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Information is a political tracer element that delineates the channels of communication within a decision making process. Up until this decade, the channel from environmental interest to decision makers was negligible. Information on the economic efficiency or the regional development effects of actions affecting natural resources was much more salient than intelligence on environmental impact. In recent years, attempts have been made to generate more information upon the implications of natural resources policy and feed it into the decision making process. In particular, the National Environmental Policy Act[1] is expressly aimed at accounting for environmental impacts of governmental decisions.

The theory of this article is that the incremental and fragmented process by which decisions are actually made imposes important restraints upon the flow of information. The initial task is to catalogue and describe these restraints, then to identify the factors that affect channels of communication. What determines which facts decision makers take into consideration? What motivates the generation and transfer of information? This article will discuss the answers to these questions and the possibilities of improving the current environmental information basis.

FACTORS AFFECTING WHAT DECISION MAKERS HEAR

Classical formulations of problem solving involve the identification and ranking of goals, the cataloging of methods of achieving those goals and the investigation of the consequences of each alternative. Unfortunately, formulations do not provide an accurate description of decision making.[2] Such a policy making process would compel a decision maker to reach out for all the related information to his problem and analyze it. The decision making strategy that Lindblom and Braybrooke call disjointed incrementalism is a better approximation of the real world.[3] Only policies which differ incrementally from the status-quo are seriously considered, and, in consequence, decision makers focus upon a quite limited number of alternatives in making

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1. National Environmental Policy Act of 1969, 42 U.S.C. 4321 *et seq.* (1970).

2. Lindblom, The Policy Making Process Ch. III, (1968); Dror, Public Policy Making Reexamined 86-87 (1968).

3. Braybooke & Lindblom, A Strategy of Decision: Policy Evaluation as a Social Process 81-110 (1963).

choices. Further, not all the consequences of any alternative are, in fact, taken into account. There is a tendency among decision makers to concentrate on the direct and immediate effects of decision, discounting the remote, and imponderable, the intangible, and the poorly understood. The practical decision-making strategy dictates that a decision maker attend to the short run consequences in hope that the long run will take care of itself—or that some other decision maker in another setting will take care of it.

The information needs of decision makers are restricted in this incremental and disjointed decision-making process. They are not required to listen to all the interests that may have a stake in any decision or to collect and weigh data on all possible impacts. Furthermore, they are barraged by more information than they can actually use in the limited choices they are comfortable in making. Information overload is a likely problem. The fact is that the receptivity of decision makers is screened by a number of considerations.

THE ISSUE CONTEXT affects what information the decision makers are receptive to. Over time, participants in a policy area develop a particular fix or conception of the dimensions of the issues involved. Information is sorted out and used in decision making on the basis of that conception, and data which related to another way of thinking about the issue is never really considered. Aaron Wildavsky explains the reluctance of the Eisenhower Administration to attend to the political dangers of the Dixon-Yates controversy in terms of the operative issue context. The Republican Administration conceived of the issue as a public versus private power controversy. Although there were numerous signals that the issue was likely to explode as a question of conflict of interest, agency offficials and Presidential advisers failed to take the cues. The information which might have proceeded early warning was filtered out.[4]

The issue context of water quality was for years a matter of health, and information about the spread of communicable disease through water supply overshadowed data about aesthetics, recreation, and wildlife habitat. Water quality officials in the Department of Health, Education and Welfare were such captives of the issue context that they were unable to adjust to the changing dimensions of the question. Ultimately the inability of these decision makers to receive and process new categories of information led to the loss of HEW jurisdiction over water quality programs.

Public works has been the issue context of a number of natural

4. Wildavsky, The Analysis of Issue-Contexts in Decision-Making, Revolt Against the Masses (1971).

resource policies, particularly water development. A dam, a levee, or an irrigation project has been seen as a means to give local economies a shot in the arm. One Congressman, a senior member of the House Public Works Committee, expressed the following conception of the water development issue:

> A member of Congress from an arid western state, where dependable water supply has held back both industries development and agricultural production, may perform his most effective service for the economic future of his region by the promotion of soundly conceived water resource developments. For a lawmaker representing a coastal area it may be the building of a sea wall to protect his town from the ocean's occasional ravages. If he serves a locality where recurrent flood hazards exist, his primary project may be the approval and eventual completion of a needed flood control measure by the Corps of Engineers.[5]

The relevant information when water projects are conceived in such terms includes the development possibilities of particular projects and the strength and unity of local support. Environmental implications are unlikely to be particularly salient.

