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## **Institutional Analysis for Energy Policy**

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**July 1980**

**Prepared for  
the U.S. Department of Energy  
Assistant Secretary for Environment  
Office of Environmental Assessments  
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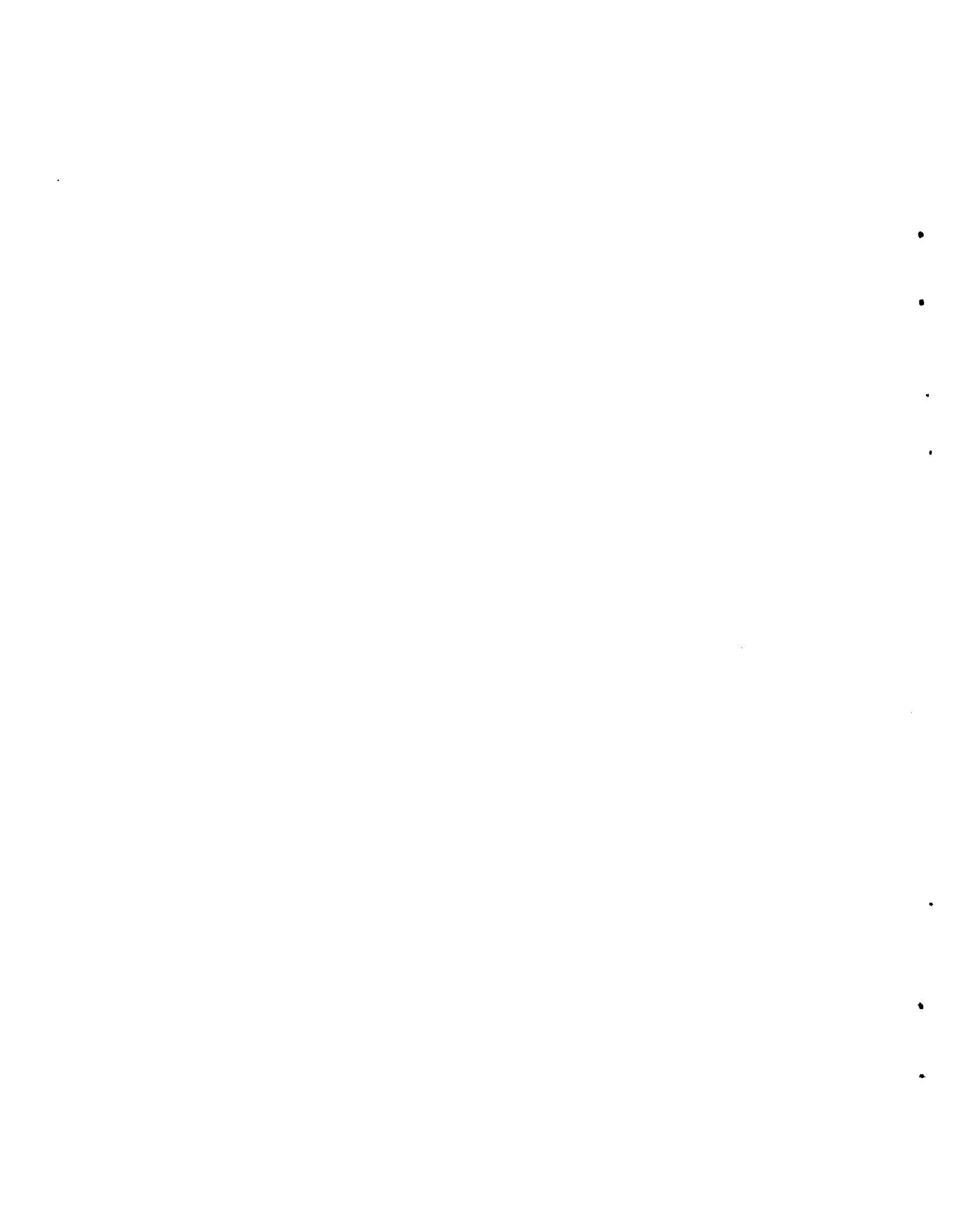
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This report summarizes principles, techniques, and other information for doing institutional analyses in the area of energy policy. The Science and Government Study Center of Battelle Memorial Institute has developed these techniques over the past five years in the course of our studies of energy. Accordingly, we want to acknowledge the direct inputs from our colleagues Alfred A. Marcus, Randall F. Smith, and C. Richard Schuller. In addition, we acknowledge substantial debt to the writings and comments of Graham T. Allison, Robert F. Coulam, Richard F. Elmore, Kai Lee, Mark H. Moore, Richard E. Neustadt, Charles H. Sawyer, A. Henry Schilling, Molly Selvin, John D. Steinbruner, and Walter Williams. We also made heavy use of the writings of Richard Stewart, Henry Hart and Albert Sacks, Richard Cyert and James March, as well as Jeffrey Pressman and Aaron Wildavsky. Many others provided ideas as well, as the footnotes acknowledge.



