



Spring 1969

Political Behavior and the Decision-Making Process in the Allocation of Water Resources between Recreational and Municipal Use

Roger E. Kasperson

Recommended Citation

Roger E. Kasperson, *Political Behavior and the Decision-Making Process in the Allocation of Water Resources between Recreational and Municipal Use*, 9 Nat. Resources J. 176 (1969).

Available at: <https://digitalrepository.unm.edu/nrj/vol9/iss2/4>

This Article is brought to you for free and open access by the Law Journals at UNM Digital Repository. It has been accepted for inclusion in Natural Resources Journal by an authorized editor of UNM Digital Repository. For more information, please contact amywinter@unm.edu, lsloane@salud.unm.edu, sahrk@unm.edu.

POLITICAL BEHAVIOR AND THE DECISION- MAKING PROCESS IN THE ALLOCATION OF WATER RESOURCES BETWEEN RECREATIONAL AND MUNICIPAL USE

ROGER E. KASPERSON*

Recent research has extended substantially our understanding of the ways by which private individuals manage a particular natural resource. A concern with the degree of knowledge and accuracy of perception by the resource manager and the significance of such cognition for the decision-making process is a prominent attribute of these studies.¹ At the same time, however, these research findings dramatically illustrate the key role which the political system plays in such questions in a modern, industrial state. Surely the specific issues of resource allocation and management are derivatives of more general problems of political economy.

Yet a corresponding thrust of research into the interactions among individual resource users, governmental specialists, members of resource interest groups, local community leaders, and the general public has not been forthcoming. Despite the small but effective group of political scientists and geographers who have devoted attention to the issues involved in public planning and policy-making processes, Maynard Hufschmidt notes that

In recent years . . . the water resources field has not attracted many political scientists. Many, for example, have become interested in urban and metropolitan problems and, of course, a bit earlier, the field of overseas development and attracted many adherents from political science. Still, when one considers the extreme public orientation of water resources and the many fascinating issues and questions related to public administration and political behavior that are involved in water resources, it is difficult to explain why more political scientists have not become interested in the field, and why more

* Assistant Professor of Geography, Clark University, Worcester, Mass. 01610.

1. See for example, R. Kates, Hazard and Choice Perception in Flood Plain Management (Univ. of Chicago, Dep't of Geography Research Paper No. 78, 1962); Roder, *Attitude and Knowledge on the Topeka Flood Plain*, in Papers on Flood Problems 11 (Univ. of Chicago, Dep't of Geography Research Paper No. 70, G. White ed. 1960); Lucas, *Wilderness Perception and Use: The Example of the Boundary Waters Canoe Area*, 3 *Natural Resources J.* 394 (1964); Burton and R. Kates, *The Perception of Natural Hazards in Resource Management*, 3 *Natural Resources J.* 412 (1964); T. Saari-nen, Perception of Drought among Great Plains Farmers (Univ. of Chicago, Dep't of Geography Research Paper No. 106, 1966).

attention is not paid to the field of water resources in political science departments throughout the country.²

A survey of the literature indicates that most substantial efforts deal with problems of governmental organization and administration.³ Similarly, despite the "high degree of significance for future work in political geography,"⁴ there has been a nearly total neglect of this uniquely suited sub-field of geography. An important gap remains, therefore, in our understanding of the behavior of the various actors in the political economy of natural resource management and the significance of such behavior for planning and policy formulation.

By examination of one local political conflict over both the spatial and functional allocation of water resources, this exploratory study seeks (1) to present some initial findings on characteristics of attitudes and political behavior in a water resource dispute, and (2) to identify a number of larger issues in the public management of natural resources. Four major components of the decision-making process—awareness and knowledge of the disputed resource, attitudes to the political system, group organization and strategy, and policy-formulation and political participation—are included in the following analysis. First, however, some background to the dispute is necessary.

I

BACKGROUND TO THE STUDY

A. *The Study Area*

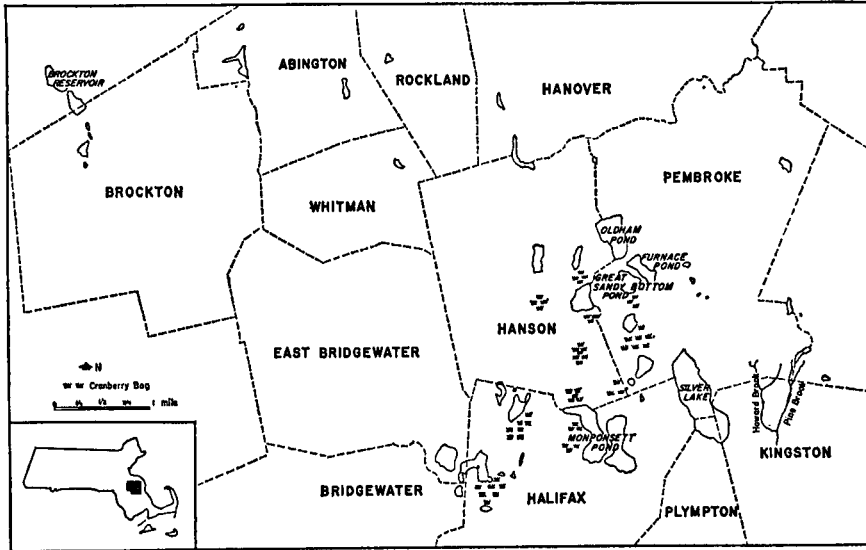
Located in southeastern Massachusetts, the study area includes the city of Brockton, with a population of 80,000 in 1965, and the smaller adjacent communities of Whitman, East Bridgewater, Hanson, Pembroke, Halifax, and Kingston (Figure 1). Brockton, formerly supported by its shoe and textile industries, is now experienc-

2. Maynard Hufschmidt, *The Role of Universities in Water Resource Education: The Social Sciences*. (Paper presented at the annual meeting of the Universities Council on Water Resources, Madison, Wisconsin, July 25, 1966).

3. The following are representative: C. McKinley, *Uncle Sam in the Pacific Northwest* (1952); P. Selznick, *TVA and the Grass Roots* (1949); A. Maass, *Muddy Waters* (1951); W. Leuchtenburg, *Flood Control Politics* (1953); P. Foss, *Politics and Grass* (1960); D. Mann, *The Politics of Water in Arizona* (1963); R. Martin, *Water for New York* (1960); R. Martin *et al.*, *River Basin Administration and the Delaware* (1960); *Organization and Methodology of River Basin Planning* (C. Kindsvater ed. 1964).

4. National Academy of Sciences—National Research Council, *The Science of Geography* 38 (1965).

Figure 1.
THE BROCKTON-SILVER LAKE AREA.



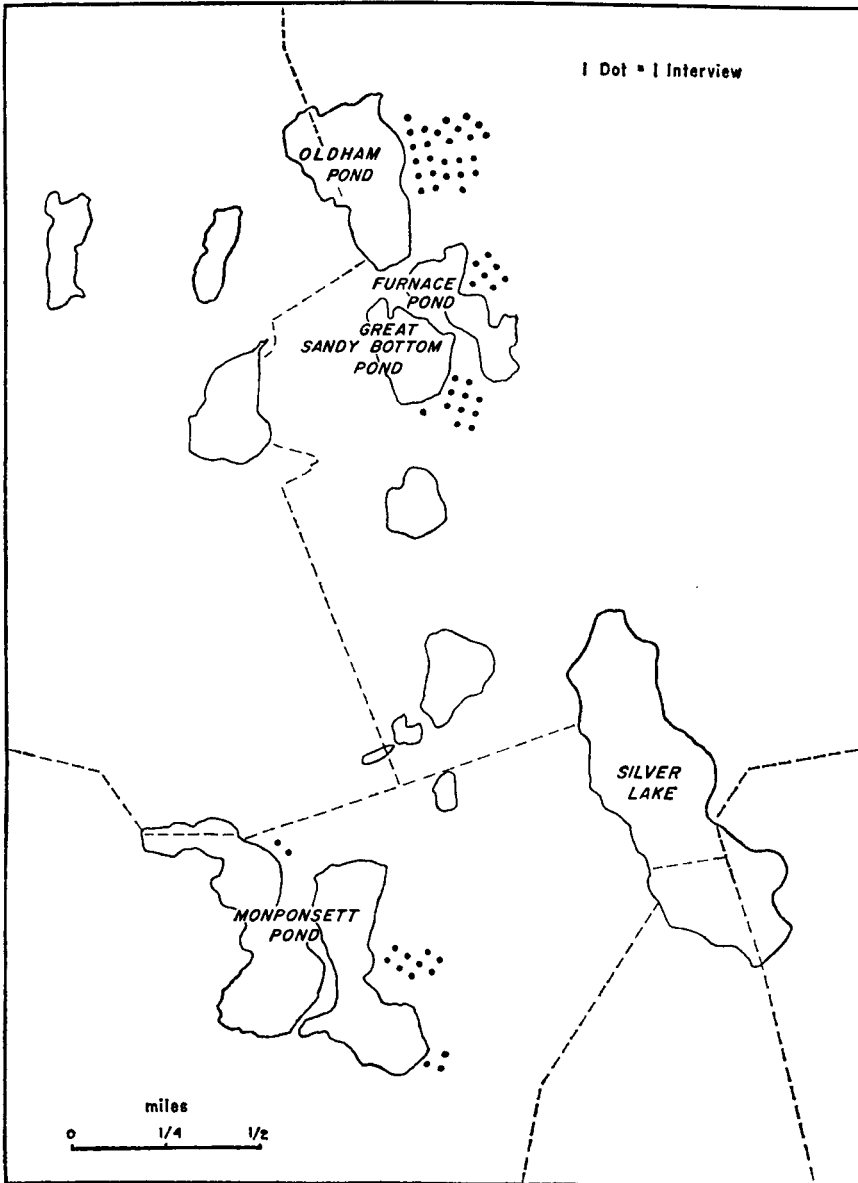
ing both an economic and population resurgence. Acting as the central city for the surrounding towns, it faces the common urban problems of population growth and internal blight. The smaller communities to the east, by contrast, retain a predominantly rural atmosphere. A number of lakes and streams in the region known as the Silver Lake area provide the single most important economic base, and the town populations (largely in the 5,000-10,000 range) double during the summer months.