THE SOURCE OF INFORMATION, evaluated in terms of the decision maker's goals and interests, is a factor in determining its receipt and consideration. A decision maker can not simply make judgments, he must concern himself with building support for his decisions. He must take care of his ability to influence, and attend to the consequences of choices he makes upon his future ability to influence. A decision maker is most apt to listen to information emitting from his constituency upon which he depends for continuing support. The antennae of Congressmen are directed toward picking up the preferences of individuals and groups important to their renomination and reelection. Agencies relate particularly to communications flowing from the groups served by agency programs—groups which ordinarily assist the agency's protecting or extending its authority budget and jurisdiction. Officials in the Soil Conservation Service (SCS) listen attentively to local soil and water conservation districts on proposed small watershed projects. The approval and active backing of local sponsors is crucial to agreements on cost sharing where local beneficiaries are required to pay back some portion, and continuous local efforts are necessary to push a project through the complicated authorizations and funding processes.[6] The same attention is not directed by the SCS to information sources apart

5. Wright, You and Your Congressman 49 (1965).

6. Allee & Ingram, Authorizations and Appropriations Processes for Water Resources Development, Report to National Water Commission (1972).

from the local sponsors. The frustration of the environmental agencies from their inability to get access to the decision making process in the SCS (and also the Corps of Engineers) was expressed by Nathaniel P. Reed, Assistant Secretary of the Interior for Fish and Wildlife and Parks before a Congressional hearing on channelization.

> A large portion of the morale problem within my Department is the result of rarely being listened to when we offer relevant recommendations to other agencies on this problem. It is discouraging for our biologists and field personnel to stand by helplessly and watch the wetlands resource succumb to the dredge bit or dragline bucket with little or no regard for the natural system.[7]

Sources of information which are not supporters of decision makers, but which hold a recognized veto position over actions are heeded. Once environmental groups had collected substantial numbers of sympathetic Congressmen and Senators sensitive to their appeals, their reception by Interior and Public Works Committees changed markedly. Indicative perhaps is the fact that the mailing list for announcements of hearings and activities of the House Public Works Committee expanded from less than a dozen to more than 180 environmental organizations in the decade of the 1970's. The concern of federal construction agencies for developing public participation programs is a function of their interest in forestalling the stalemates which have occurred in recent years with local conservation groups.

In actuality, regulated groups often veto decisions of the governmental agencies assigned the task of regulating them. In the long run, enforcement of regulation depends upon voluntary compliance. Because of physical and political constraints, regulators cannot take punitive action against every violator of standards if the violations are widespread. Consequently, the setting of standards, and the choice of whom to prosecute for non-compliance depends not only upon what it is reasonable to expect of the regulated industry, but also what the adverse consequences would be if the industry were prevented through enforcement action from carrying on its trade. Matthew Holden has convincingly described pollution control as a bargaining process.[8] Command of relevant information is a powerful resource which polluting industries have in bargaining. Holden says,

> To tell a firm to stop a certain discharge practice is to tell it to assume a cost which it has been able to pass on to someone else.

7. Statement of Nathaniel P. Reed, Assistant Secretary of the Interior for Fish and Wildlife and Parks, *Before the House Government Operations Subcommittee*, 91st Cong., 2d Sess. (1971).

8. Holden, Jr., Pollution Control as a Bargaining Process: An Essay on Regulatory Decision-Making (Cornell Water Resources Center, Oct. 1966).

> Yet this cannot be done without reference to whether or not the firm can afford to do so. In general, only the firm or industry itself is likely to have the relevant information on such matters as the importance of the firm or industry in the political economy, the nature of the product and process, and the related possibilities for technical adaptation. And the firm or industry is likely to be secretive, both because of the uses which its competitors might make of such information and because of the uses which public officials might make of it.[9]

Regulators must establish a fund of good will, common interest and established links of communication with the regulated. In the end, this often means that regulating agencies are more receptive to information from the regulated industry than from environmental groups. Understandably then, the Federal Power Commission, attuned to the electric industry's case for new sites, was not sensitive to information from conservationists about the consequences of licensing power plants such as Storm King until the courts directed the Commission to take the environment into account.[10]

CONTENT OF INFORMATION affects its reception by decision makers. Dexter has illustrated the fact that a Congressman hears most often from those who agree with him, and that some men automatically interpret what they hear to bolster their own viewpoints.[11] Agencies, too, seek out information which supports actions toward which they are already inclined. In his case study of the planning process within the Army Corps of Engineers on the DelMarVa Waterway, Leonard Shabman noted that the Corps paid meticulous attention to the Bureau of Sports Fisheries and Wildlife and the Bureau of Outdoor Recreation reviews of the Pocomoke Canal, a structure the Corps had no enthusiasm to build. A memo in Corps files affixed to unfavorable comments read, "This is exactly what we hoped to get from BOR. Beautiful example of interagency coordination."[12]

Decision makers are particularly receptive to categories of information which justify and legitimize their decision making process.[13] Cost benefit analysis is favored information to legislators and natural resource agencies. The ratio of benefits to costs provides a rationale for not pursuing certain projects while at the same time the economic

9. *Id.* at 33.

