a vent to "let off steam" about the proposed actions or lack of them.
4. Possibly for the participants is the satisfaction derived from the feeling that they are playing some part in the decision-making process.
5. Hearings are a source of information to the public about the water resource; however, many technical reports would be meaningful to only a certain informed segment of the public.
6. They encourage collaboration between local and federal governments.

However, hearings cannot be solely relied upon to channel public feelings to the planner because of the following main summary points:

1. Representatives of governmental departments and agencies, and representatives of local organizations cannot be assumed to be presenting the actual feelings of the group.
2. The number of organizations, businesses and individuals expressing their own views is a small part of the total of such entities.

A lesser used method of determining public views is that of perception and attitude studies. It should be noted that, although disciplines, such as geography, have just recently discovered the utility of studying attitudes and perception, the concepts are not new ones in psychology, social psychology and sociology. In fact, considerable study has gone into these concepts and their measurement through most of this century. Since, in social science literature, the meaning of the terms "perception" and "attitude" varies, explanation of these words as they are used is given, along with a bit of the general theory and studies concerning them.

"Perception" refers to "the way organisms respond to the stimuli picked up by their sense organs".¹⁰ It does *not* refer simply to a mechanical process of recording sense data but to a process influenced by interests, attitudes, needs and past experiences. There is often an interactive effect between subjective perception and objective reality (e.g. "what (political) parties do affects what the voters think they are, and what the voters think they are affects what they subsequently do.")¹¹

Studies related to the factors affecting perception are numerous. For example, Asch¹² studied a group of subjects who were asked to match the length of a given line with one of three unequal lines. Each member gave

his judgment publicly. All but one of the group members had been previously instructed to, at certain points, agree unanimously on the *wrong* line (the errors were large, varying from $\frac{1}{2}$ " - $1\frac{3}{4}$ "). Thus, for the one critical subject, the group completely opposed the perception of his senses.

One third of all the estimates made by the critical subjects were errors identical with, or in the direction of, the purposely distorted estimates of the majority. This is significant when compared to the total absence of errors in the control group where judgments were carried out "honestly". There were extreme individual differences - some remained independent throughout while others agreed nearly always with the majority. Among the yielding subjects were some who merely yielded because they did not want to appear different but others concluded that their perceptions were inaccurate and some even came to perceive the majority estimates as actually being correct.

This study and others of its kind are striking because they illustrate that even direct perception of *concrete* physical stimuli can be affected by other factors. How much more, then, can perception of *abstract* phenomena be altered?

Vroom¹³ studied the effects of attitudes on the perceptions of goals of an electronics manufacturing organization. His findings support the following statements:

1. The more positive the attitude toward the organization, the greater the tendency for the person to perceive a similarity between the organizational goals and his own goals for the organization.
2. A person will accurately perceive the organization's goals with which he agrees to the extent that he has a positive attitude toward the organization.

3. A person will accurately perceive organizational goals with which he does not agree to the extent that he has a negative attitude towards the organization.

Attitude can be defined as "the degree of positive or negative affect associated with some object".¹⁴ It is usually associated with a state of readiness to act. The attitude concept stresses the fact that people do not automatically respond to situations but that their responses are always relative to ideas, perceptions and dispositions carried over from past experience.¹⁵ (It should be noted that there seems to be an interactive effect between attitude and perception.)

Katz and Braly¹⁶ indicated the strong affective quality of attitudes and also illustrated that they can be consistent and widespread, by studying students' rankings of ten ethnic groups. These groups were ranked in order of preference for association with their members. Students not only agreed in their preferential ranking of ethnic groups but they also agreed on the characteristics attributed to the groups. Therefore the attitude of racial prejudice seems to be a generalized, highly consistent set of stereotypes which includes emotional responses to race names, a belief in typical characteristics associated with race names and an evaluation of such typical traits.

Generally stated then, the object of perception and attitude studies is to discover, of a certain segment of the population, just what individuals do "*see*" in their environment, what it *means* to them, how they *feel* about it and how they would be disposed to *act* towards it.

More specifically, and with application to proposed water resource projects, the object of perception and attitude studies is to discover areas of information such as the following:

A. *Perception of, and attitudes towards, problems in the area.*

(Canadian planners have been enlarging the scope of their consideration. Sewell¹⁷ has stated that water resource projects should be seen in relation to other projects in the area. Therefore there would be a need for information regarding the way people view the water "problem" in relation to other felt problems.)