## PREFACE

This report was prepared to support DOE's Regional Issues Identification and Assessment (RIIA) program. RIIA identifies environmental, health, safety, socioeconomic, and institutional issues that could accompany hypothetical future scenarios for energy consumption and production on a regional basis. This report should help analysts whose assignment is to identify institutional issues. In particular, Chapter 2 should be helpful in constructing "institutional maps" of the processes for bringing on line energy technologies and facilities contemplated in RIIA scenarios. Chapter 3 should be helpful in assessing the institutional constraints, opportunities, and impacts that affect whether these technologies and facilities would in fact be developed. Chapters 1, 4, and 5 may be of indirect help--Chapter 1 in providing some theoretical grounding in institutional analysis, Chapters 4 and 5 in showing how institutional analysis can support use of exercises such as RIIA in planning institutional change and making energy policy choices.

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CHAPTER 1  
INSTITUTIONAL ANALYSIS: AN OVERVIEW

1.1 INTRODUCTION

Institutional analysis takes as its point of departure the policymaker's recurring problem: matching ends and means in the face of limited resources and considerable uncertainty. For example: How should oil imports be reduced? Should a quota system be relied upon or should a tariff be imposed? How should domestic natural gas be allocated--should residential customers have first claim on supplies or should large manufacturers? We believe, as an article of professional faith, that systematic analysis can help individuals, and perhaps even groups and organizations, reach better answers to such questions.<sup>1</sup>

Many techniques are available for supporting such analysis. In structuring a problem, microeconomic theory and decision analysis have played important roles. In predicting the consequences of alternative policies, the use of modeling has been frequent.<sup>2</sup> For example, engineering models have helped predict the technical performance of new technologies. Environmental models have helped predict effects on air quality, water quality, and ecological relationships. Economic models have helped assess the effects of alternative policies on supply and demand, with respect to both particular goods and the aggregate economy. Socioeconomic models have been used to predict impacts on such indicators as employment, population size and composition, income, and even neighborhood stability, housing availability, and the physical condition of state and local governments. Increasingly, however, policymakers have become aware that institutions--laws, organizations, politics--complicate energy policy choices in ways that these models do not always capture. Simple reliance on "the numbers" that models generate is apt to be misleading.

Institutions impinge on energy policy in several ways. First, institutions form an important part of the context in which policies are adopted and implemented. Certain legal requirements must be complied with or changed--in the case of coal conversion for example, ambient air quality standards and new source performance standards for major fuel burning installations. Certain organizations must be relied on--for example, the utilities and their state regulators. And certain political interests may become engaged--for example, railroad companies and their unions, environmental activists, or the major oil companies.

Second, this context may affect policy choices. On the one hand, legal, organizational, or political elements of this context may stand in the way of movement to desired outcomes. These elements that stand in the way can be called "institutional constraints." Again to take the example of coal conversion, state utility laws that allow utilities to pass through the escalating costs of oil as rate adjustments, but require formal rate increases to pass through capital costs, discourage the conversion of facilities from oil to coal use. Environmental groups that oppose tampering with clean air standards and utility companies that refuse to install flue gas desulfurization equipment also create institutional constraints that stand in the way of coal conversion. On the other hand, legal, organizational, or political elements may facilitate movement to desired outcomes. For example, joint participation of the technology developer, state regulators, and electric utilities seems likely to ease the commercialization of geothermal power generation in Idaho. Such facilitating elements can be called "institutional opportunities."

Third, policy decisions and actions may affect institutions. These effects can be called "institutional impacts," in an analogy to environmental or economic impacts. For example, implementing regulations that stretch the authority

of an authorizing statute to the limit may be optimal from an economic perspective. However, if such regulations are too tenuously based, they will give rise to legal uncertainty about agency authority that may result in litigation and other resistance to compliance. Such impacts could make the net result worse than some economically less than optimal but less controversial incentive structure.