B. Data Sources

A number of sources provided the data for the study. During the height of the water crisis in 1963, 57 resource users were interviewed in the Silver Lake area. The distribution of the interviews, which was selected by a random cluster sample, is shown in Figure 2.⁵ Because the general lack of knowledge of resource questions and political issues among the public-at-large is a common feature of other studies and since political officials and resource users were the main political actors in this dispute, the data collection effort concentrated on the more highly motivated and politically active segment of the population.

5. The map does not show the exact location of each interviewee but rather the total within the cluster by means of equidistant spacing.

Figure 2.
DISTRIBUTION OF INTERVIEW SAMPLE.



Depth interviews with community political leaders were a second source of information. These open-end interviews concentrated on the views of the community as perceived by the political official, usually the chairman of the Board of Selectmen, and the political activities undertaken by the respective towns in the Silver Lake area. In addition, leaders of several water resource interest groups provided useful interview results. In Brockton, although the mayor and city water commissioner were the key figures interviewed, information gathered during field work also will permit some surface impressions of political attitudes and behavior in the city of Brockton.

A collection of editorials and newspaper accounts of the controversy in the *Brockton Daily Enterprise* and the *Silver Lake News*, the only local newspaper in each respective area, constituted a third source of data. Content analysis permitted an evaluation of the impact of this segment of the information system upon political attitudes and behavior. Finally, other sources include interviews with the firm of Camp, Dresser & McKee, the consultants to Brockton; interviews with representatives of the cranberry industry; correspondence with members of governmental agencies (e.g., the Massachusetts Water Resource Commission, the State Public Health Department); and the various reports, historical literature, and legislative documents pertaining to the dispute.

C. *The Brockton Water Supply Problem*

As in many other areas of the United States, rapid population growth and the increasing per-capita consumption of water in Brockton have severely strained its municipal water supply. During the 1950's, experts from consulting engineering firms and state agencies warned city leaders of impending water shortages. With the severe drought of 1908-1911 in the hazy and all-but-forgotten past, however, Brockton residents and politicians—who were enjoying an unusually rainy period—chalked up these dire forecasts to the inevitable propensity of technical experts to project future crisis. After all, the city had always solved its past water supply problems with ease.

Constructed in 1880, Avon Reservoir, with its safe yield of 1.5 million gallons per day (MGD), was the original municipal supply.⁶

6. The best history of Brockton's water supply system is the unpublished report prepared by Camp, Dresser, and McKee for the City of Brockton: Board of Water Commissioners, Report on Water Works Improvement for the City of Brockton (November 2, 1951).

Then, in 1897 population growth led the city Board of Water Commissioners to recommend the acquisition of Silver Lake, located within the political limits of nearby towns (Figure 1). Because the acquisition bill did not prohibit recreation and because the population of the towns was small, the bill passed without opposition. Only six years later the State Board of Health intervened to prohibit all future bathing, boating, fishing, and ice-cutting, and the local populace felt the sting of their ready consent.

By the early 1950's, the stage was set for a possible crisis over water supply. At that time, the Brockton Water District served the city of Brockton; the towns of Whitman, East Bridgewater, Pembroke, Halifax, and a portion of Hanson; and the village of South Easton. The rights of the Silver Lake area towns to draw their water from the Brockton District was the price the city had to pay for tapping Silver Lake. In 1950, when Brockton's average water consumption reached 4.8 MGD, the Board of Water Commissioners hired a reputable Boston engineering firm (Camp, Dresser & McKee) to prepare a thorough evaluation of Brockton's water supply and to make recommendations for future planning. This report formed the basis for Brockton's attempts to augment its water supply over the next fifteen years.

D. The Camp, Dresser & McKee Report (1951)

Three major areas of evaluation—population growth and water consumption, existing sources of supply, and alternative sources for additional supply—formed the basis for the report's recommendations. At the outset, the firm made population and water consumption estimates for the Brockton Water District (Table 1). By the

TABLE 1
ESTIMATED POPULATION AND WATER CONSUMPTION
FOR THE BROCKTON WATER DISTRICT FOR THE YEAR 2000

Year 2000	Population		Water Consumption		
	Brockton Towns	Total	Average Per-Capita Consumption (in GD)	Total District Consumption in (MGD)	
Minimum	63,000	28,000	81,000	90	7.3
Maximum	90,000	35,000	125,000	90	11.2

Source: City of Brockton, Board of Water Commissioners, Report on Water Works Improvement for the City of Brockton 8 (Nov. 2, 1951).

use of a questionable assumption—that the population rates between Brockton and the surrounding towns would remain constant—it estimated the future populations of the towns of the Brockton

Water District. The firm further estimated future per-capita water consumption by simply assuming it would be somewhat higher than an extension of the relatively constant rate of increase between 1900 and 1950. Based on these figures, the engineers predicted an interim demand in 1975 of between 6.0 and 8.0 MGD.

Examination of Avon Reservoir, now unused except in emergency, led the engineers to conclude that its average safe yield was only 1.5 MGD. Because of its limited supply and poor water quality, it would suffice only as a reserve supply until new water sources could be obtained. Silver Lake had a safe yield estimated at 4.6 MGD, a figure then matched by consumption rates. In this manner the consultants concluded that present sources were inadequate to meet future demand, and additional supplies should be obtained.

The consultants considered three major additional sources of supply. First, they considered existing ground water supplies but determined these to be inadequate because of the magnitude of the supply needed and because of the possibilities of iron and manganese content. Second, they weighed the possibility of a connection with the distant Boston Metropolitan Water District but rejected this alternative because of the higher costs involved in pumping, connecting pipelines, and the higher water rates in the district. Finally, like earlier studies, the firm decided the ponds and streams (Furnace, Oldham, and Monponsett ponds and Howard and Pine Brooks) in the southeastern portions of the state were the preferential source. The engineers estimated that these five sources would produce a safe yield of 10.2 MGD, enough in their view to satisfy Brockton Water District needs until the year 2000. At the time the study was made, the consultants clearly envisioned only single purpose use (i.e., water supply) for the proposed sources.

II

CHRONOLOGY OF THE POLITICAL DISPUTE

A. The Emergence of Crisis

In 1952, Brockton introduced legislation to augment its water supply in the directions suggested by the Camp, Dresser & McKee report. Determined opposition to the bill from the towns adjacent to the proposed sources, the cranberry industry, and a number of summer residents from elsewhere in the state, killed the bill in committee. Unlike the political environment, however, the natural environment was kind to Brockton in the years following this abortive legislative attempt. From 1953 to 1957 southeastern Massa-

chusetts received fully twenty per cent more rainfall than the mean for that area. Brockton's political leaders and water commissioners, comforted by the brimming reservoir of Silver Lake, complacently turned their attention to other local problems.

But unknown to the local administration, the favorable balance they perceived in the water supply system was already threatened. Brockton's population increased more rapidly, took more baths, installed more dishwashers, airconditioned more homes, and watered more lawns than the engineers anticipated. While these consultants did not foresee an average annual demand of 6-8 MGD until 1975, by 1957 actual annual water consumption had already reached 5.4 MGD.

Alerting Brockton city leaders to the very grave situation developing, Camp, Dresser & McKee persuaded them in 1957 to reintroduce the 1952 bill. The response was stunning. 1800 angry people stormed into the public hearings in Boston to deliver their protests, turning the meeting into an assembly of denunciation. Although principally Silver Lake area residents, the dissidents came from throughout the eastern portions of the state. Ranged against them were only a handful of Brockton political officials, several representatives from governmental agencies, and the Camp, Dresser & McKee consultants. With the political outcome apparent to all, Brockton humbly withdrew the bill.

Nature remained patient. During the next five years, rainfall continued nearly twenty per cent above normal. Consumption, however, continued its unabated rise. By 1962, water consumption had reached 7.8 MGD, an increase of more than fifty per cent in ten years. At the same time, the safe yield of the municipal supply remained at about 5 MGD. The consumption drained Silver Lake to about fifty per cent of its capacity. The consulting engineers renewed their warnings to Brockton officials, pointing out that in the event of drought the Silver Lake supply would be exhausted in eighteen months. Since the time needed to construct facilities for water diversion of the proposed supplementary sources was also estimated at eighteen months, the problem had, in their opinion, reached crisis dimensions. Accordingly, they convinced city leaders of the need for a new and vigorous legislative effort.

B. The Legislative Effort of 1962-63

Determined to equip himself for the conflict he knew would surround any proposed legislation, Mayor F. Milton McGrath of Brockton asked Camp, Dresser & McKee to update their study of

1951. He also knew that provisions would have to be written into the bill to allay the fears of present water resource users in the Silver Lake area. Obviously, only a well-prepared attempt stood any chance of success.