1. Problems perceived in the area (may or may not be related to water resources; they may refer to areas of education, housing, hospitals, for instance).
2. Priority of problems.
3. Degree and kind of relationship to problems (i.e., how directly is the individual affected by the problems)
4. Intensity of concern over problems.
5. Extent and accuracy of information about problems.
6. Source of information about problems (direct, indirect).

(Note: Points No. 5 and No. 6 above (also points No. 1 and No. 2 below) could be useful in planning an education program if need is seen for one.)

B. *Perception of, and attitudes towards, the proposed water resources project.*

(Ideally, perception and attitude studies should be completed before any project is proposed to avoid influencing the subjects. However, since one of the aims of this paper is to *compare* the efficacy of public hearings and attitude-perception studies, and since the public hearings examined have had reference to a specific problem or means of development, attitude-perception studies must also be given a specific water resource

reference to maintain comparability.)

1. Extent and accuracy of information about the proposal.
2. Source of information about the proposal (direct, indirect).
3. Degree and kind of relationship to the proposed project (i.e., how directly is the individual affected by the proposed project).
4. Amount and kind of personal involvement in the initiating, planning and/or decision-making stages of the proposal.
5. Perceived beneficial and/or harmful aspects of the proposed project (overall, segments of) in relation to self/other (present, future).
6. Intensity of feelings towards beneficial/harmful aspects.
7. Amount of agreement with proposed methods for carrying out the proposal (in terms of decision-making processes, techniques, personnel, time, money, etc.).
8. Preferred methods for carrying out the proposal.

C. *Personal characteristics.*

(This section is included to determine what particular groups - i.e., age groups, socio-economic classes, organizations, if any, entertain particular perceptions and/or attitudes.)

1. Personal attributes:

- | | |
|----------------|-------------------|
| (a) sex | (e) income |
| (b) age | (f) ethnic origin |
| (c) education | (g) religion |
| (d) occupation | |

2. Community involvement:

- (a) length of residence in community

- (b) membership in local organizations
- (c) ownership of property
- (d) further community involvement

The tapping and measurement of such information requires careful attention to sampling procedures, questionnaire/scaling techniques and statistical analysis; for if such data can be put in a reliable, numerically-measurable form, it is of greater use to planners.

As Oppenheim has noted, "Survey literature abounds with portentous conclusions based on faulty inferences from insufficient evidence wrongly assembled and misguidedly collected."¹⁸ Therefore, particular care must be given to each technique throughout a study if results are to be valid and reliable.

The many aspects of these techniques cannot be reviewed here, but a few points about each, their advantages and problems, should be mentioned to indicate the feasibility of obtaining the specific information mentioned above and to estimate the value of perception and attitude studies in directing public views to the planner.

In almost all studies involving social data, it is either impossible or unreasonably expensive and time-consuming to question *all* the subjects one wishes to make conclusions about. Therefore, it is necessary to turn to probability theory and to rely on an accurate *sample* of such subjects to give an indication of the characteristics of the whole. There are really only two basic requirements for sampling procedures but each of these requirements must be diligently met if a useful, unbiased sample is to be achieved. What is required is that the sample be representative and adequate.

Obtaining a representative sample involves (1) careful definition

of the "universe" and the observations hoped to be made in the sample;

(2) exact selection of the units to be included in the sample. Although techniques of selection must suit the purpose of the study, the following are widely used:

- (a) Simple random sampling gives equiprobability of selection to every unit. A table of random numbers is often used to approach the goal of equiprobability.
- (b) Stratified random sampling involves sampling from a series of homogeneous subuniverses in such a way that when they are combined, they make up a sample of a more heterogeneous universe. If this is done, there is an increase in accuracy and a smaller sample is required.
- (c) Cluster random sampling involves multi-stage sampling by simple or stratified random methods from more inclusive to less inclusive sampling units. This has a greater margin of error than the strict use of either the previous methods but it requires only a small sample.

The second criteria of a good sample, that of adequacy, refers to the actual number of cases needed. Adequate random sample sizes can be calculated by formula on the basis of (1) an estimation of the standard deviation, (2) the range of permissible error, and (3) the level of probability that is necessary for this range of variation. Other factors should also be considered - e.g., purpose of study (concern with generalizability), type of sample (e.g., random stratified can be smaller than simple random).