10. Scenic Hudson Preservation Conference v. Federal Power Commission, 354 F.2d 608 (2d Cir. 1965).

11. Dexter, The Representative and His District, New Perspectives on the House of Representatives 3-28 (1963).

12. Shabman, DelMarVa Waterway Report, Cornell U. Water Resources & Marine Sciences Center (1972).

13. Downs, *Some Thoughts on Giving People Economic Advice*, 9 Am. Behavioral Scientist 30-32 (1965).

tool is flexible enough to supply a justification to projects which have strong support. As Herbert Marshall put it, "one of the principal uses of benefit/cost analysis is to clothe politically desirable projects in the fig leaf of economic respectability."[14] Decision makers have a strong preference for kinds of information which can be applied to politically viable solutions. Dean Schooler has pointed out that physical technologies produced by the physical, medical, biological and engineering sciences are favored by policy makers over behavioral technologies which emerge from the political, social, economic and psychological sciences. Behavioral technologies have the disadvantage to the decision maker of implying new life styles, shifts in values and changed patterns of behavior which are likely to produce conflict.[15] It is far more difficult, for instance, to focus on the behavioral requirements for reducing the demand for electric energy than to concentrate upon a technical solution such as fusion to generate more energy for everybody.

In a politically controversial situation, a decision maker is likely to be receptive to information content which places the issue in new terms amenable to settlement. An illustration can be found in the Central Arizona Project debate revolving around the Grand Canyon dams.[16] The Bureau of Reclamation, historically a hydroelectric power agency, would never have considered the financial support of coal fired steam plants as a possible alternative to dams had not the conservationists drawn a stalemate on the issue in Congress.

CHARACTERISTICS OF THE DECISION MAKER affect the information that is received. The background and experience of a decision maker screens his receptivity in favor of disciplines and facts with which he feels familiar and comfortable, and the recruitment patterns of an agency affects its ability to collect and assimilate data. The dominance of engineers in federal construction agencies has affected their bias toward construction solutions and their lack of receptivity to environmental concerns. Indicative of the balance, in the Army Corps of Engineers the Civil Works Study Board found that of the 622 professionals whose sole responsibility was planning, 91 percent were engineers.[17] Organizational militancy affects the kind of data collected and the way it is fed into the decision-making process. In his study of the Forest Service, Ashley Schiff found that research on

14. Marshall, Politics and Efficiency in Water Development, Water Research 294 (1965).

15. Schooler, *Political Arenas, Life Styles and the Impact of Technology on Policymaking*, 1 Policy Sciences 275-87 (1970); Science and Public Policy (1971).

16. A case history can be found in H. Ingram Patterns of Politics in Water Resources Development: A Case Study of New Mexico's Role in the Colorado River Basin Bill, (1969).

17. Civil Works Study Bd. of the Senate Committee on Public Works, 89th Cong., 2d. Sess. Civil Works Program of the Corp of Engineers (Comm. Print 1966).

controlled burning and the effect of vegetal cover on stream flow was heavily influenced by the doctrines which administrators found useful in promoting the agency. Research was too closely identified spiritually and structurally with "the cause" to impartially identify and investigate problems of forestry management.[18] For similar reasons, the multidisciplinary staffing of the Soil Conservation Service has not affected any particular receptivity to alien ideas. The SCS is a very unified organization with strong centralized control.[19] The agency's pattern of a "universalist" (what the well grained soil conservationist should be) is of the same cut regardless of discipline or area of the country.

RULES AND REGULATIONS structure the formal behavior of organizations and give legitimacy to whatever information collected and transmitted according to the rules that is actually considered by the agency. It is doubtful, however, if rules can build certain information into the decision making process than would otherwise not be considered. If the rules require that a decision maker consider data which imply large policy changes, then the decision maker is likely to bend the rules to fit the incremental strategy which is both more comfortable and safe.

The Fish and Wildlife Coordination Act of 1958[20] is ambitious in its stated purposes. Equal consideration for fish and wildlife conservation along with other features of water resources development such as navigation, flood control and irrigation is supposed to take place. The rules in every construction agency require it to consult with the federal bureau and state game and fish departments whenever they propose major water development projects. There is no provision that conservation agency recommendations be accepted, however, and in practice conservation viewpoints affect decisions only when it suits the construction agency, or when a coalition of interests lends some muscle to the conservation viewpoint.[21]

LEARNING CAPACITY affects a decision maker's receptivity to information. This complex notion merits a more lengthy discussion than is possible here, but in general learning capacity is related to the amount of uncommitted inner resources.[22] An individual can restructure the way he responds to external information, provided he has certain resources to invest. He must command sufficient intellectual and emotional capability to recognize the inappropriateness of his present actions, and he must not be under stress. In the same way an

18. Schiff, Fire and Water; Scientific Heresy in the Forest Service (1962).
19. Hardin, The Politics of Agriculture 66 (1952).
20. 16 U.S.C. 661 *et seq.* (1964).
21. Allee and Ingram, *supra* note 6, at ch. 3 & 7.
22. For extended theoretical treatment *see* Deutsch, Nerves of Government (1966).

organization can, with adequate competent staff and budget and time, alter its reception of information. The process of adjusting to new sources of information is typically slow. Decision makers repeatedly encounter troublesome opposition and conflict and seek out ways to deal with negative feedback. Decisions are altered marginally and tentatively, as the decision maker tests for a more positive response. Through numerous incremental adjustments new channels of communciation are established.