The modified bill submitted to the Legislature in 1963 embodied a number of revisions from the original 1952 version. It proposed to divert only surplus overflows of water during the period from October to May. All recreational rights and uses of the ponds for flooding cranberry bogs would be fully protected:

. . . nothing in this act shall be construed as preventing the normal use of the aforesaid Furnace, Oldham and Monponsett ponds or Howard and Pine brooks for bathing, boating, fishing and other such purposes, nor shall the provision of this act prevent the withdrawal of sufficient water for flooding cranberry bogs.⁷

The bill also established minimum water levels and flows and no longer obligated the cranberry industry, as in 1952, to notify in advance the State Board of Public Health of the time and amount of water withdrawals. In short, the city finally broadened its original single-purpose project to include both recreational and supply uses.

Despite these legislative modifications, precedent proved to be the attitudinal frame of reference. Scoffing at the guarantees in the bill, Silver Lake area leaders characterized the legislation as simply another in a series of threats and mobilized their forces for yet another effective demonstration of powerful political opposition. In a preliminary meeting held at a local school in the Silver Lake area, over 1,000 people jammed the auditorium to express their disapproval. There followed, at the committee hearings in Boston, a similar display of opposition to the bill. Brockton leaders salvaged some hope though, when the House Committee on Water Supply and Water Resources supported the formation of a special legislative commission to study their water problem.

C. *The Decision*

Composed of representatives from Brockton and each of the Silver Lake area towns; the state commissioners of agriculture, natural resources, and public health; the director of the state water resources commission; and a representative from the cranberry industry; the study commission accomplished what Brockton could not. The enforced consideration of the water problem by a mixed

7. Commonwealth of Massachusetts, House of Representatives, Bill No. 2969 (1963).

study group of political leaders and governmental "experts" led to a gradual erosion of political support for the Silver Lake area opposition.

Several factors contributed to this shift in the balance of political power. The steadily worsening state of Brockton's water supply made some effective action mandatory. Also on August 1, 1963, Governor Endicott Peabody intervened by calling for an investigation by the State Water Resources Commission of the water supply situation in southeastern Massachusetts. He called attention to the complication of the problem by "old water rights held by some of the municipalities."⁸ In addition the flow of more accurate information to key political decision-makers contributed to the removal of some of the emotional atmosphere surrounding the controversy. The single most important element, however, was the realization that society was not prepared to let a town go dry.

After a series of meetings and hearings during 1963 and early 1964, the special commission reported out a new water plan which established a regional water district and authorized Brockton to extend its water supply to the sources recommended in past legislation. The key concession in the report and in subsequent legislation was Brockton's agreement to construct a filtration plant at Silver Lake—a provision which insured recreational use of the new sources. The bill was passed in 1964 and construction began the same year.

This outward sequence of events provides little understanding, however, of the processes of planning, policy formulation, and decision-making. What were the prevailing levels of knowledge and awareness among the various groups involved in the controversy? How did they arrive at decisions as to the proposed legislation? How did community political leaders and other interested parties organize and what strategies did they employ to influence the political decision? To answer these questions, it is necessary to return to the critical period following the introduction of the legislation in 1963 and attempt to reconstruct and analyze the patterns of attitude formation and decision-making.

III

COGNITION OF THE RESOURCE

A. Awareness and Knowledge

A very high proportion (58 per cent) of resource users in the

8. See the full report of the message in the Brockton Daily Enterprise, August 1, 1963.

Silver Lake area listed water resources as a major community problem in response to an open-end question. This was the result of the crisis atmosphere of the time, a period when the *Silver Lake News* was running banner headlines and featuring editorials on the controversy. The high degree of knowledge among interviewees of past diversion attempts by the city of Brockton (only 12 of 57 had no knowledge) corroborates the widespread concern over the proposed legislation and emphasizes the importance of an unpleasant precedent to contemporary attitudes. Of the 12 who had no knowledge of precedent, seven had lived in the area less than one year.

Perhaps more surprising than the general high level of awareness among interviewees was the widespread lack of information about the resources themselves. Despite constant publicity, none of the interviewees could name all three ponds and two brooks involved in the dispute, and only 20 (35 per cent) could even name all three ponds. In all cases, respondents listed the nearest pond first and then perhaps one or two others—distance clearly influenced the knowledge of sources.

Even more striking was the lack of accurate knowledge concerning ownership of the water sources. The fact that the diversion was ultimately a state not a local question was, after all, a key factor in the dispute. Without this consideration, there would not have been a controversy in the first place. Nevertheless, only 49 per cent of all respondents cited the state as the owners of the ponds, while fully 42 per cent incorrectly cited the towns as owners. This misconception among a large minority of the more highly informed segment of the population is of great salience since individuals with this view would see no legal right to a proposed diversion by a geographically distant community. Some analysis of this pattern of knowledge is therefore in order.

Length of residence was particularly important in the degree of knowledge. As Table 2 indicates, the level of knowledge of both

TABLE 2
LENGTH OF RESIDENCE AND KNOWLEDGE OF RESOURCE

Years of Residence	Knowledge of Water Resources Involved			Knowledge of Ownership of Ponds		
	High	Medium	Low	State	Town	Other or Don't know
1.0 or less	1	5	5	1	7	3
1.1-4.9	5	5	6	7	7	1
5.0-9.9	3	4	3	6	4	0
10.0 or more	11	6	3	14	6	1
	$\chi^2 = .16$			$\chi^2 = .12$		

the water sources (none or one lake = low; two lakes = medium; three lakes or three lakes and one or more brooks = high) involved and the ownership of the ponds increases markedly with increases in the length of residence. At the same time, however, one-third of the residents of over five years duration believed that the towns owned the ponds. The explanation for this misconception may well be in the character of statements used in the newspaper and at public hearings. Content analysis of all references to ownership of the ponds in the *Silver Lake News* and the *Brockton Daily Enterprise* during the months of January and February of 1963 (Table 3) shows an interesting contrast in the use of the possessive.

TABLE 3
CONTENT ANALYSIS OF NEWSPAPER RHETORIC:
USE OF THE POSSESSIVE IN REFERENCES TO DISPUTED SOURCES
(JANUARY 1-FEBRUARY 28, 1963)

Wording of Possessive	Occurrences	
	<i>Silver Lake News</i>	<i>Brockton Daily Enterprise</i>
State's or "Great Ponds"	0	1
Region's	1	0
Town's	8	0
"Our"	2	0

Despite the publisher's knowledge to the contrary clearly indicated in an interview, news descriptions in the *Silver Lake News* inevitably lapsed into rhetoric implying local control over the water sources. *The Brockton Daily Enterprise*, except for a lone instance, avoided use of any possessive and usually only named the sources in question.

In Brockton, residents apparently had little knowledge of or concern with the waters in dispute. They had not been seriously inconvenienced by the growing water shortage. Comforted by reassurances from city leaders, they took but desultory interest in the confused debate over the enlargement of the municipal water supply.

B. *The Mythology of Alternatives*

In many natural resource disputes, there is considerable confusion among the public as to the choices available for a solution. Frequently, the imagination of men creates paths which are so much more inviting than those that exist in reality.⁹ Consequently, in the analysis of resource disputes it is possible to speak of the myth-

9. See the discussion of the influence of attitudes and myths on public apathy in the New York water supply crisis in Sewell, *The New York Water Crisis*, *Journal of Geography* 387 (1966).

ology of alternatives. This mythology often provides the rationale for a particular personal stance and covers the decision-making process in a cloak of ambiguity.

In the Brockton controversy, the "giant underground river" was the major myth among Silver Lake area residents. "The underground river starts in New Hampshire and flows in a curving path through Massachusetts and then empties into the Atlantic Ocean. When it reaches Brockton, it's about 3,000 feet down. The engineers are working on it right now. Where do you think the V.A. hospital gets its water?"¹⁰ Another interviewee's incredulous response reflects a similar viewpoint: "Brockton run out of water? are you kidding? Brockton sits on top of one of the biggest underground lakes in the east. Engineers have proved it!"¹¹ Five resource users and one political official cited, of their own volition, the "underground river" as the best possible solution to the problem. Efforts to determine the source of this myth were fruitless, although interpersonal communication was apparently the means of diffusion (there were no references to the myth in the mass media).

Those who harbored no illusions about underground rivers, often entertained other mythical alternatives. Thirty-two (56 per cent) of the interviewees believed that the crisis would be resolved by Brockton's finding a satisfactory alternative source, while another eleven (19 per cent) refused even to grant that the city would ever run out of water. Several cited the claim by a local well-drilling firm that ample ground water could be found if the effort were made.¹² There was also a widespread belief that Brockton would eventually succeed in tying into the Boston Metropolitan Water District. Still others confounded the distributional deficiencies in the Brockton water system with the need for new sources. Fewer than ten per cent of Silver Lake area interviewees saw the sharply circumscribed range of alternatives. As a result, the vigorous political opposition was in great part the product of this hazy view of alternatives.

If confusion and mythology plagued cognition in the Silver Lake area, apathy spread its blanket over the city of Brockton. Only those in positions of public responsibility had any inkling of the nature of the crisis or the alternatives available. Yet, even well-informed individuals groped for that magical source which would bring the millennium and extricate them from the ever-increasing difficulties.