Fourth, reaching the desired outcome may require the design of new institutional relationships. "Institutional design" will most often be needed if the institutional arrangements necessary to a course of action do not now exist. It will also be needed if existing arrangements cannot be exploited or circumvented other than by reforming the arrangements. For example, in the area of high level nuclear waste management, the problem of institutional design looms as large as the technical issues, because the institutional arrangements necessary for many of the possible courses of action do not now exist.

The presence of an institutional context, the potential for institutional constraints standing in the way of actions, the prospects of institutional opportunities facilitating actions, the likelihood of institutional impacts stemming from actions, and the possible need for institutional design, may require readjustment of calculations about technical performance, environmental consequences, economic performance, and socioeconomic impacts. From an environmental perspective, it may make no sense to convert utilities burning natural gas or oil to coal, but our laws and organizations may compel many utilities to do so. From an economic and technical perspective, the problems with nuclear power may or may not be exaggerated but from legal, organizational, and political perspectives they are undeniably severe. At a minimum, such factors should give pause to any policymaker who is considering basing his choice solely on technical calculations.

Of course, most public officials and professional policy analysts are acutely aware that messiness in the "real world" of institutions tends to foul up the most ingeniously crafted and technically "correct" policy initiative. Consequences occur that are not anticipated. The best-laid policy plans do not yield expected outcomes. Although ready to concede the importance of institutional problems, officials and analysts often are less ready to concede that formal analytic techniques can help them deal with these factors. In part this report is a response to such skepticism.

We contend that a set of techniques we call institutional analysis can help. Properly applied, these techniques can yield useful insights to the analyst and be persuasive to others. We base this contention on our five years' experience in doing such analysis in the area of energy policy. We feel the techniques have yielded useful insights to us, and have been persuasive to our sponsors and others that read our reports. Our judgment about our experience is, of course, suspect. We feel the best evidence for convincing someone of these points is to have him or her apply them and see what results. Therefore, the report is in the form of guidance for doing institutional analysis. It should help those who are already convinced of the value of institutional analysis, and hopefully help convince those who are not yet sold on its value.

We have begun to knit formal analytic techniques that are being developed by others into three basic forms of institutional analysis that we have found useful for evaluating energy policies. These three forms are: (1) institutional mapping; (2) institutional assessment, which may include examination of both constraints to and impacts from suggested alternatives; and (3) institutional planning, which may include design of new institutional arrangements or guidance for working within the existing institutional context. The succeeding chapters of this report set out these forms of institutional analysis.

The purpose in setting out these forms of analysis is to provide "middle-level" guidance to those who want to perform such analyses themselves. We have attempted to make our guidance "middle-level" in two senses. First, we have tried to steer between complete theoretical abstraction and complete cookbook concreteness. The theories involved have been set out elsewhere (see the discussion below) and Cookbook prescriptions are either beyond the state of the art at this point or are so tied to specific situations.

Admittedly, general cookbook prescriptions do exist concerning data gathering, even the gathering of institutional data. Some of our favorite works are listed in the accompanying footnote.<sup>3</sup> However, our concern is not with data gathering per se, but with questions surrounding what data to gather and how to present and analyze it once gathered.

Second, we have tried to steer a middle course between case studies and general propositions. We try to illustrate our points with both short and long energy examples, but we do not ask our readers to derive our guidance solely from those examples. We state, as explicitly as we can, the points we are trying to make about how to do these kinds of analyses.

Our guidance concerning what data to gather consists largely of questions the analyst should seek to answer. It also includes descriptions of the products an institutional analysis might produce. Our guidance concerning how to analyze institutional data consists largely of a representative sampling of general propositions and descriptions of where to find more such propositions. These propositions are statements about the world derived from one or more of the three theoretical viewpoints (legal, organizational, and political) discussed later in this chapter. For example, legal decisions usually follow the precedent of past decisions, government organizations change incrementally; political groups logroll by trading their support on one issue for support on a second issue from another

group. The propositions are rules of thumb that the analyst should use unless the relevant facts of a specific situation suggest that a given rule does not apply. Most of them apply frequently enough that the analyst will usually be trying to figure out how they apply rather than whether or not they do.

Neither task is trivial. The assumptions on which a given proposition is based are usually implicit and often depend on the presence or absence of facts the analyst may find difficult or impossible to obtain. The conclusions of such propositions are often vague or ambiguous, and may not be observable, let alone measurable. Propositions even conflict with one another in many areas. Other areas are without propositions.