Decison makers, including resource agencies, differ in their ability to learn. Among them, the Army Corps of Engineers demonstrates better than average flexibility. It is responding to local conflict with an energetic public participation program, and is increasingly receptive to non-structural solutions to flood control problems. The chief's offiice has directed Corps divisions to come up with new plans directed toward urban problems. Most important, the Corps has responded to pollution with planning studies of regional waste management. This capacity to innovate is associated to some extent with the fact that the organization has some surplus resources. The size of its program, for instance, gives the Corps leeway to experiment. Nearly three-quarters of all federal water development is under the aegis of the Corps.

TIMING of information affects the nature of its reception. Chances are that decision makers will be most receptive to new information during the sorting out phase of an emerging issue. If a decision maker is uncertain about the values involved in the question, and about his risks and options, he is apt to be relatively open to all suggestions which appear helpful. Information is likely to have its greatest impact early in the planning process while the need for an airport, highway, dam, power plant or pipeline is still being discussed, and before a site is selected. Once the issue has been placed in a context, the decision maker will follow routine patterns and listen to regular sources.

FACTORS AFFECTING WHAT INFORMATION IS GENERATED AND TRANSMITTED

In a democratic society it is an accepted value that individuals and groups will have the opportunity to participate in or be represented in decisions that affect them.[23] However, in the real world of fragmented, inconsistent and often incoherent policy, not every interest group participates in decisions that affect its concerns. The focus of interests is likely to be upon those decision points and decision makers where access and impact can be most easily achieved.

23. Fox, *Strategic Considerations in Attaining Water Planning Goals*, J. Water Pollution Control (1966).

The effective means of expressing most interests in the political system is through organizations, including interest groups and agencies oriented toward particular interests. Whether or not an interest group or an agency spokesman for an interest voices its concern in decision-making depends upon its perception of the potential costs and benefits involved in generating and transmitting information. Such organizations' calculus is constrained by the hierarchy of importance among decisions affecting its interest and the budget of resources it has to expend in participating in decision making.[24] The following factors affect an interest group's or interest oriented agency's willingness to generate and transmit information reflecting its concerns.

THE PERCEPTION OF THE DECISION and what is at stake affects what information is generated and transmitted. An organization's evaluation of what is at issue is a function of its goals and perceptions. The core interest of the traditional conservation movement represented by such organizations as the Izaac Walton League, National Parks Association, Audubon Society, Wilderness Society, National Wildlife Federation, and Sierra Club is the preservation of natural areas through parks and other reserves. The decisions made by natural resource agencies are perceived as essentially developmental decisions fostering growth of particular industries and regions. For the most part decisions made by such agencies as the Bureau of Reclamation, the Corps of Engineers, and the Bureau of Public Roads is outside the purview of conservation. It is only when a park, wild river, or trout stream is threatened that the actions of these agencies become relevant.

The newer envirnomental groups, emerging in the 1970's have tended to focus on individual family consumptive decisions rather than governmental actors. The public has been directed to stop littering, use returnable bottles, use pollution free detergents, buy non leaded gasoline, reduce water and pesticide use, tune up autos and so on. Some observers see both the traditional conservation groups and new environmentalists currently altering their focus toward a wide range of public decisions. Governmental action is seen as a way of preserving the environment, and changes in present government decisions are viewed as essential if environmental quality is to be achieved.[25] A new assessment by environmental groups of the role of public decisions in reaching environmental goals will foster the

24. Shabman, Decision Making in Water Resources Investment and the Potential of Multi-Objective Planning: The Case of the Army Corps of Engineers ch. 4 (Cornell Water Resources and Marine Sciences Center 1972).

25. Morrision, Hornback, & Warner, The Environmental Movement: Some Preliminary Observations, Social Behavior, Natural Resources, and the Environment, (forthcoming).

generation of different kinds of information designed to influence political actors.

An interest group or an agency expressing a particular interest will react first to what it perceives as imminent and direct effects upon its interest and will react later, with a lower order of effort, to questions with an indirect and remote impact. The direct impact of a dam, highway, or power plant is experienced in jobs, growth and profits. The indirect environmental implications are less immediate and much harder to predict. Partly for this reason, development interests have traditionally had more communications links with natural resources decision makers than have environmental groups. Because of the remote impact of planning decisions, conservation interests have not been motivated to make much of an input into planning studies. Nothing happens to many plans, even authorized ones, as illustrated by the fifteen billion dollar backlog of authorized water projects. If plans come to fruition, it is often far in the future. The average time for the planning and construction of civil works projects by the Army Corps of Engineers is currently seventeen years and eleven months. Construction agency planners have not traditionally made much effort to present their plans as important and immediate to conservation groups outside the regular constituency of the agency. Like other parts and decision making, the incremental strategy has restricted the scope of planning.