As has been mentioned, attitude and perception studies are dependent upon sampling which is based upon probability theory; thus, results

must be less than exact. Also, there are many problems in choosing and reaching sample units (e.g., it is hard to obtain a complete list of people in an area due to out-of-date and incomplete city directories, voting registration lists, etc. Once the sample is chosen, there are problems in contacting some subjects and in getting some to respond). As a result, no conclusions about the sample can ever be said to be identical to the situation in the "universe" but good approximations can be made and results stated at high probability levels.

Once the researcher has chosen his sample, he must formulate a questionnaire and/or interview to obtain the specific information he requires from his subjects. Each technique has certain advantages over the other, some of which are listed below. The decision of which to employ depends upon the particular study undertaken.

Advantages of the Questionnaire over the Interview

1. Group administration is possible.
2. Requires less administrative skill.
3. Less expensive.
4. Can cover wider area of subjects.
5. More uniform replies and thus more comparable results.
6. More anonymity for the subjects.
7. Less time pressure for the subjects.

Advantages of the Interview over the Questionnaire

1. Appropriate for all subjects - even non-literate.
2. Less effort is required of subjects.
3. More complete sample; thus less bias.
4. More flexible - can probe answers.
5. Can note *how* subjects respond.

Questionnaires and interviews range in the degree of structure that is built into them. Structured interviews present exactly the *same* questions in the *same* words in the *same* order to all respondents. This draws more standardized responses than does the unstructured interview and thus, the results are more comparable. However, the latter has the advantage of being more flexible which is important if an intensive "probe" study is wanted.

Questionnaires can never be as unstructured as interviews, but both can make use of closed and/or open questions. In the closed question, the subject is asked to choose from a set of given responses; in the open question, no responses are suggested. A short evaluation of each of these types of questions follows.

Advantages of the Closed Question over the Open Question

1. Simpler to administer.
2. Quicker and easier to analyze.
3. Ensures answers are relevant.
4. Often helps to make question clearer to subjects.
5. Allows subjects to rate strength of own feelings.

Advantages of the Open Question over the Closed Question

1. Allows a free response in own terms of reference.
2. Doesn't force opinion where there isn't one.
3. Allows subject to make own qualifications of answers.

The choice of the style of the questions depends on the type and complexity of information wanted. A good questionnaire or interview should employ them both in a suitable manner.

Short mention should be made of the mailed questionnaire which

is sometimes used in studies. The obvious advantages are quick and easy administration and complete subject anonymity. The main disadvantage is the chance that they may not be returned. "Double sampling" has been used to get around this disadvantage by using the mailed questionnaire for the entire sample and the field interviews for those who did not answer the questionnaire. (This can only be done when both methods will yield the same type of data.)

In attitude studies, the direct questioning methods mentioned above may be satisfactory depending upon the situation. However, if individuals are reluctant to express their attitudes on controversial issues, these methods may not yield valid results. Further, an attitude study is concerned with knowing the *degree* of affect associated with an object - not just whether or not an affect exists. The strength of attitudes would be necessary knowledge to the planner as he would then have an indication of how to weight the opinions of various groups.

A useful technique for tapping attitudes and determining the degree of affect is that of the attitude scale which can be included as a part of any questionnaire and/or interview. Three of the most common and widely used attitude scales are those developed by Thurstone, Likert and Guttman.¹⁹ Choice of these scales depends on the particular aspects of attitude emphasized (e.g., Guttman's would be the best if there was practical concern for the reproducibility²⁰ of the score).

Attitude scales employ rigorous techniques to select the statements to be put on the scale. In the Thurstone technique, for example, a very large number of statements are judged to be favorable or unfavorable statements about the object by a large group of judges. Scale values and measures of variation are computed and statements are then selected such that their interquartile range is small and their scale values²¹ are equally placed

along the favorable - unfavorable continuum. Reliability²² and internal consistency checks²³ can be made. Validity²⁴ is always difficult to check conclusively in attitude studies. However, it has been loosely indicated with the aid of criteria groups whose attitudes were allegedly known through their membership in groups and their comments in interviews.

When the scale is composed, subjects are asked to agree or disagree with each statement. An attitude score can then be obtained by averaging the scale values of the statements agreed with.

A distinction between attitude studies and public opinion polls should be noted. The latter usually apply no sampling techniques, depend on one or two questions, have no proven or indicated reliability or validity and, as practical guides to public opinion, are of doubtful value.