Nonetheless, the institutional analyst must work with what is available. His or her principal analytic task, once data is gathered, will almost always be to determine if potentially applicable propositions exist or can be proposed; to decide whether the existing or proposed ones apply in a given case; and to spell out their implications in that case. (Some readers may note a similarity between this activity of institutional analysts and the activity of legal analysts in sorting out the existence and application of legal doctrines. Indeed, legal analysts often make excellent institutional analysts. Given that both of us went to law school, our stating the central analytic activity in this form should be no surprise.)

Of necessity our questions, products, and propositions, are preliminary. They represent approaches that have "worked"--by generating important and nonobvious insights--in the analysis of a variety of energy policy issues. They should be taken not as absolute prescriptions, but as informed suggestions.

Although these approaches are tentative, they were not generated ad hoc. Each draws on a large body of theory about institutional behavior. As background for the succeeding discussions, therefore, the remainder of this chapter summarizes this theoretical core.



## 1.2 THEORETICAL PERSPECTIVES

Like economic forecasting, institutional analysis benefits from the adaption and application of several behavioral theories. We have found it useful to cluster these theories around three distinctive "viewpoints," which we have labeled legal, organizational, and political. These viewpoints are not mutually exclusive. They provide a way of looking at policy issues from different perspectives. We have found that applying each perspective in succession reveals more about institutional behavior than relying on a single viewpoint or attempting to use all three at once. Nor is any of the viewpoints a "model," in the sense of a rigorous, empirically tested theory. Rather, each draws on several theories that provide general propositions about institutional behavior. Each viewpoint is presented in the form of a "paradigm"--that is, a systematic statement of the basic unit of analysis, organizing concepts, and dominant inference pattern employed by the viewpoint for understanding governmental decisions and actions.<sup>4</sup>

### 1.2.1 The Legal Viewpoint (Hart and Sacks' "Legal Process")

The legal viewpoint highlights the many government decisions that take the form of statutes, regulations, and adjudicatory decisions. Formulation of a separate legal viewpoint represents a deliberate, though hardly inevitable choice. In one sense, legality is a constraint under which organizational and political processes must operate.<sup>5</sup> In another sense, the legal process can be thought of as a particular kind of organizational process from which laws emerge as outputs. In yet another sense, the legal process corresponds to one of the channels through which the political process produces government actions. Indeed, successful use of organizational and political viewpoints requires explicit attention to legal considerations. However, the legal viewpoint merits separate attention. Organizational and political perspectives can contribute valuable insights to understanding

government decisions and actions produced by the legal system, but they cannot substitute for an understanding of the logic and concepts of a process that is frequently comprehensible only in its own terms. Our statement of this viewpoint is based in part on the work of Henry Hart and Albert Sacks.<sup>6</sup>

### Basic Unit of Analysis: The Law of the Land

Each law is a basic unit of analysis. Obviously, for each particular problem, only the relevant laws would be analyzed. Laws come from many sources: constitutions, statutes, treaties, regulations, adjudicatory decisions, and contracts, to name the most obvious.

### Organizing Concepts

Law. A law is a proposition that is general, authoritative, and directive: general in the sense that it applies to everyone falling within its classifications; authoritative in the sense that it claims to be entitled to the observance and acceptance of all members of society; directive in the sense that it speaks from one point of time to another. Obviously, Section 102 of the National Environmental Policy Act of 1969 requiring the preparation of environmental impact statements in connection with all governmental actions significantly affecting the environment is a law. So too, the regulation at 10 C.F.R. Sec. 711.41 setting out DOE's criteria for determining the need for environmental impact statements is a law. And the court's holding in Calvert Cliff's Coordinating Committee v. AEC, 449 F.2d 1109 (D.C. Cir. 1971) that NRC must comply with NEPA in issuing construction permits and operating licenses is also a law. However, NRC's denial of an operating license to a particular applicant is not a law. Though authoritative and directive, it is not general. It applies only to the one applicant.