THE EXPECTED IMPACT of information affects whether it will be transmitted and its content. The corollary of the notion that decision makers hear what they want to hear is that organizations will transmit information to decision makers when they believe it will get a hearing. The crucial points for stopping a dam or highway for conservation interests have not been on the local level where development benefits have their strongest appeal or within agencies whose mission it is to build public works. Instead it has been the national political leaders including members of Congress who have been open to conservationist persuasion. As a result opposition interests which fail to show up at agency hearings have a habit of surfacing later when projects reach a national decision making arena. The tremendous increase in citizen's suits attests to the willingness of environmental interests to prepare a case for whatever decision makers, in this case the judges, they perceive to be sympathetic.

Federal review agencies which express conservationist and recreation interests, including the Bureau of Sports Fish and Wildlife, the National Park Service, and the Bureau of Outdoor Recreation, focus their comments on what they believe is achievable in the incremental process of decision making. Reviews tend to be pro-forma

unless the proposed project threatens an important interest. Even then the message of these agencies is seldom outright opposition since past experience has shown it is usually unsuccessful. Instead reviewers suggest changes in design and location of the project, and mitigating and compensating features such as recreational access and facilities, a wildlife sanctuary, fish hatchery, fish ladder etc.

It is possible, of course, that environmental interests may despair of influencing particular decision makers and use public hearings to appeal to the broader citizen audience. In such cases environmental groups will talk past decision makers with a general message aimed at rallying supporters to the cause, and impart little to the decision maker which relates to the choices he has at hand.

The *RESOURCES* of an organization affect what information it can generate and transmit. Unity and cohesion are important resources.[26] The environmental movement has suffered from fragementation and internal division. The number of groups is growing as well as membership. The Council of Environmental Quality estimated that there are over 5,000 environmental organizations in the United States.[27] These groups differ in their conceptions of environmental quality. A unified strategy, even on limited specific issues, is often impossible for them to agree upon and execute. Very often environmental groups are in competition for another important resource, membership. Up until recently lack of numbers has been a resource limitation. The Sierra Club, for instance, had only 30,000 members in 1966. A great deal of the energy and resources environmental groups have has been plowed back into the organizations in membership and fund raising drives.

The older conservation organizations have been mainly national organizations with a national appeal, but with only a few members scattered in localities. As a result, it has been much more possible to mount a national campaign than to stop a project on the local level. Thus the National Parks Association could cause the Bureau of Reclamation proposal to build Echo Park Dam great difficulties in Congress in the 1950's but could not dent the staunch support of Utah residents.[28]

Data base and expertise is a requirement for meaningful participation in natural resources decisions. Much of the debate on issues such as nuclear reactor safety, thermal pollution, air and water quality measurements, etc. takes place in technical terms. Environmental groups have solicited the aid of biologists and foresters in testimony

26. Truman, The Governmental Process 167 (1955).
27. Council on Environmental Quality, Letter from Staff, 1973.
28. Stratton & Sirotkin, The Echo Park Controversy (1959).

on clear cutting and have hired economists to do benefit cost analysis of water projects. The availability of experts on the staff or within the membership is a valuable resource. Without specialists, an organization can not substantiate an independent position or even interpret data which comes in from outside.

Lack of adequate staffing and budget have been persistent problems for the Bureau of Sports Fish and Wildlife in voicing the conservationist position. Up until a few years ago the River Basin Studies Division which has been assigned to review water development proposals of the Army Corps of Engineers, the Bureau of Reclamation, and the Soil Conservation Service were dependent upon the lead construction agency to fund their evaluations. Today about half the budget for BSF and W review comes form outside. These budgetary restraints are compounded by other resource limitations which affect the kind of reviews it makes. A division handbook describes the difficulty of the River Basin Studies Planner.

> Usually he is operating against a deadline, frequently a short one–nearly always shorter than the lead planning agency–and often with less adequate tools and manpower. Nearly always, too, he has less adequate basic data and information than much that is available to the lead agency . . . The parameters dealt with by the RBS and lead agency planners are of different orders of complexity, variability and recognized utility. Thus the basic data on climate and hydrology have been long recognized as valuable to Man's welfare, while comparably basic data on fish and wildlife populations and their dynamics not only are less widely valued, but they are far more difficult to obtain.[29]

The National Environmental Policy Act[30] (NEPA) was designed to alter the existing channels of communication in policy making affecting the environment. The principal thrust of Section 102 (2) (C) was to establish a new "action-forcing" provision to assure detailed research and full consideration of environmental impacts in decision making.[31] Judged by the number of court cases which environmental organizations have won under NEPA directing government agencies to comply, the legislation has been a success. Citizen's suits have produced court orders blocking or delaying a variety of projects including the Alaska oil pipeline, dams, highways, nuclear and

29. River Basins Studies Division, Bureau of Sports Fisheries and Wildlife, Procedures & Techniques of Fish and Wildlife Analysis & Planning.

30. National Environmental Policy Act of 1969, 42 U.S.C. 4321 *et seq.* (1970). (hereinafter cited as NEPA).

31. Report on the Administration of the National Environmental Policy Act, Comm. on Merchant Marine and Fisheries, H.R. Rep. No. 316, 92nd Cong., 1st Sess. (1971).

hydroelectric power plants, canals and logging in national forests.[32] There is considerable difference, however, between sand in the wheels of progress on specific projects and actually altering the patterns of communication in decision making. What impact has NEPA had on what decision makers actually hear, and what information is actually generated and transmitted?