10. Interview, Pembroke, Massachusetts, April 25, 1963.

11. Interview, Halifax, Massachusetts, May 5, 1963.

12. On March 19, 1963, the R. E. Chapman Company of Oakdale, Massachusetts, touched off a furor by describing Brockton as "one of the greatest water-producing areas for rock wells in New England." See the Brockton Daily Enterprise, March 20, 1963.

In a personal interview with the author, Mayor F. Milton McGrath of Brockton speculated on the feasibility of using some bogs in back of a friend's house as a source area to meet the growing water shortage. He thought also of the prospect of diverting local brooks to the bog, thereby using it as a storage area. In any event, he was confident that Silver Lake would "come back" as it always had in the past.¹³

What in fact were the available water supply alternatives? According to the reports of the consulting engineers, the only "feasible" alternative was to divert surface water supplies in the Silver Lake area. Yet, there was never a systematic search for and an economic evaluation of all surface water supplies, nor were there, until 1965, well-drilling tests to determine if adequate groundwater supplies could indeed be found. It can justly be said that the range of alternatives was never clearly defined by any of the major actors—the "experts," the political leaders, the water resource users, or the general public.

Another major shortcoming in the definition of alternatives was the failure of Brockton, its consultants, or governmental agencies to recognize multiple use of the disputed water resources as an early option. It was only under the pressure of political opposition that the participants in the planning process finally considered multiple water uses. The intransigence of the State Public Health Department to recreational uses of water supply reservoirs was, of course, a contributing element.

C. *The Perceived Impact.*

The perceived impact of the proposed diversion contributed to the characteristics of awareness and knowledge among resource users. Only nine (16 per cent) interviewees felt that they would

TABLE 4
THE PERCEIVED PERSONAL IMPACT

<i>Impact</i>	<i>Numbers</i>	<i>Per Cent</i>
Depreciate Property Values	19	32
Hurt Personal Business	1	2
Loss of Recreational Rights	35	59
No Effect	9	15

not be directly affected personally by the proposed diversion. Most (59 per cent) perceived the greatest threat to be to their recreational use of the ponds. Among these respondents, most were aware

13. Interview, Brockton, Massachusetts, May 18, 1966.

that the proposed bill allegedly would not interfere with recreation, but they discounted the guarantees as ineffective. Explaining this position, they usually cited precedent for justification, saying that they had been "burnt" before in Silver Lake and Big Sandy Pond.¹⁴ The "foot in the door" argument (Once Brockton obtained limited use, further legislation could be introduced to restrict recreation) became the rallying cry of Silver Lake area residents. The importance of precedent was continually present. Twenty-two (39 per cent) of the water resource users and all the political officials interviewed in the Silver Lake area referred to it of their own volition. All were quick to point out that in the cases of both Silver Lake and Big Sandy Ponds, the State Department of Public Health eventually banned recreational uses. At a public hearing in January, 1963, Worthen H. Taylor of the Department of Public Health admitted to 800 Silver Lake area residents that in all but two of the 200 ponds used as direct water supply in Massachusetts bathing was prohibited and permits were needed for boating and fishing.¹⁵

Most resource users also foresaw a devastating impact on their communities generally (see Table 5). Interviewees perceived the

TABLE 5
THE PERCEIVED COMMUNITY IMPACT

<i>Impact</i>	<i>Numbers</i>	<i>Per Cent</i>
Depreciate Property Values	17	29
Hurt Community Business	12	20
Decline in Summer Population	21	36
Loss of Recreational Rights	10	17
Don't Know	4	7
No Effect	2	3

impact of the proposed diversion on the community in broader and more varied terms. Comparison with the perceived personal impact betrays a pronounced tendency to depersonalize and universalize the impact. While the highly personal and material effects of lower property values and the loss of recreational rights predominated in the expected personal impact, the more general and abstract effects of the economic decline and population reduction of the community were critical in the expected community impact. Interesting in this respect is the tendency of individuals to use identical expression and phraseology in describing their fears. Of the twenty-one interviewees citing the danger of losses in the summer population, nine described

14. Big Sandy Pond was requisitioned as a water supply for several nearby communities and recreation was prohibited.

15. Brockton Daily Enterprise, January 29, 1963.

the bleak future of the community by an identical term—"ghost town."

The interview data suggest, then, that the perceived impact of the proposed diversion occupied two levels—the personal level, where individuals viewed the change largely as a material threat; and the community level, where they viewed the outcome chiefly in immaterial and often symbolic terms. While only a knowledge of the proposed change was necessary for the former, the latter probably grew out of exposure to mass communications and participation in the social and political fabric of the community. Only the latter factors can explain the tendency among interviewees to express the reservation in precisely the same terms.

The impact of the proposed legislation was not, of course, limited to the resource users immediately adjacent to the ponds. Real estate agents claimed, for example, that even the threat of water diversion resulted in fewer buyers for lakeside property. Local businessmen feared a possible decline in their future sales. Cranberry industry leaders, concerned that the proposed use of the ponds and brooks for water supply would eventually lead to a prohibition of water use for flooding cranberry bogs, added their denunciation of the bill. A United Cranberry Company representative expressed the views of the growers as follows: "If a foot is in the door, it's easier to get into the house. They (Brockton political leaders) could easily amend the bill so that it would curtail the use of cranberry water, because the number of cranberry growers is relatively small compared to real estate owners. Also, the State Board of Health is rather dictatorial."¹⁶ Each of these participants in the dispute was influenced in his attitude toward the larger political question and motivated to political involvement by his occupation and position in the community.

IV

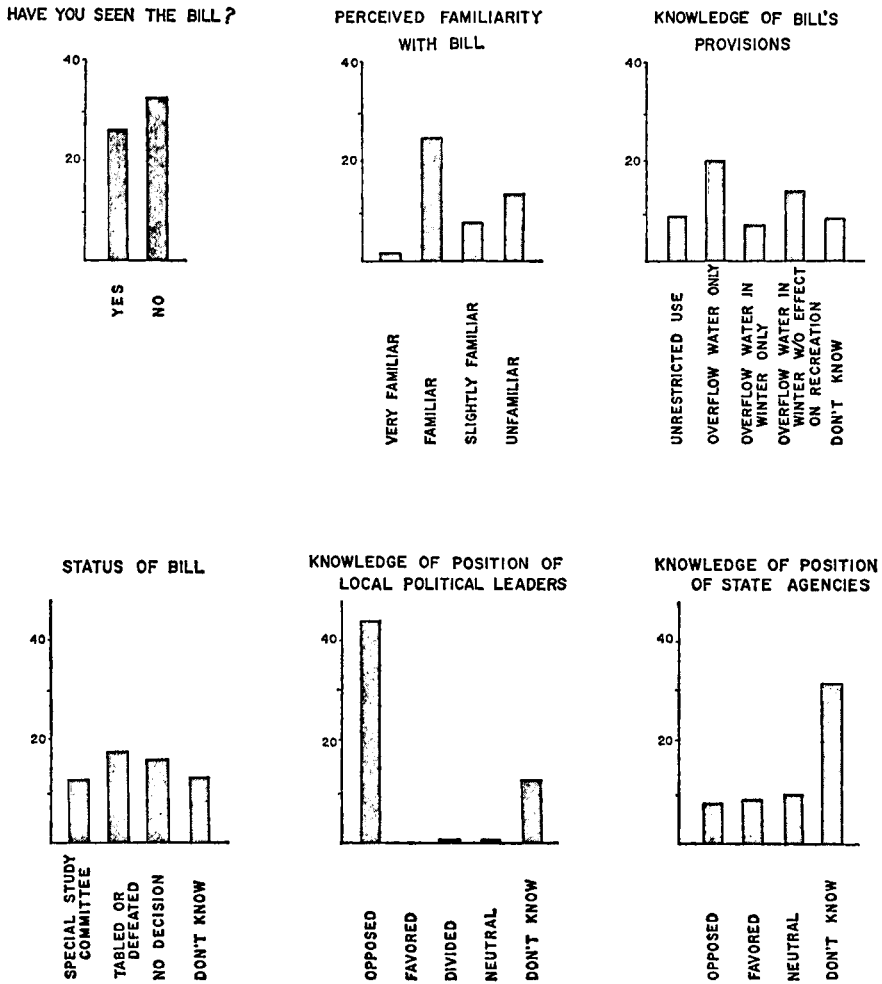
PATTERNS OF POLITICAL COGNITION

A. Awareness and Knowledge

Figure 3 shows the major parameters of the degree of awareness and knowledge of the political dimensions of the dispute among resource users in the Silver Lake area. A surprisingly large number (44 per cent) had actually seen the bill under consideration, and only fifteen (26 per cent) thought themselves unfamiliar with its provisions. Yet, in questions dealing with the content of the bill,

16. Interview with Mr. Brooks, United Cranberry Company, Hanson, Massachusetts, May 15, 1963.

Figure 3.
KNOWLEDGE OF POLITICAL DIMENSIONS.



only fourteen (25 per cent) accurately described the restriction of the diversion to overflow waters during the winter period. An equally large number failed to realize that the bill did not provide for interference with recreation rights. In addition, 29 (51 per cent) could not cite correctly the current status of the bill. In short, individuals tended to overestimate their knowledge of the proposed legislation, and, despite their high degree of exposure to its provisions, failed to assimilate the key restrictions included as safeguards.

Why was there this breakdown in the flow and absorption of in-

formation? First, many individuals may have refused to consider the guarantees of the bill, may have chosen to characterize the dispute in symbolic terms of a "struggle" between "us" and "them". In other words, the lack of awareness may arise from an individual lack of receptivity.¹⁷ The sense of community is probably also critical in such a viewpoint. Second, the rhetoric of public communication may have served to cloud a more factual presentation of information. Table 6 presents telling evidence to support this hypothesis.