Primary Versus Remedial Provisions. Any law has both a primary and a remedial provision. The primary provision states the behavior desired.<sup>7</sup> Primary provisions may be in the form of duties to refrain from certain actions altogether (e.g., using a pesticide like DDT), to behave according to specified norms if certain actions are undertaken (e.g., comply with pollution control standards when generating electricity and refining oil), or to take certain actions (e.g., pay your taxes). Primary provisions may also be in the form of a liberty (absence of a duty) or a power (authorization to do certain things).<sup>8</sup> The remedial provision states the consequences of failure to comply with a primary provision--such as payment of a fine or nullification of a contract.<sup>9</sup>

Legislation. Legislation is the formulation and elaboration of general, authoritative, directive arrangements.<sup>10</sup> Obviously, legislatures legislate. So do voters. Less obviously and frequent disclaimers to the contrary notwithstanding, courts often legislate in adjudicatory proceedings. So do administrative agencies: administrative rulemaking is an obvious form of legislation; administrative adjudicatory proceedings result in legislation in the same way as court proceedings.

Law Formulation. Formulation is the first stage in the operation of a law--that is, the operation of a general, authoritative, directive arrangement.<sup>11</sup> Laws can be formulated by the voting population (as in the case of constitutional conventions, referendums, and initiatives, such as initiatives that would ban nuclear power), by the legislature (as in the case of statutes, such as the Energy Supply and Environmental Coordination Act of 1974), by the judiciary (as in the Calvert Cliffs case), and by administrative agencies (as in the case of Economic Regulatory Administration rulemakings and adjudicatory decisions which set oil prices).

Law Elaboration. Elaboration is the second stage in the operation of a law.<sup>12</sup> The most prevalent instances of law elaboration are the activities of administrative agencies in issuing regulations pursuant to statutory authority and the activities of courts in interpreting statutes, regulations, and previous judicial holdings. Administrative agencies also carry out this interpretative function when pursuing their adjudicatory duties. For example, passage of the Energy Conservation Standards for New Buildings Act of 1976<sup>13</sup> was law formulation; publication of Energy Performance Standards for New Buildings; proposed rule making and public hearings<sup>14</sup> was law elaboration.

Law Application. Application is the third stage in the operation of a law. There are three main varieties of law application. Self-application occurs when the person to whom the law is addressed in the first instance knows of and understands the law, identifies the circumstances in which the law is applicable, and chooses to comply: for example, the geothermal developer who notices an exploratory well is reaching the depth for which a production permit is necessary and suspends drilling operations until he is able to obtain one. If, however, the developer continues to drill and the state geologist directs him to stop, the geologist's action constitutes a tentative official application by the person to whom the law is addressed in the second instance. When a court or administrative agency determines whether the developer in fact exceeded the permissible depth for drilling without a production permit there will have been authoritative application of the law in operation.<sup>15</sup>

Rulemaking. Rulemaking is one process by which an administrative agency formulates and elaborates laws. Rulemaking is legislative activity. It results in rules (or regulations--there is no difference) that have the force of law. They are generally codified in the Code of Federal

Regulations or its state or local equivalent. Because an administrative agency's legislative power is derivative its power to legislate is limited. Its rules must lie within the scope of the authority delegated and they must be consistent with the general principles set forth in the statute. In addition, the agency must follow proper procedures in adopting rules. These procedures are set out in the agency's enabling statute, or more commonly in the Administrative Procedure Act (APA), which applies to most agencies.<sup>16</sup> The APA establishes two basic types of procedures for agency rulemaking. The more commonly used version is "notice and comment" rulemaking, in which the agency gives notice of the proposed rulemaking in the Federal Register, receives and considers written comments (and at the agency's discretion, oral presentations), and then promulgates the rules together with an explanation of their basis and purpose.<sup>17</sup> When required by statute to do so, the agency must instead conduct rulemaking "on the record", according to more cumbersome procedures analogous to a trial.<sup>18</sup> Under judicial prodding, the federal agencies have come to develop an intermediate approach known as "hybrid rulemaking" that produce a more comprehensive record than notice and comment rulemaking but without the full formalities of an on the record hearing.<sup>19</sup> In the Vermont Yankee case, the Supreme Court held that a reviewing court cannot compel a federal agency to adopt procedures beyond those required in the APA, the agency's enabling statute, and the agency's own rules, except in unusual circumstances.<sup>20</sup> Of course, agencies are still free to make use of hybrid rulemaking procedures of their own choice and are likely to do so.<sup>21</sup> Generally, an agency commences a rulemaking proceeding on its own initiative. Under evolving judge-made law, however, outside parties can sometimes compel the initiation of rulemaking proceedings.<sup>22</sup> These parties are especially apt to be successful when agency action appears to sidestep a congressionally mandated public role.