It should be emphasized that although survey data is qualitative in form, it can be measured quantitatively. Attitude scales yield scores, and other responses given by the subjects can be processed into figures and symbols that can be counted and analysed. Very little social data is in the form of interval scales, most is ordinal or nominal data. However, statistical analyses can be carried out on such data. Thus, there is a definite criteria by which hypotheses concerning the population can be accepted or rejected.

Also indices can sometimes be developed. Such figures provide a concise, meaningful representation of data and can account for much of the variance. Metz²⁵, for example, analyzed some determinants of attitude toward fluoridation and found that income, age, number of children and knowledge of fluoridation have independent relationships to attitude toward fluoridation. Therefore, combined in the form of an index of "predisposition

to fluoridation", they have even a stronger relationship.

In order to evaluate the efficacy of perception-attitude studies in determining public views and feelings, it was necessary to examine their goals, the type of information they gather and the methods they use to collect and analyze data. It should be noted that their goals are clearly in line with what the planner has claimed to seek - i.e., they try to find the views of the *public* and not just of the "representatives" of the public. Further, although studies of social data are strictly within the realm of probability, the social scientist has developed techniques to enable him to make conclusions about the nature of that data and to generalize from the sample to the population.

It might be useful, at this point, to look briefly at a few of the findings of perception studies specifically in the water resources field.

G.F. White²⁶ researched property managers' adjustment choices to floods in La Follette, Tennessee and found that the following factors affected this choice:

- (1) perception of the flood hazard
- (2) perception of the range of adjustments
- (3) feasibility of adjustments
- (4) economics and efficiency of adjustments
- (5) timing and incidence of decisions by private and public managers.

Saarinen²⁷ studied the wheat farmers' perception of the drought hazard on the Great Plains. He found a general awareness of drought hazard but an underestimation of its frequency and an overestimation of the number of good years and average crop yields. Those from the most arid areas and those whose operations are most vulnerable to weather changes have a more

accurate perception of drought risk.

Looking at some different factors, Barker²⁸, in a study of "The Perception of Water Quality as a Factor in Consumer Attitudes and Space Preferences in Outdoor Recreation" found:

- (1) a significant relation between attitudes expressed toward man and nature, and the evaluation of water quality - e.g., a feeling of mastery over nature was associated with a more critical appraisal.
- (2) a weak relationship between expectations of future pollution and man-nature orientation.
- (3) a weak relationship between the subject's evaluation and social-economic characteristics - especially between opinions of water quality and occupation, education, ethnic origin and sex.
- (4) that perception of nature and degree of pollution is of the same significance in affecting the user's evaluations and space preferences.

Although public views are a factor which governments cannot afford to overlook, attitude and perception studies have not been widely used in planning and policy decisions. L.F. Carter, Vice-President of the Systems Development Corporation in the U.S.²⁹, has indicated his feelings about why such surveys have not been used to their full extent by people in administrative positions³⁰:

- (1) The *action* implications of the studies have rarely been stated directly enough to be useful.
- (2) Often the social scientist, who is trained in survey studies and techniques is not "permanently available and

responsible for helping the administrator carry out the action implications of the survey"³¹.

(3) Survey results can be useful in deciding upon the action to be taken but they are only a part of all the information that must be considered before making a decision.

(4) Policy decisions usually "hinge on matters of basic philosophy more than on indications from survey results".³²

Political scientist, Ithiel de Sola Pool³³, in responding to Carter's comments³⁴, notes that attitude research is understood and used in the commercial field. Market research has long employed the techniques of perception-attitude studies in determining what attracts people to particular goods, services or programs. Significant findings have been obtained, (e.g., that even the color of packages greatly affects a product's sale potential) and have been used effectively in marketing. However, perception-attitude studies have received limited attention from the government. "The result is sometimes, disregard of the attitudinal aspects of a decision or more often, the substitution of the official's prejudices for solid knowledge of attitudinal matters."³⁵

De Sola Pool whole-heartedly agrees with Carter's first two points. He suggests that social scientists should explicitly state the action implications of their studies and should aid in the administration of such action.

However, he does not agree with Carter's last points. He concedes that public opinion is only one factor amongst many that must be considered before decisions can be made and that its weight varies from issue to issue. However, it is not often because other factors are properly more important that attitudes are disregarded or weighted less, but because the other

factors are only more easily predictable (e.g., in urban renewal planning, the goal is not "the most beautiful neighborhoods for the dollar but the most human satisfaction,"³⁶ but the planner finds it relatively easy to measure the former compared to the latter).