TABLE 6
CONTENT ANALYSIS OF NEWSPAPER RHETORIC: REFERENCES TO THE PROPOSED LEGISLATION
(JANUARY 1-FEBRUARY 28, 1963)

Category of Reference	Occurrences	
	<i>Silver Lake News</i>	<i>Brockton Daily Enterprise</i>
<i>Nouns</i>		
Bill, Proposal, or Plan	24	28
Implying arbitrary nature ("grab," "encroachment," "seizure")	6	0
Implying Uncertainty ("attempt")	3	0
<i>Verbs</i>		
Implying unqualified control ("take," "acquire," "take over")	7	13
Qualified ("tap," "divert")	2	6
<i>Adjectives</i>		
Implying arbitrary nature ("callous," "expedient," "vicious")	6	0
Implying precedence ("latest," "most recent")	2	0
Implying uncertainty ("proposed," "attempted")	3	4

The consistency with which the *Silver Lake News* cast the proposed legislation as an arbitrary if not criminal action detracted immensely from the guarantees in the bill. Characterizing the bill as a "grab," an "expedient" attempt, the "latest" of several such "seizures" undoubtedly contributed to the emotional and symbolical overtones of the dispute. In addition, the failure of the *Silver Lake News* to properly qualify the diversion in references to the water resources (Table 7) (as did the *Brockton Daily Enterprise*) caused the diversion to appear as a far more serious threat. The lack of qualification together with the systematic misrepresentation of ownership were the seeds for widespread misconception.

The lack of knowledge concerning the position of public officials was another source of misunderstanding. Despite the presence of representatives from the State governmental agencies as backbone of Brockton's "expert" testimony, only eight individuals (14

17. K. Deutsch, *The Nerves of Government* 239-40 (1966).

TABLE 7
CONTENT ANALYSIS OF NEWSPAPER RHETORIC: USE OF ADJECTIVES IN REFERENCES TO
DISPUTED WATER RESOURCES (JANUARY 1-FEBRUARY 28, 1963)

<i>Adjectives</i>	<i>Occurrences</i>	
	<i>Silver Lake News</i>	<i>Brockton Daily Enterprise</i>
Implied value ("precious," "priceless")	2	0
Implied beauty ("sparkling")	1	0
Qualifying ("excess," "overflow," "winter")	5	23

per cent) could correctly indicate the stand of officials on the proposed legislation. While such a lack of knowledge would surround most similar resource questions, it is surprising here because many (34 per cent) of the interviewees attended hearings at which these "experts" presented testimony and others undoubtedly had read lengthy resumes in the newspapers. This indicates either another serious gap in the informational system associated with the dispute or an unwillingness of the receiver to recognize or absorb adverse viewpoints. Only when it came to the favorably-inclined local political representatives could the majority (75 per cent) of interviewees accurately describe *their* position on the bill.

Given a situation of crisis dimensions, high exposure of issues to the public, and a highly motivated segment of the general public, the widespread lack of knowledge among individuals creates serious problems for decision-making in a democratic society. Is there any light in this generally dark portrait of political cognition? The answer is yes. One positive element exists in the cognition of membership of resource interest groups. The Silver Lake area boasted a series of local improvement groups oriented to each of the many lakes and ponds of the region.¹⁸ Membership in one of these organizations implied a higher degree of knowledge of the proposed legislation (Table 8). Granted, this may merely indicate the pres-

TABLE 8
RELATIONSHIP BETWEEN MEMBERSHIP IN A RESOURCE INTEREST GROUP AND KNOWLEDGE
OF THE PROPOSED LEGISLATION

<i>Membership in a Resource Interest Group</i>	<i>Have You Actually Seen Bill 2969?</i>		<i>How Familiar Are You with Bill 2969?</i>			
	<i>Yes</i>	<i>No</i>	<i>Very Familiar</i>	<i>Familiar</i>	<i>Slightly Familiar</i>	<i>Unfamiliar</i>
Yes	15	11	2	16	6	2
No	8	23	0	8	11	12
	$\chi^2 = .02$		$\chi^2 = .03$			

18. These groups include the Oldham Lakeside Association, the Oldham Village Improvement Association, the Furnace Beach Colony Association, the Monponsett Improvement Association, the Oldham Pines Improvement Association, the Monponsett Lake Shores Improvement Association, and the Pembroke Resident's Association.

ence in such organizations of the more informed and concerned portion of the population. On the other hand, political scientists have long noted the informational and educational function of interest groups.¹⁹ Such groups may well be an extremely influential medium for providing both legislators and the general public with detailed and accurate information concerning natural resources. The impact of resource interest groups is also apparent in differences in levels of knowledge of pond ownership, a particularly troublesome and confused issue in the dispute (Table 9). Efforts to improve the

TABLE 9
RELATIONSHIP BETWEEN MEMBERSHIP IN A RESOURCE INTEREST
GROUP AND KNOWLEDGE OF OWNERSHIP OF THE PONDS

<i>Membership in a Resource Interest Group</i>	<i>Ownership of Ponds</i>		
	<i>State</i>	<i>Town</i>	<i>Other or Don't Know</i>
Yes	19	5	1
No	8	19	5
$\chi^2 = .01$			

degree of knowledge and accuracy of cognition may find such interest groups a useful starting point.

B. Attitudes Toward Government

Prior to field research, one hypothesis of the study was that a sense of political alienation among the public would tend to create apathy toward and a subsequent lack of knowledge of legislative and political issues in the dispute. There is past evidence to support such a hypothesis in a state noted for its political corruption and party fragmentation.²⁰ Yet, the interview results do not support such an interpretation. To a question asking whether the community had received fair treatment from the State in the past, thirty-six interviewees (63 per cent) replied in the affirmative whereas only six (9 per cent) indicated a definite negative reaction. An even higher proportion—83 per cent—expressed confidence that the state governmental agencies were a competent source of information. Perhaps if the interviewees had been better informed of the support of these agencies for the proposed legislation they would have responded quite differently!

Despite these favorable reactions to the role of agency representatives, the interviewees did not share this same confidence in the

19. The classic work is D. Truman, *The Governmental Process* 332 (1951).

20. See the discussion of the alienated Massachusetts voter in M. Levin, *The Compleat Politician: Political Strategy in Massachusetts* 149 (1962). For a criticism of Levin's findings, see E. Litt, *The Political Cultures of Massachusetts* 177-80 (1966).

state legislature. Thirty-two (56 per cent) believed it would make a fair decision on the proposed legislation, but twenty-three (40 per cent) expressed doubt that it would. The reason most often given for this doubt was that such questions were not decided on their merits but on considerations of political "pull." If this does indicate an undercurrent of political disillusionment, it apparently did not greatly influence the public's political knowledge or mode of political behavior.

V

POLITICAL BEHAVIOR

Since a continually well-informed and politically-active electorate is as much a straw man as the economically rational man,²¹ the assumption of this study is that individuals will participate actively in natural resource disputes only episodically in a democracy. These episodes should occur when the individual perceives a particular issue or event directly to affect him. The empirical evidence gathered during the Brockton dispute may contribute to understanding why and how people get involved in natural resource disputes. Further, it is instructive to determine the role which various actors played in the decision making process. In the dispute under consideration, participation, organization and spatial linkages, policy-making, and political strategy all contributed to the decision on the proposed legislation.

A. Participation

The most noteworthy aspect of participation in the Brockton dispute was a geographical one. In the Silver Lake area, there was a generally high degree of involvement and a ready willingness to engage in political actions. Among water resource users, the entrance into politics was, of course, the more marked because of the atmosphere of perceived crisis and the fear of personal loss which permeated the dispute. In Brockton, however, where the population faced a genuine crisis of water shortage, the citizenry was apathetic.²² The explanation for this geographical difference in rate of

21. There is considerable evidence, drawn from a number of societies and accumulated over a considerable period of time, that a generally low level of political participation characterizes most democracies. "Politics and government are a peripheral rather than a central concern in the lives of most cities in modern western societies." L. Milbrath, *Political Participation* 143 (1965). Similar findings are available in G. Almond & S. Verba, *The Civic Culture* ch. 13 (1965).

22. Despite the fact that this generalization does not rest on interview results, there is considerable supporting evidence. Not until the final confrontation in 1965 did any interested citizens attend the various public hearings held in Boston and the Silver Lake

participation has a broad significance for natural resource disputes.

To evaluate participation, it may be useful to recognize a typology, based upon motivation, of political participants in natural resource disputes.²³ *Private actors* are those who participate because they see themselves personally advantaged or disadvantaged by a particular resource situation. Usually, this type of motivation involves the material well-being of the individual. In the dispute under consideration, most political participants interviewed fell in this class. *Civic actors* are those who, although not personally affected, participate because they see their community or their neighbors threatened. The perceived threats may be either material, intangible, or even symbolic in form. The extent of involvement depends heavily upon such factors as length of residence, membership in groups, and social cohesion. Past or latent political conflicts may be important to the civic actors. Several Silver Lake area interviewees cited past intercommunity conflicts (Brockton's discontinuance of bus service, closure of a Brockton public market) as evidence of Brockton's lack of "good faith" in relations with the smaller towns. *Ideological actors* participate chiefly because of an intellectual or moral stance on conservation questions. This class would include not only the politically-active rabid conservationists but also those who act because of strong views on the role of government in the public economy.