Intervention. Through intervention, parties whose interests are affected by agency proceedings may participate in them. The right to intervene may be established by statute, as for example in the case of the Atomic Energy Act.<sup>23</sup> Under evolving doctrine, virtually anyone with standing to seek judicial review of an agency action, as discussed below, also has the right to intervene in agency proceedings.<sup>24</sup>

Agency actions that are nonregulatory. Obviously, regulatory actions (rulemaking and adjudication) are not the only agency actions subject to legal norms. A variety of federal and state agencies have no regulatory responsibilities. Others having regulatory responsibilities (such as the Department of Energy's Economic Regulatory Administration or DOT's Materials Transportation Bureau) perform many nonregulatory tasks as well. In carrying out these tasks, the agencies are subject to legal constraints imposed by their enabling statutes (defining their duties and responsibilities), by federal environmental, health, and safety statutes that apply to federal agencies, and by regulations and court decisions interpreting these statutes. Parties injured by an agency's failure to comply with applicable legal norms may obtain judicial relief, as provided in the statute that is violated.

NEPA. The National Environmental Policy Act (NEPA)<sup>25</sup> requires federal agencies to include an environmental impact statement (EIS) in every recommendation or report on proposals for major federal actions significantly affecting the quality of human environment.<sup>26</sup> NEPA applies to all federal agencies; and it applies to all actions, regulatory and nonregulatory. The EIS requirement means all agencies must consider alternatives and weigh their costs and benefits, environmental and otherwise, before taking major actions affecting the environment. Because agency compliance with NEPA is subject to judicial review, both under the APA<sup>27</sup> and under the federal

district courts' federal question jurisdiction<sup>28</sup>, NEPA provides interested parties a "hook" into the federal agency decisionmaking process. This access is especially significant with respect to nonregulatory agencies, whose actions would otherwise be subject to review only as regards compliance with a particular substantive statute.

Adjudication. Authoritative application of a law is accomplished through the process of adjudication. Only courts and administrative agencies adjudicate. Adjudication generally takes one of three basic forms: an administrative agency adjudication (such as a licensing proceeding), a lawsuit, or an enforcement proceeding (in which the government seeks either civil or criminal penalties). Adjudicatory decisions have the following characteristics: they are final (subject only to review by a superior adjudicatory tribunal); they are not subject to political accountability; they are imposed on the parties; and they are reasoned from impersonal criteria.<sup>29</sup> Analytically, adjudication involves three steps. The first is law declaration: stating the applicable general proposition. The second is fact identification: determining the relevant characteristics of the particular matter before tribunal without using any of the terms in the general proposition. The third is law application: linking the particular facts to the general proposition.<sup>30</sup> A typical instance of adjudication is the determination of whether or not to grant an applicant a construction permit to build a nuclear power generating facility pursuant to the Atomic Energy Act of 1954. The tribunal involved is a three-member panel of the Atomic Safety and Licensing Board (ASLB). The ASLB declares the law by identifying the standards relevant to the application in the Atomic Energy Act and the NRC regulations in 10 C.F.R. The ASLB identifies the facts by determining the physical characteristics of the proposed facility. Then the ASLB applies the law by

determining whether the physical characteristics of the facility meet the relevant standards.

Jurisdiction. Neither a court nor an administrative agency can adjudicate a case without having both personal and subject matter jurisdiction. Personal jurisdiction defines the parties whose rights the tribunal may determine. Subject matter jurisdiction defines the types of cases the tribunal may decide. Jurisdiction may be either original (if the tribunal is empowered to decide the case in the first instance) or appellate (if the tribunal reviews the decision of an inferior tribunal). Jurisdiction is vested in a tribunal according to constitutional and statutory provisions.

Justiciability. The doctrine of justiciability precludes a court or administrative tribunal from resolving hypothetical dispute. Thus, a case brought before a federal court must "present a real and substantial controversy which unequivocally calls for adjudication of the rights" asserted.<sup>31</sup> As a result, the federal courts may not issue "advisory opinions" concerning the prospective conduct of the executive or legislative branches.<sup>32</sup> Note, however, that a declaratory judgment, which states the rights of the parties without providing further relief, is among the solid congressionally authorized remedies of the federal courts. Analogous principles apply to state courts.

Reasoned Elaboration. In applying the applicable law to the relevant facts in order to reach a decision, tribunals engage in the process of reasoned elaboration.<sup>33</sup> Reasoned elaboration involves two basic principles of decision. First, tribunals decide like cases alike: that is, when they apply a law to similar facts in different cases, the results should be the same. Second, a tribunal's decision relates in a reasoned fashion to the principles and policies that applicable law expresses. That is, law application is not and cannot be mechanical. Often, the applicable statutes or judicial



authority do not explicitly address the precise factual situation presented. Sometimes the literal application of a statute or the wooden application of a judicial precedent would produce a result that is clearly anomalous or unjust. In such instances, a tribunal has to look to the principles and policies the applicable law serves and reach a decision that relates rationally to these policies and purposes.