Section 102 of NEPA requires that all agencies of the Federal Government prepare detailed environmental impact statements on proposals for legislation and other major actions significantly affecting the environment. In impact statements agencies are directed to consider: (1) the environmental impact of the proposed action; (2) any adverse environmental effects which cannot be avoided should the proposal be implemented; (3) alternatives to the proposed action; (4) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity; and (5) any irreversible and irretrievable commitments of resources involved in the proposed action should it be implemented. In the process of preparing impact statements, federal agencies are to consult with other federal agencies which have jurisdiction, by law or special expertise, with respect to any environmental impact involved. Environmental statements and accompanying comments are to be made available to the President, the Council on Environmental Quality (CEQ) and the public and are to accompany proposals throughout the review process. The Council has issued guidelines, and each federal agency has developed or is working on formal procedures for preparing and processing 102 statements.

NEPA AND DECISION MAKERS

The *ISSUE CONTEXT,* or the framework in which a decision maker conceives a problem and the information he considers relevant is built up over time and experience and is highly resistant to change. The incremental model of decision making suggests that decision makers relate closely to past experience. They consider only alternatives which differ marginally from those taken into account in previous decisions. The informal rules of decision which dictate what information is relevant and what can be dismissed are only loosely related to the formal rules and procedures with which the decision maker complies on paper. It is unreasonable to expect, then, that an alteration of formal procedure such as NEPA could, by itself, accomplish much change in issue contexts in established programs. There is ample evidence of a reluctance to change decision making procedure even formally. A number of Congressmen and administra-

32. Zeldin, *Will Success Spoil NEPA,* Audobon 106-11 (July 1972).

tors see NEPA as introducing additional red tape.[33] The initial failure of agencies to comply with the procedural requirements of the act has led to a great deal of litigation. A spate of bills were introduced into the 92nd Congress to provide specific exemptions from NEPA.[34] And, even as agencies adjust to procedural requirements, and they are presently on the whole complying, it is still possible for decision makers to favor information on development rather than environmental impact. Although the environmental impact statement on the Alaska pipeline acknowledged severe environmental effects, the Secretary of the Interior recommended approval of the pipeline on the basis of economics and national security.

NEPA requires that an agency preparing an impact statement obtain the comments of other Federal, State and local agencies having jurisdiction or special expertise on any environmental impacts involved. Under the Freedom of Information Act,[35] the agency must make draft statements and comments available to the public and any individual or organization may comment. The Council of Environmental Quality receives statements and may also comment. Theoretically, then, agencies have broad sources of environmental information to call upon. Whether these *SOURCES* are actually considered in decision making depends partly upon the agency's evaluation of their political significance. No agency, including the Council on Environmental Quality (CEQ), is authorized to veto a project proposed by another agency on the basis of an adverse environmental statement. CEQ prepares guidelines and monitors the preparation of environmental statements. Under the law,[36] it may, but is not required to comment. As part of the President's staff, CEQ can recommend that the President reject a project. This option was exercised in halting the Cross Florida Barge Canal, but otherwise has not often been used. As Presidential advisers, the informal persuasion of agencies by the CEQ may be effective. Chairman Russell Train told a Congressional Committee, "if we are troubled by a proposed action, either in whole or in part, we generally say so—and there have been cases, to my knowledge, proposals that have been withdrawn, never see the light of day, if you will, I think because of our reaction."[37] However, in its

33. *Hearings on Red Tape–Inquiring into Delays and Excesssive Paperwork in Administraton of Public Works Programs Before the Subcommittee of Investigations and Oversight of the Committee on Public Works,* 92nd Cong., 1st. Sess. (1971).

34. For a partial listing see National Wildlife Federation, Conservation Report No. 12, (Apr. 14, 1972).

35. 5 U.S.C. 22(1964).

36. NEPA.

37. *Hearings on the Administration of the National Environmental Policy Act Before the Subcomittee on Fisheries and Wildlife Conservation of the House Committee on Merchant Marine and Fisheries,* 91st Cong. 1st Sess. 13 (1971).

review of the implementation of NEPA in seven agencies, the Comptroller General's office found that much of the formal and informal guidance given by CEQ to Agencies focused on the inclusiveness and quality of particular statements, not upon the procedure whereby statements were integrated into decision making.[38]

Under its own legislative mandate, the Environmental Protection Agency (EPA) has a particular responsibility to review impact statements from the perspective of its broad environmental concerns. Responsiblity is different from vigorous effort, which the General Accounting Office Report, cited above, found wanting. The causes for failure to generate and transmit information relate to EPA's own perspectives and resources and will be discussed below. Whether or not EPA could become a significant source of environmental information is related in part to its strength in Congress, the White House and with its own environmental constituency.