"The citizen is both client - the person for whom the planning is done - and consultant, who must make his views known to the planners. If this two-way communication does not exist, the resulting plan is likely to be little more than an academic exercise."³⁷

As has been concluded in this paper, the mass media, due to the many levels of influence acting upon it, cannot be taken as an accurate indication of what the public thinks. Also, views expressed through public hearings cannot be assumed to be representative of public views. Mass media and public hearings have their own uses to the planner, but as channels of accurate public information, they do not measure up to the accuracy that can be provided through perception and attitude studies.

Thus, if the planner is seriously concerned with obtaining knowledge of public views and with making his projects socially legitimate by incorporating these views and feelings in his plans, he must turn to attitude and perception studies, and then the onus is on the social scientist to provide him with well-conducted surveys, explicit interpretations and active administrative guidance.

Specific Implications for the Policy and Planning Branch

A. *Public Hearings*

A modified form of public hearings might be useful if held in conjunction with attitude-perception studies. The hearings would have to *follow* the studies to avoid biasing the survey results. The studies could then guide the planning of the hearings.

The following changes in public hearings are suggested:

1. Publication of the hearings should be expanded beyond official notices in local newspapers, the Canada Gazette and the Federal Register - i.e. the following types of communications should also be included:
 - a. radio and television notices
 - b. newspaper publicity (outside of official notices)
- e.g. in the form of news articles
 - c. notices in other local communications
- e.g. organization bulletins
 - d. personal invitations to individuals and groups who expressed a strong interest in the issue (either directly or in the attitude-perception studies)

The aim of such communications should be to emphasize the public participation in the hearings and to avoid giving the impression that they are only for the "experts" and officials.

2. Copies of written reports or oral statements given by the public should not be required as it may deter many from giving testimony. Necessary copies could be made by the Secretary of the hearing.

3. The number of technical reports should be minimized and presented at a layman's level. Results from perception-attitude studies could act as a guide in pointing out areas of information that the public lacks or misunderstands and these could be specifically included in the reports.
4. Local universities, experimental or research stations should be encouraged to do research into the various aspects of the issue and to present relevant material in lay terms.
5. Representatives of organizations should be directly encouraged to speak for their group as much as possible - i.e. representatives should not be self-appointed and should be asked to take direct action to find out the views of the organization - e.g. through discussions, votes.
6. Business concerns and individuals should speak for themselves but should be questioned specifically on their involvement with the issue, their ideas on what is harmful/beneficial (how, to whom and when). Also they should be encouraged to state preferred action.
7. Brief accounts of the hearings should be publicized and full accounts should be made directly available to newspapers, T.V. stations, local organizations, etc. for discussion.

Hopefully, such modifications would raise the efficiency of public hearings as a detector of public views; however, they still could not be solely relied upon. Instead, they could be used as an *additional* source of information and could act as somewhat of a check on the results from perception-attitude studies.

B. *Perception-Attitude Studies*

Perception-attitude studies could focus on many subjects which would be of use in water resource planning and policy-making. Examples of such studies are listed in the chart below. On the right are possible uses of the study results.

*Studies of Public Perception of
and Attitudes toward:*

*Results could be used as a
factor in:*

- | | |
|---|--|
| 1. Problems in the region in order to see where water resources fit into the overall picture of priorities - e.g. Are educational facilities of greater concern than purer water? | Deciding whether to proceed with, postpone or cancel a water resource program. Also, if the water resource is in a dangerously polluted state, for example, and the public appears to be unaware of it, then results can be used as guides for educational programs. |
| 2. Methods of controlled use and development of a water resource in order to determine public preferences. | Making a choice on the particular methods to be used in the program. |

3. Federal influence and action on regional resources. (Comparisons might be made between regions that had received federal action and those that had not.)

Determining the relative amounts of federal and regional action on a local water resource.
4. Public involvement in planning and administrating resource action as opposed to "leaving it to the experts".

Determining who should participate and to what extent and degree. Such information will have implications for the establishment of local advisory groups.
5. Resource development or change that has been completed.

Evaluating the effectiveness of the project and in planning future projects.
6. Resource development or change before and after action was taken. This would require a longitudinal study over a period of several years.