Statutory interpretation is a special kind of reasoned elaboration: that involving application of a statute to a given set of facts. Statutory interpretation demands particular care on the part of an adjudicatory tribunal because the legislature's authority to make social policy prevails over that of the judiciary. (When a tribunal is interpreting judge-made law, this potential conflict of authority does not arise.) In interpreting a statute, a tribunal first decides "what purpose ought to be attributed to the statute and to any subordinate provision of it which may be involved."<sup>34</sup> In attributing purpose the tribunal looks first to express statements of purpose in the statute, and then to purposes that can be inferred to the overall scheme of the statute; to the context in which it was enacted; to previous administrative, judicial, and popular constructions; and as a last resort, to presumptions.<sup>35</sup> Next, the tribunal interprets "the words of the statute ... so as to carry out the purpose as best it can, making sure, however, that it does not give the words either (a) a meaning they will not bear, or (b) a meaning which would violate any established policy of clear statement."<sup>36</sup>

Judicial review. Judicial review is the principal means of ensuring that an agency has correctly interpreted its authority, followed necessary procedures, and reached a defensible result in the course of rulemaking and adjudication. Judicial review is provided for either in the agency's enabling statute or under the general provisions of the APA.<sup>37</sup> Review of federal agency

rulemaking or adjudication is generally by the U.S. Court of Appeals for the District of Columbia Circuit. Who may seek judicial review depends on the doctrine of standing. To have standing to sue, the person bringing the action must be able to plausibly allege he or she was injured in fact and that this injury violated a zone of interest protected by the statute in question. As a practical matter, standing is rarely a bar to a well pleaded complaint, as the modern doctrine is applied quite liberally.<sup>38</sup> When a person may obtain judicial review depends on several doctrines. The doctrine of primary jurisdiction determines whether the court or the agency must make the initial determination of some issue. The doctrine of exhaustion of administrative remedies requires that administrative proceedings must be completed before judicial review can be obtained. The doctrine of ripeness for review precludes judicial review until an agency action substantially affects or threatens the plaintiff.<sup>39</sup>

Standards of review. Ordinarily, a reviewing court does not conduct a de novo proceeding to independently ascertain the legislative or judicial facts of issue. Rather, the reviewing court determines whether the administrative tribunal has correctly identified and applied the relevant law. In general, reviewing courts are most comfortable determining whether the agency has followed proper procedures in promulgating rules or adjudicating a case. In the case of rulemaking or adjudication, these procedures will be those set out in the agency's enabling statute, in the APA, and in the agency's own procedural rules. Courts also engage in limited substantive review of agency action. In the case of rulemaking or adjudication, courts set aside an agency action if it is "arbitrary and capricious," represents an "abuse of discretion," or exceeds the agency's statutory authority.<sup>40</sup> In the case of adjudication, the court may also overturn a decision "unsupported by substantial evidence." In NEPA cases, which may involve either regulatory or nonregulatory actions, procedural and substantive standards

of review tend to blur. At the procedural extreme, courts are quite willing to reverse an agency for NEPA compliance when it has failed to produce an EIS at all when to do so is clearly necessary or has overlooked obvious alternatives to the proposed agency action. At the substantive extreme, a court has apparently never rejected an EIS solely because the agency made the "wrong" decision on environmental grounds.<sup>41</sup> In between, courts have adopted a variety of standards under the rubrics of requiring a "hard look" at the alternatives and their consequences or "adequate consideration" of environmental values.<sup>42</sup> Recent Supreme Court cases suggest that agency actions will survive review so long as there is an adequate justification for the agency's conclusions<sup>43</sup> and the agency has at least "considered" environmental values.<sup>44</sup>

Remedies. Remedies are the relief obtained by the successful plaintiff in a lawsuit or the government in an enforcement proceeding. The successful plaintiff may obtain legal relief (generally money damages) or equitable relief (an injunction requiring the plaintiff to do something or to refrain from doing something). In a successful enforcement proceeding, the government may obtain civil penalties (roughly the same as legal or equitable relief in a lawsuit) or criminal penalties (fines or jail sentences).