Court decisions are of increasing concern to agencies. Failure to satisfy the courts has cost agencies troublesome delays. Up until the present the courts have concentrated upon the procedure required by NEPA, not the substance of decision making. If this stance is maintained the courts will become less salient as agencies meet the necessary procedures. In the *Calvert Cliffs*[39] decision, a U.S. Court of Appeals held that if a decision is reached procedurally without individual consideration and balancing of environmental factors, conducted fully and in good faith, the courts will examine the weight of environmental information in the decision making process. Historically, however, courts have been reluctant to second guess agencies on the substance of decisions.

Environmental considerations were given formal recognition in NEPA. As a result, environmental data gained stature and credibility with decision makers. However, agencies are reluctant to take information which is likely to produce conflict and make decisions more difficult to reach. It is logical to expect that an agency will include in draft and final statements the data which best supports its own decisions and decision making process. Left to their own devices, without external oversight, impact statements are likely to become justifications to environmentalists of what the agency has determined to do.

NEPA promises to alter the *CHARACTER OF DECISION MAKERS*, and in the long run the changes it makes in agency

38. Comptroller General, Report on Improvements Needed in Federal Efforts to Implement the National Environmental Policy Act of 1969 (1972).

39. 449 F.2d. 1109 (D.C. Cir. 1971).

recruitment and personnel can significantly alter channels of communication. It takes life scientists to write environmental statements, and biologists are being brought into federal agencies in significant numbers. The Bureau of Reclamation, for example, has placed at least one G.S. 14 biologist in each of its regions to supervise the preparation of environmental impact statements. How much effect newly recruited individuals with environmental expertise have upon the receptivity of each to environmental concerns will vary according to the success with which the agency inculcates its traditional orientation and mission into its personnel and its learning capacity.

The charge of Sec. 102 (a) (A) of NEPA to all agencies is a "systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and decision making." Despite the recruitment of life scientists, many agencies are as yet unable to comply. There is a paucity of funds to attract sufficient numbers of qualified people. More important, agency prospectives are currently too narrow to undertake a broad environmental overview. For instance, the Rocky Mountain Center on the Environment found that one Forest Service "102" statement had utilized an "interdisciplinary team" of six timber management specialists.[40]

Environmental impact statements are apt to be *post hoc* evaluation, prepared after decision makers have settled upon a course of action. A specific project or action has become the center of attention in the decision making process by the time an environmental impact statement is introduced. The interest by this time within the agency and among their organizational backers is often to build support for the proposal, not to re-examine goals and needs. The General Accounting Office found that for the seven agencies they reviewed, impact statements were prepared in stages as proposals moved up the organzational levels toward the final stages of review. As a result a lower level did not have the benefit of all environmental aspects of a proposal prior to advancing it to the next organizational level. In some agencies, such as the Bureau of Reclamation and the Corps, even top officials did not have a completed statement when reviewing proposals.[41] The Administration, Congress and the public are allowed 90 days after publication of a draft statement and 30 days from the final statement to react before an agency can take action.[42] By this time it is likely that options are so narrowed and the proposal has accumulated such support that stopping it is difficult and costly.

40. Hansen, NEPA: Problems and Outer Limits, (1972).
41. Comptroller General, *supra* note 38.
42. NEPA.

NEPA AND ENVIRONMENTAL INTERESTS

NEPA requires a statement presenting detailed information about every action with substantial effect upon the environment. It is possible that environmental interests will be prompted by this information into an awareness of stakes which were previously remote. The environmental impact statement may serve as alarm which activates distracted and latent groups. Whether or not environmental groups react to the warning and attempt to establish channels of communication with agencies depends on their view of agency receptivity. Certainly such organizations have focused on impact statements as a means to get court delays. Courts have demonstrated their receptivity to environmental groups. Whether or not they are also perceived as a means to communicate with agencies in decision making is partly a function of the ability of environmental groups to generate and transmit information.

A central question which experience will finally decide is whether environmental agencies and groups have *ADEQUATE RESOURCES* to make their views known to decision makers on the basis of environmental statements. Certainly conservation oriented agencies already engaged in making reviews of projects are likely to feel that NEPA has afforded them additional resources. The Bureau of Sport Fisheries and Wildlife and the Bureau of Outdoor Recreation are given additional legal basis for their claim of a say in actions affecting their interests. They now review impact statements as well as proposed actions in areas where they already have review prerogative, and may consult in the preparation of environmental statements. These agencies however, still suffer from long-standing budgetary and staffing restraints which NEPA by itself cannot change.

The volume of §102 statements circulated for comment and review on the national level threatens to become very large. By November, 1971 draft or final environmental statements for 2040 actions had accumulated at CEQ.[43] A peak of 50 final and draft statements per day was anticipated. The Corps of Engineers' permit programs for waste discharges under the 1899 Refuse Act [44] could alone generate some 7,000 permits per year and, unless the law is amended, environmental impact statements are required on each one. Such numbers place a great strain on agencies such as CEQ and EPA and constitute an information overload.