Evaluating the effectiveness of the project and in determining correlates of possible attitude-perception change.
7. Communication techniques - e.g. public hearings, education programs, mass media releases.

Evaluating the value and effectiveness of such techniques and in indicating areas of possible improvement.

NOTES

1. W. Firey, Man, Mind and Land, A Theory of Resource Use, (Illinois: The Free Press of Glencoe, 1960), pp. 11-244.
2. W.R.D. Sewell, "Guidelines for Future River Basin Planning in Canada", Background Papers, Water Workshop Seminar, (Canada: Canadian Council of Resource Ministers, 1968), p. 14.
3. W.B. Shore, "Regional Planning and Public Consultation", Planning 1965, Joint Planning Conference of the American Society of Planning Officials and the Community Planning Association of Canada, Toronto, 1965, p. 148.
4. W. Firey, Ibid., pp. 249-250.
5. Meetings were held on December 3, 4, 5, 1968 in Victoria, British Columbia.
6. W.R.D. Sewell, Ibid., p. 12.
7. G.A. Lundberg, C.C. Schrag and O.H. Larsen, "Mass Communication and Public Opinion", Sociology, (Revised edition, New York: Harper and Brothers, 1958), pp. 425-474.
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9. Public Hearing on Regulation of the Great Lakes Water Levels, International Joint Commission, Sault Ste. Marie, Michigan, May 11, 1965.

10. A.R. Lindesmith and A.L. Strauss, "The Social Aspects of Perception, Memory, and Emotion", Social Psychology (Revised edition New York: Holt, Rinehart and Winston, 1956), p. 86.
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13. V.H. Vroom, "The Effects of Attitudes on Perception of Organizational Goals", Human Relations, Vol. 13, No. 3, pp. 229-240.
14. A.L. Edwards, "Introduction", Techniques of Attitude Scale Construction, (New York: Appleton - Century - Crofts, Inc. 1957), p. 2.
15. Lindesmith and Strauss, "Conceptions of Personal Organization", op. cit., p. 494.
16. D. Katz and K.W. Braly, "Verbal Stereotypes and Racial Prejudice", op. cit., E.E. Maccoby, et. al., ed., pp. 40-46.
17. W.R.D. Sewell, op. cit., p. 13.
18. A.N. Oppenheim, "Problems of Survey Design", Questionnaire Design and Attitude Measurement, (New York: Basic Books, Inc., 1966), p. 3.

19. A brief introductory reference to these attitude scales is: A.N. Oppenheim, Ibid.

20. Reproducibility of a score means that there is only one combination of statements that can produce that score.

$$21. s = l + \left(\frac{.50 - P_b}{P_w} \right) i$$

s - scale value

l - lower limit of interval in which median falls

P_b - sum of proportions below interval in which median falls

P_w - proportion within interval in which median falls

i - width of interval

22. Reliability refers to a measure of consistency.

23. Internal consistency check is the best available validity check. (Compute correlation coefficients for each item with total score and retain those with the highest correlation).

24. Validity is the extent to which an instrument actually measures what it purports to measure.

25. A.S. Metz, "An Analysis of Some Determinants of Attitude Toward Flouridation", Social Forces (June, 1966), Vol. 44, pp. 477-484.

26. G.F. White, Choice of Adjustment to Floods, (Chicago: Department of Geography, University of Chicago, 1964), Research Paper No. 93.

27. T.F. Saarinen, Perception of the Drought Hazard on the Great Plains, (Chicago: Department of Geography, University of Chicago, 1966), Research Paper No. 106.
28. M.L. Barker, "Perception of Water Quality as a Factor in Consumer Attitudes and Space Preferences in Outdoor Recreation", Unpublished paper, University of Toronto, 1968.
29. Carter is, himself, a social psychologist.
30. L.F. Carter, "Survey Results and Public Policy Decisions", Public Opinion Quarterly, (Winter, 1963), Vol. 27, No. 4, pp. 549-557.
31. Ibid., p. 549.
32. Ibid., p. 549.
33. Ithiel de Sola Pool is Professor of Political Science and Director of the International Communication Program of the Center for International Studies at Massachusetts Institute of Technology.
34. Ithiel de Sola Pool, "Comment" to L.F. Carter, "Survey Results and Public Policy Decisions", Public Opinion Quarterly, (Winter, 1963), Vol. 27, No. 4, pp. 558-561.
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36. Ibid., p. 561.
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