This typology of political participants may aid in understanding the vastly different levels of involvement in the two areas. In the Silver Lake area, private actors were the majority, especially among water resource users and the business interests. Fifty of 57 (88 per cent) interviewees felt that they would be affected personally by the proposed legislation. At the same time, the vigorous and opinionated coverage of the dispute in the local press and the pessimistic forecasts of its outcome fostered a deep-seated civic concern over the issue. Thus, both private and civic actors could be readily mobilized into effective political opposition.

In Brockton, by contrast, people never really felt themselves threatened. To be sure, the city periodically imposed water restrictions, but that is not unusual in Massachusetts communities. In

area. Analysis of letters to the editor in the Brockton Daily Enterprise shows a general lack of interest. Moreover, this was the opinion of both the city political officials and the local representatives to the state legislature.

23. A study of public opinion and collective behavior in the Delaware River basin in Kansas supports this motivational typology. Especially detailed information on the class of civic actors is available in these findings. See Warriner, *Public Opinion and Collective Action: Formation of a Watershed District*, Administrative Science Quarterly 333 (1961).

addition, many believed (perhaps rightly) that the State would not allow anyone to go thirsty. As one resident expressed it, "We hold the trump card, you see." The only actual shut-off of water occurred because of a distributional problem, and then only a small segment of the population was affected. Consequently, the controversy did not generate a core of private actors, concerned over possible personal damages.

A similar situation prevailed with regard to civic actors. Conflicting statements from city leaders over the need for augmenting the municipal water supply resulted in a confused view of the gravity of the situation and a lack of clarity in alternatives. And there is evidence to suggest that a clarity of alternatives is especially important in mobilizing citizens who usually stand on the periphery of politics.²⁴ Only a portion of the real estate and business interests, concerned over the reluctance of several industrial firms to locate in Brockton because of the uncertainty of water supply, developed a clear civic concern in the latter stages of the dispute. The contrasts in motivational structures between the two areas produced an almost diametrically opposed pattern of participation.

Some analysis of those who actually participated and the forms of their participation may also be instructive. Among Silver Lake area interviewees, the importance of membership in a resource interest group is again apparent (Table 10). Of course, these in-

TABLE 10
RELATIONSHIP BETWEEN MEMBERSHIP IN A RESOURCE
INTEREST GROUP AND POLITICAL BEHAVIOR

Membership in a Resource Interest Group	Number of Political Actions Taken				Types of Political Activity				
	None	One	Two	>Two	None	Signed petition	Wrote letter	Attended hearing	Voluntary work or contribu- tion
Yes	1	7	6	10	1	19	12	21	2
No	15	6	9	3	15	12	6	10	2
	$\chi^2 = .01$				$\chi^2 = .03$				

dividuals, to begin with, probably represent the more concerned and active portion of the population. Yet, resource interest groups often have strong leaders who are particularly forceful in urging members to political activity. Once involved, individuals will probably persist in combatting the proposal. The resource interest groups were particularly influential in making individuals aware of possible avenues

24. See Rokkan & Valen, *The Mobilization of the Periphery: Data on Turnout, Party membership and candidate Recruitment in Norway*, 6 Acta Sociologica 111 (1962); Campbell, *The Passive Citizen*, 6 Acta Sociologica 9 (1962).

of action and in providing mechanism for political protest (e.g., names and addresses of congressmen, dates of and transportation to public hearings). Group members are more likely to engage in gladiatorial activities (i.e., those activities requiring a high personal commitment, such as voluntary work or soliciting funds).²⁵

A common generalization among state agency representatives and professional consultants was that the Silver Lake area opposition was a product of "hysteria" and a general "lack of information and understanding." Kates suggests that the technical-scientific community generally tends to ascribe the views of resource managers which do not accord with their own to "ignorance," "cupidity," or "irrationality."²⁶ Yet the data recorded in Table 11 do not support

TABLE 11
RELATIONSHIP BETWEEN DEGREE OF POLITICAL ACTIVITY
AND LEVEL OF KNOWLEDGE OF THE RESOURCE

Number of Political Actions taken	Knowledge of Resource			Knowledge of Ownership of Ponds	
	Low	Medium	High	State	Other
None	9	6	2	2	16
One	4	5	3	7	5
Two	2	6	8	8	6
> two	0	4	8	9	4
	$\chi^2 = .01$			$\chi^2 = .05$	

this characterization of the local opposition. Clearly the more politically active segment of the population was, at least in this parameter of knowledge, also the better informed. This of course, does not alter the fact that some individuals did take political actions based upon misconceptions and poor understanding. Yet, it does fly in the face of the assertion of "experts" that the opposition in the Silver Lake area was simply the result of misunderstanding, lack of knowledge, or irrationality.

B. Organization and Spatial Linkages

Although the Silver Lake area had a large number of private and civic actors available for political roles, meaningful use of their motivation was heavily dependent upon both the manner and structure of political organization—the latter, in turn, closely related to natural resource use. In most natural resource disputes, recreational

25. See the "hierarchy of political involvement," which classifies activities as "spectator," "transitional," or "gladiatorial," in Milbrath, *Political Participation* 18 (1965).

26. R. Kates, *Variations in Flood Hazard Perception: Implications for Rational Flood-Plain Use, Spatial Organization of Land Uses: The Willamette Valley* 97 (1964).

users have usually lost. The numerous reasons for defeat include difficulties in measuring and articulating the economic values of recreation and in mobilization of effective opposition to conflicting uses. Reliance upon ideological actors to present the case for recreation in public hearings and in debates with engineers, economists, and governmental agency representatives has contributed to the poor showing for this use. There are, however, influential political advantages associated with recreational uses that are often overlooked.

In the Silver Lake area, recreationists were the dominant users of the ponds involved in the proposed legislation. Little communities had formed about these ponds and concern for maintaining property values and regulating both water quality and scenic attractiveness had led to the formation of improvement societies bearing the names of the adjacent ponds. Thus by 1963, the area as a whole had an infrastructure of resource interest groups which met periodically and which articulated concern over resource uses. These organizations, together with the local political officials, were the backbone for the Silver Lake opposition in the series of successful combats against the Brockton legislative efforts of 1953, 1957, and 1963-64. Convinced of the need for a more careful and systematic organization to oppose future Brockton efforts, these groups in 1960 created the Mid-East Council for the Preservation of Water Rights.

Described by President John Kroon as the "Minutemen of the Silver Lake area," the Council served as the coordinating agency for the mobilization of political opinion and activity. Composed of two representatives from each of the various resource interest groups, the Council met only once a year except when Brockton sought special legislation. The Council formalized its watch-dog function by appointing its first president as its representative to the state legislature. It also capitalized on its spatial political linkages, provided by summer residents living in other parts of the state, by compiling a comprehensive list of these individuals and their permanent addresses. As President Kroon proudly noted, "We have all the letters addressed and ready to go at a moment's notice. We're well-prepared for Brockton." Figure 4 provides a sample of one such letter.

Brockton, by contrast, had no such ready-made structure of organizations to support its legislative efforts. Public water-supply does not generate interest groups. Aside from the political officials of the city, only the Chamber of Commerce showed any consistent concern over the controversy. City leaders experienced great diffi-

Figure 4.
 REPRESENTATIVE CALL TO ARMS IN THE DISPUTE.
 MID-EAST COUNCIL FOR THE PRESERVATION OF WATER RIGHTS
 HALIFAX - HANSON - PEMBROKE

*Oldham Lakeside Association
 Oldham Village Improvement Association
 Furnace Beach Colony Association
 Monponsett Improvement Association
 Finnish Temperance Society
 Halifax Taxpayers Association
 Oldham Pines Improvement Association
 Pine Grove Association
 Monponsett Lake Shores Improvement Association
 Pembroke Resident's Association*

January 14, 1963

Dear Fellow Owner of Property
 In Halifax - Hanson - Pembroke:

The City of Brockton again is attempting to take Rights and Privileges on the uses of the Ponds and Areas away from you.

The best way to protect your Rights is to immediately get in touch with your Local State Representative, preferably by a letter or by personal contact, stating your opposition to House Bill NO. 2969, which no doubt, will be assigned to the Water Supply Committee.

It is further suggested that you request your Representative to insist that Hearings on this Bill be held in the effected areas of Hanson, Pembroke or Halifax, so that you will have an opportunity of letting the Legislative Committee know your views.

Sincerely,

John J. Kroon
 John J. Kroon
 President

THIS BILL MUST BE DEFEATED
 # H 2969

culty in mobilizing public opinion and activity. In addition, although other communities in southeastern Massachusetts faced similar problems, Brockton officials did not cultivate their support. Even when some contact was made, however, legislators were reluctant to give political commitments because of potential reaction from Silver Lake area summer residents. The Brockton situation imposed formidable liabilities, and the confused pattern of policy-making

and strategy adopted by city leaders markedly aggravated their political position.

C. Policy-Making: The Managerial Experience

Is it possible to speak of policy-formulation in a community's management of its natural resources? The very terminology suggests a degree of purposeful evaluation and action which, in the case under consideration, never existed. Yet, the sequence of results of public decisions cumulatively does constitute a policy, be it consistent or inconsistent. To gain understanding of the decision-making process, an evaluation of the goals and methods of the public official is in order.