The Council of Environmental Quality, as most staff agencies of the President tend to be, is a very small organization. Its present staff is at

43. Council on Environmental Quality, 1, 102 Monitor, no 10, 1971.

44. 33 U.S.C. 407, 411, 413 (1970).

30 professionals, and many of these engage in matters apart from §102 statement reviews. At the beginning of 1972, only one man covered all statements on environmental impacts of water projects proposed by the Corps, the Bureau of Reclamation and the Soil Conservation Service. Unless some federal conservation agency or environmental group brings a particular project to the reviewer's attention, environmental impact statements are apt to get no more than general oversight. CEQ's outlook upon its reponsibilities with regard to §102 statements are bound to be affected by the fact that the agency is designed to serve the President. It is unlikely that the President desires or can afford to become involved in large numbers of controversies over governmental activities detrimental to the environment. In consequence, CEQ is unlikely to openly challenge very many governmental actions.

In light of the other demands upon its attention, the Environmental Protection Agency also faces severe limitations in regard to its review of environmental statements. EPA is a young agency, created in 1970, and much of its resources are taken up in establishing its own internal organization. Further, EPA has a number of difficult regulatory programs to administer including water and air pollution, control of pesticides, radiation protection, and solid wastes management. It is likely that these activities have a priority over environmental impact statement review. The experience with EPA's handling of Environmental Impact Statements has been that the agency is very slow. EPA's first listing of comments on statements was published in the Federal Register on January 18, 1972, approximately two years after the enactment of NEPA. The agency has complained to the CEQ that the quality of statements was poor, but with the exception of the Atomic Energy Commission, EPA has not yet sent guidelines to other federal agencies setting forth the type of information needed for EPA to carry on its review responsiblities.[45]

Environmental interest groups have problems similar to those of environmental agencies in exploiting NEPA. A survey of member organizations of the Natural Resources Council of America, a large coalition of groups, revealed that none had the necessary personnel to conduct an in-depth review of the volume of environmental statements anticipated on specific projects. It was estimated that one man-day was necessary simply to determine the adequacy of an impact statement concerning a Corps of Engineers project and one-half man-day for a simple highway impact statement. An in-depth review would take much more staff time, varying according

45. Comptroller General, *supra* note 38.

to the complexity of the subject. In all cases it would be necessary for the reviewer to have detailed information of his own.[46]

Independent detailed information about the impact of a proposed government action upon the environment most likely will come from local environmental interests familiar with the project area. The number of local environmental groups has increased impressively, and the growing membership of national groups has strengthened their local base. While a few years ago national interest groups called attention to impending degradations, now local groups exist to strongly oppose actions harmful to the environment on the local level. Communication between national and local levels on environmental statements remain a problem. Local groups will probably have to signal national organizations about projects proposed by field offices of federal agencies so that particularly important environmental statements can be sifted out and monitored. *Timing*, too, remains a significant problem for effective communications from environmental groups. The Rocky Mountain Center on the Environment estimates that it takes 80 to 90 days to react to a §102 statement. Agencies may well have taken action before interest groups can generate and transmit information.[47]

CONCLUSIONS

The National Environmental Policy Act of 1969 is being hailed as effective by its friends and foes alike. The *National Audubon* magazine has called it the "first effective environmental law of the land," while Senator Gordon Allott has said that it is a means of promoting mischief and should be reviewed,[48] and Secretary of Interior Rogers Morton has blamed NEPA for the delay in the department's activities to overcome the energy crises.[49] Most of these reactions are based upon the achievements of citizen lawsuits compelling government agencies to comply with the procedural requiremens of the Act. Evaluated in terms of the long term effectiveness in forging new channels of communication to broaden the environmental information base upon which public policy is made, proclamations of success are not yet warranted.

NEPA has been examined here from the perspective of the incremental process of decision making. A great deal of relevant information is ordinarily outside the purview of any decision maker

46. Natural Resources Council of America, Report of the Ad Hoc Committee On Environmental Impact Statements (mimeo) (Aug. 12, 1971).

47. Hansen, *supra* note 40.

48. Zeldin, *supra* note 32.

49. *Hearings on Fuel and Energy Resources Before the House Interior and Insular Affairs Comm.*, 92nd Cong., 2d Session (1972).

who typically concentrates upon marginal alterations from the status quo. Information becomes relevant to the decision maker when he becomes convinced that it will help him, or that he cannot afford to ignore it. New rules and regulations are not likely, by themselves, to force a decision maker to take into account interests and concerns he would not otherwise consider, despite the claims of NEPA's sponsors that its provisions are action forcing. Instead, NEPA may facilitate change in communications channels where decision makers are already in search of alternatives to avoid the conflict with environmentalists which have made their past patterns of decision-making uncomfortable. Realistically, it should be expected that receptivity to environmental interests will come about incrementally and unevenly among government agencies. The extent to which it happens depends upon the continuing strength and activity of environmental interest groups. The passage of NEPA can be viewed as an outcome of past failures of environmentalists to get the ear of decision makers. It will take the sustained effort of environmentalists to make it work.