Shortly after he took office, Mayor F. Milton McGrath of Brockton expressed amazement and deep concern when consultants informed him of the gravity of the water supply situation. The steadily worsening situation through 1962 incited city officials once again to attempt legislation to acquire use of surface water sources in the Silver Lake area. Concurrently, when the Silver Lake reservoir was $33\frac{1}{4}$ inches below its normal level, the Mayor issued statements reassuring the public that the water supply was adequate, that the lake had "always been able to come back in the past," and that the only problem was one of "efficient distribution." This complacent stance in the community, when juxtaposed with Brockton's predictions of crisis at State hearings, provided Silver Lake area political leaders with potent ammunition.

As the crisis mounted during 1963 and the need for a consistent water policy became more urgent, the conflicts and inconsistencies in policy became more pronounced. On June 1, 1963, the city enacted a ban on outdoor watering. By the end of the month, the Massachusetts Department of Public Health deemed the situation sufficiently grave to declare a state of emergency. But when a heavy rain temporarily restored Avon Reservoir, the limited emergency supply, to its normal level, city leaders lifted the ban on outdoor watering for one hour per day. Daily water consumption immediately jumped from 8 mg to 10.49 mg. On August 21, in the face of this heavy summer-time consumption, more rainfall and the completion of a new storage tank led city officials to entirely remove the outdoor watering ban. A short eighteen days later, Silver Lake reached its all-time low of 81 inches below normal. Unwillingness to restore the water ban and the continuing heavy demand resulted in the failure of Silver Lake to rebuild its supply during the fall

and early winter of the year, and on December 31, the city started using its emergency supply of Avon Reservoir.

An even more striking example of policy conflict and mismanagement occurred after the state had given Brockton diversion rights to the additional water sources in the Silver Lake area. On July 22, 1965, despite warnings from the consultants that the continued high water consumption would necessitate the installation of an emergency water pump at Silver Lake, the Brockton Water Commission voted 2-1 against a total ban on outside watering. By the end of the summer, not only was a full ban necessary, but the city also had to pass ordinances to put "teeth" into the ban. By December of the same year, a special 8-inch pipe on pontoons had to be extended 400 feet into the deeper part of Silver Lake and an emergency pump installed on a raft to meet the supply problem. These emergency arrangements ironically symbolize the failures of water policy at the local level.

How can one explain the city officials' inconsistent policy which endangered the public welfare, depleted the city supply, and furnished the political opposition with telling and effective evidence? Two explanations are most prominent. First, city officials never really understood the scope or ramifications of the dwindling supply balance or the feasible alternatives for enlarging the supply despite long discussions with and detailed memoranda from engineering consultants and state water resource agencies. During the early years of his administration, Mayor McGrath appears to have genuinely confused the problems of supply and distribution. On numerous occasions during the summer of 1962 he indicated that once the city solved its distributional problem, its water supply problem would be over. In addition, city leaders appear to have made implicit assumptions of either cyclical or predictable patterns (to both rainfall and water supply) which shaped their expectations of the future and dissipated their resolve to pursue tough and consistent policies of water management. There were frequent references to the ability of Silver Lake "to always come back." A predictable pattern of water supply is assumed in the statement of Brockton Water Commissioner Paul F. Kingman in 1963 that ". . . heavy rains in the near future will help alleviate the condition (i.e., drought) but the traditional spring moisture has been lacking this year."²⁷ The mayor's serious consideration of tapping a local bog for water supply indicates his faith in some imminent alternative.

27. Brockton Daily Enterprise, April 18, 1963.

The second explanation of the inconsistent city policy follows from the fact that a city mayor is not only a manager of community resources, but a political figure as well. The water supply policy must be viewed in the broader context of the "economy" of political decisions and must be measured in terms of goals and the manipulation of the bases of political support.²⁸ The continued existence of the city administration depended in large part on its ability to deal effectively with the diverse and complex problems of a city of 80,000. Besides the water supply situation, city leaders during this period faced difficult problems of educational expansion, sewage disposal, and urban renewal. In early 1963 the Mayor announced that he would run for reelection. Given his problems and objectives, it was undoubtedly important that he demonstrate to the electorate that he was satisfactorily solving the city's problems. Consequently, he devoted much effort to reassuring Brockton voters, in part by a relaxation of the unpopular and politically costly water ban whenever possible. The mayor also assured the population that an alternative water source would be found. Thus, when the local well-drilling firm of R. E. Chapman Company described Brockton as "one of the greatest water-producing areas for rock wells in New England," the Mayor and Water Superintendent, instead of pointing out the errors in this allegation, encouraged the belief that ground water might be a feasible solution.

The conflicting statements of city leaders appear to have been part of a general effort to allay public concern by purposefully not presenting the city population with a clearer picture of the hazard. The mayor justified this position by stating frankly at a state legislative hearing, "We could scare our people by telling them the truth of our water problem, but we don't want hysteria."²⁹ Is it any wonder that low levels of knowledge and a general political apathy prevailed in the city?

D. Political Strategy

The political strategies adopted by the two major parties in the dispute influenced significantly the decision on the proposed legislation. Brockton leaders adopted what might be called a "faith in science" strategy. This approach rested on the assumption that the

28. The significance of spatial political structure to decision-making in the city is analyzed in Kasperson, *Toward a Geography of Urban Politics: Chicago, a Case Study*, 41 *Economic Geography* 95 (1965).

29. *Silver Lake News*, January 31, 1963.

merits of the situation would determine the decision on the legislation. The major spokesmen for the Brockton case were, therefore, the consulting engineers and representatives from governmental agencies. City leaders did not attempt during the legislative efforts of 1953, 1957, and 1963 to mobilize public opinion and participation in the Brockton metropolitan area. Given the managerial policy of city leaders, however, any such attempts would have been difficult. The strategy was, in other words, essentially apolitical.

Silver Lake area leaders, by contrast, more accurately perceived the controversy as a political question. The twofold strategy adopted was predicated on this assessment. To begin with, utilizing the organizational structure of resource interest groups, political leaders effectively mobilized public opinion and participation. By sheer weight of numbers, if not argument, they delayed public hearings and committee meetings. In 1963, for example, 700 property owners converged on the hearing at the State House where they outnumbered Brockton proponents 25-1. Second, community leaders capitalized on the spatial linkages associated with the recreational use of water resources for the second prong of their political attack. Pressure from summer residents in diverse parts of the state provided a second line of defense should the proposal come to a vote. The fact that the bill was never favorably reported to the floor between 1953 and 1963 and that, in 1963, seven state senators and 46 representatives, representing 102 cities and towns, appeared before the committee to express their disapproval suggests the efficacy of the strategy. Significantly, the Senate President John E. Powers and House Democratic Whip Robert H. Quinn, sniffing the direction of the political winds, both went down on record as opposed to the bill.

In the final and successful legislative effort of 1964, Brockton reversed its tactics, finally learning from the example of Silver Lake area leaders. Support arose in the city real estate and business interests who were concerned because of the decisions of several firms not to locate in the Brockton area. The Brockton Taxpayers Association, the Brockton Board of Realtors, the Retail Merchants Association, the Brockton Area Chamber of Commerce, and the National Bank of Plymouth County all donated buses to transport the public to the hearings.³⁰ The prevailing patterns of political apathy described above remained unmoved, however, and city leaders could fill only

30. The role of the business interests conforms to the shifting and ephemeral role of the entrepreneur in community power structure described so ably by R. A. Dahl, *Who Governs?* (1961).

two of the six buses. Silver Lake area leaders resorted to the same strategy so successful in the past, but the water shortage had become so severe and the erosion of support so extensive that the outcome was reversed.

VI THE LARGER ISSUES

The present study of the Brockton water supply dispute reflects general issues in the public management of natural resources: project feasibility and the public interest, the role of local attitudes and participation, policy formulation and the planning process, and information systems. Although others have considered these issues, the Brockton controversy furnishes material for critical reexamination.

A. Project Feasibility and the Public Interest

Criticism of economic efficiency, both from the standpoint of underlying philosophy and measurement criteria, is widely available in other sources.³¹ The Brockton dispute, justification for the proposed legislation illustrates two problems involved in the determination of project feasibility. First, the evaluation of benefits and costs referred only to the area and population encompassed within the political limits of Brockton. Since most resource development projects take place in a politically fragmented space, interregional repercussion can be an important component in feasibility evaluation. In the Brockton situation, possible adverse effects on recreational uses of the lakes and brooks were not included in the consultants early ranking of projects. An evaluation for the regional economy might well have led Brockton to apply for inclusion in the Boston metropolitan water district at an early date.

The second problem involves the ranking of projects by strictly economic criteria. Since much of natural resource planning occurs within a political economy, project evaluation should include explicit consideration of social and political values. In this dispute, the allocation of waters between municipal and recreational uses involved political questions over community taxable property, the desirability of "home rule" management of water resources, and the spatial allocation of public investment. In addition, when the political environment sharply restricts either the range of alter-

31. See, for example, *Measuring Benefits of Government Investments* (R. Dorfman ed. 1965); A. Maass, *Benefit-Cost Analysis: Its Relevance to Public Investment Decisions*, in *Water Research* 311 (Kneese & Smith eds. 1966).

natives or the ease of implementation among alternatives, planners and public officials should show a willingness to adopt economically less attractive alternatives. Maass suggests methods by which such social and political values can be considered in benefit-cost analysis.³²

B. Local Attitudes and Participation

A number of researchers have noted the need for a fuller understanding of the characteristics and formation of public attitudes.³³ Local attitudes and participation play a role of varying importance in most public resource development projects. In the Brockton dispute, local attitudes and participation successfully altered the early single-purpose use of the waters to include guarantees for recreation. In addition, they called into question the state of our present knowledge concerning population projections, the health hazards of swimming and boating in water supply reservoirs, and the process by which possible supply alternatives are defined. Furthermore, findings point to the importance of precedent in attitude formation and to the use of the myth of attractive alternatives. They also suggest that the mass media and interest groups may be critical vehicles in developing both attitudes and information levels.

Evidence from the study points to the need for consistent policies and a clarification of alternatives in water resource issues. Where these dimensions are lacking, the public apathy and confusion so widespread in Brockton may be the result. In addition, political activity in the Silver Lake area indicates the cumulative and repetitive nature of participation, which in turn suggests that areas of public choice need to be accurately set forth at the start. If alternatives evolve late in the planning process, as they did in the Brockton dispute, individuals may tend to react in earlier established patterns.

Finally, interview results provide some clues to the motivational structure and transmission vehicles of attitudes and participation. People evidently get involved in natural resource issues for different reasons (i.e., private, civic, and ideological), and a distinction among them may be useful for enlarging the role of the public. The positive effects of membership in water resource interest groups upon levels of knowledge and activity also appear to be a potential

32. A. Maass, *Muddy Waters* 312-13 (1951).

33. Fox, *Policy Problems in the Field of Water Resources*, in *Water Research* 278 (Kneese & Smith eds. 1966); White, *Formation and Role of Public Attitudes*, in *Environmental Quality in a Growing Economy* 105 (Resources For the Future, Inc. ed. 1966).

instrument in mobilizing greater interest and involvement in natural resource questions.

C. *Policy Formulation and the Planning Process*

Other authors have presented convincing arguments for public control and governmental responsibility throughout the planning process.³⁴ Yet the basic assumptions of public management of natural resources appear questionable. Public control and democratic responsibility are possible only if the public is at least episodically well-informed and politically active. In many natural resource conflicts, including the one under consideration, low levels of knowledge and participation relegate the responsibility for decision-making to the "experts" in governmental agencies and technical consulting firms. Some individuals involved in resource planning argue that, given the constraints of public knowledge and concern, this is a desirable situation.

Quite apart from the broader implications of such a position for the democratic governmental process, the evidence from the present dispute scarcely encourages a high level of confidence in the technical "expert." The reasons for this are threefold. (1) The consulting engineers were consistently mistaken in their estimates of both future water consumption and supply capabilities. While they predicated as late as 1962 that the acquisition of the proposed augmentary sources would provide for the increase in water consumption until the year 2000, in fact the drought of the 1960's resulted in an inadequate supply by 1966, only one year after the legislation was passed. There is much irony in the fact that water levels were so low in 1966 that water could not, according to the legislation, be withdrawn from these new, additional supplies—and this after a twelve year planning effort and legislative fight! In other words, the degree of error in prediction was so high as to be nearly useless as a basis for planning. (2) The universal unwillingness of these same technical experts and the representatives of government agencies to recognize the uncertainty which surrounded their predictions and definition of alternatives. And perhaps still more disturbing is their subsequent inability to make this uncertainty explicit to the public. (3) Finally, planners do not faithfully mirror the goals and aspirations of the public. They are a professional group

34. The best of these is contained in the normative model developed by Arthur Maass for the design of water development systems. See Maass, *System Design and the Political Process: A General Statement*, in *Design of Water Resource Systems* 565 (1962).

whose social and economic background, training, and outlook emphasize goals such as economic efficiency which are not the goals of society as a whole.³⁵

What then should be the role of the planner, the political leader, and the public in the public management of natural resources?³⁶ The public should establish broad social goals, make its views known in specific political disputes, and provide information to political leaders, planners, and agency representatives. Political leaders should translate social goals into legislative objectives (i.e., formulate policy), provide information to public and planner alike, and serve as a watchdog for the public over the behavior of governmental agencies. The planner or agency representative should translate legislative objectives into specific projects (i.e., implement policy) and provide information to the public and its political leaders. The information system, which must provide continual and accurate flows of information, and the participation of an informed and concerned public are crucial to the success of the managerial process. Yet, it is precisely these two variables which generally, and specifically in this case study, malfunction in the management of natural resources.

D. *The Information System*

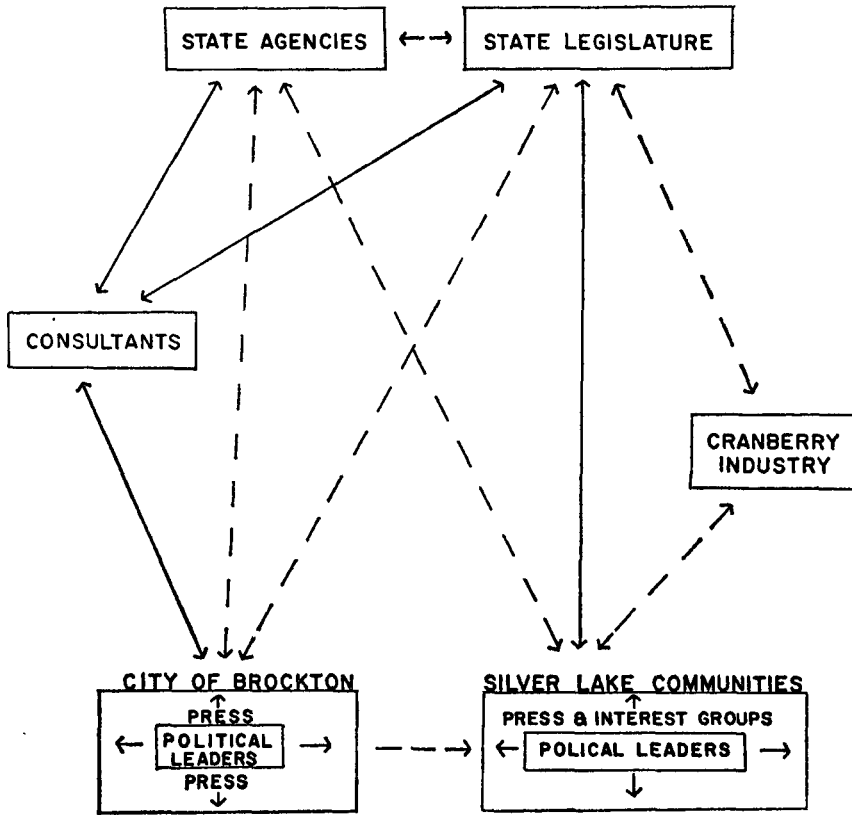
The Brockton water supply dispute highlights the need to improve the levels of information and knowledge prevailing among the various participants in resource management. Concerning the lack of water consumption-supply balance, Brockton's public officials betrayed a lack of understanding which abetted a pattern of policy-formulation already inconsistent and dangerous. Similarly, misconceptions among Silver Lake area inhabitants concerning the exact provisions of the legislation and the ownership of the water resource involved contribution to local opposition to the proposed legislation. Brockton's population showed a serious lack of knowledge and concern throughout the controversy. Evidence from this study indicates that the information system was inadequate and at least partly responsible for these shortcomings.

Figure 5 shows a rudimentary schematic diagram of the information system in the Brockton dispute which conceptualizes linkages among the major participants. Information flows are divided into

35. See the discussion of the consequences of professionalism for decision-making in Marshall, *Politics and Efficiency in Water Development*, in *Water Research* 303 (Kneese & Smith eds. 1966).

36. The following is an adaptation of Maass, *supra* note 34.

Figure 5.
INFORMATION SYSTEM IN THE BROCKTON WATER SUPPLY DISPUTE.



INFORMATION CHANNELS

- ← → CONTINUOUS
- ← - - → IRREGULAR

continuous and irregular.³⁷ The generation of information in the communities stems chiefly from the statements of public officials reported and editorialized in the local press. These sources were a problem at the outset in both communities since Brockton leaders issued conflicting policy statements while the Silver Lake area press, as content analysis bears out, confused issues by its emotional

37. The respondent's own judgment of the regularity of information flow formed the basis for classification, although his evaluation was cross-checked by communication and knowledge levels of particular issues.

commitment. In the Silver Lake area, resource interest groups transmitted information with considerable apparent success.

Major weaknesses are evident in the information system as a whole. Particularly problematic are the absence of spatial (i.e., horizontal) linkages between the two conflicting areas—Brockton and the Silver Lake communities. At one point early in the dispute (1961), the Brockton Area Chamber of Commerce proposed a radio forum to create better understanding on both sides but nothing came of it. Only when facing one another as adversaries in public hearing or, in later stages, as members of the study commission did public leaders from the two areas come into contact. The consultants who acted as major information transmitters rarely had any contact with representatives of the Silver Lake area. Outside their local communities, Silver Lake area leaders were in close contact only with the state legislature, and then chiefly to affect legislation.

If the present case at all typifies information systems in other similar disputes, an obvious recommendation for improving the managerial process is to improve the information systems. One method would be for governmental agencies to include a staff member who would function as a liaison man. In this role, such an individual could educate local political officials and gather and disperse information to local political leaders, resource interest groups, and the local press. This procedure would involve a more comprehensive view of planning than now generally prevails. Another improvement for the system would be the upgrading of the accuracy of the local press. The suggested radio forum that bring adversaries together might also prove a useful vehicle for defining areas of compromise and for eliminating misconceptions. Finally, political units and agencies, at all levels, might beneficially allocate more funds for information-gathering than is usually now the case.