Dominant Inference Pattern: Government Action as Institutional Settlement

The dominant inference stemming from the legal viewpoint is that disputes concerning government policy or its application will be settled within the bounds imposed by substantive and procedural law. If a tentative settlement has been reached outside those bounds, several different parties to the dispute have the opportunity to continue the dispute until its resolution is brought within them. Existing law has the power

to force settlements within its bounds because a basic operating tenant of the American system is that decisions duly arrived at by duly established procedures and meeting duly established standards are binding unless and until they are changed by the same or other duly established procedures and according to the same or other duly established standards.

### 1.2.2 The Organizational Viewpoint (Allison's "Model II")

The organizational viewpoint explicitly recognizes that "the government" (or a portion of it, such as the Federal Executive Branch or the U.S. Department of Energy or the executive branch of Oregon) is an agglomeration of organizations. A President or Governor may have extensive formal authority over the agencies he heads. Yet in responding to his needs for information, alternatives, and implementation, such organizations necessarily operate within the confines of their own distinctive missions, procedures, and resources. Similarly, governmental policies depend on the response of organizations outside the government, such as corporations and labor unions. Existing organizations help form the context in which policy choices are made. They define the range of choice for assigning responsibilities to carry out actions. New organizational arrangements are an important (though often difficult to implement) alternative for achieving desired outcomes. Inevitably, organizations--new or old--are of key importance in determining whether a policy alternative will achieve desired results. The organizational viewpoint, or "Model II" as developed by Graham T. Allison, helps the analyst understand organizational behavior.<sup>45</sup> It relies heavily on the theories of Herbert Simon, James March, and Richard Cyert.<sup>46</sup>

#### Basic Unit of Analysis: Organizations

Each governmental or nongovernmental organization involved in a particular policy area is a basic unit of analysis for this viewpoint. In addition, so is each component of the most

relevant organizations. For instance, in an examination of the nuclear waste problem, the viewpoint would consider organizations such as the Department of Energy, the Nuclear Regulatory Commission, the public utilities and the private companies generating waste, and the U.S. Congress. It might also examine particular divisions of DOE and NRC, including their operating offices, their intergovernmental affairs offices, and their license issuing or standard-writing offices.

In examining each organization or component, the viewpoint would lead one to examine many aspects of each unit and how it interacts with others and with its environment. These aspects include, as explained below, such things as the strategy and structure of each component, the recruitment and training of its members, and its existing pattern of resources and activities.

### Organizing Concepts

Organizational Participants. "The government" is not a single actor speaking with one voice, but a group of organizational actors that governmental leaders can to some extent direct. This group acts through organizational routines.<sup>47</sup> For example, "the federal government" for purposes of nuclear waste management includes the Department of Energy, the Nuclear Regulatory Commission, the Department of Interior, the Environmental Protection Agency, the Department of Defense, and the Department of Transportation, as well as the Congressional committees with jurisdiction over them. Assorted other federal agencies are involved to a lesser degree. Nor are these organizations themselves monolithic. The Department of Energy, for example, includes regulatory agencies such as the Federal Energy Regulatory Commission and the Economic Regulatory Administration, program units such as Nuclear Energy and Fossil Energy, and staff offices such as Policy and Evaluation. Obviously, state governments also act through clusters of organizations.

Factored Problems and Fractionated Power. Few public policy problems are so simple that one organization alone can deal with them. Almost any significant issue must be divided into pieces.<sup>48</sup> Thus for nuclear power, the Department of Energy has responsibility for research and development; the Nuclear Regulatory Commission, for safety and safeguards regulation at fixed sites and in transportation; the Department of Transportation, for safety regulation of materials in transportation; the Environmental Protection Agency for regulation of environmental risks; and the State Department for nonproliferation.

Precisely because organizations handle pieces of problems too complicated to be handled by a single entity, they tend to operate with substantial autonomy. In principle, the federal departments serve the President. In fact, their priorities and procedures resist central direction, or even understanding, except of the roughest sort. In state governments, organizational autonomy may be reinforced by legal and political factors--when for example, the head of a department is an elected official in his own right.

Parochial Priorities and Perceptions. Primary responsibility for a narrow set of problems encourages organizational parochialism, which is enhanced by factors such as the selective information available to organizational members, recruitment of similar minded personnel into the organization, tenure of individuals already socialized into the organizations, group pressures to conform to existing organization practices, and distribution of rewards within the organization for conforming with existing patterns.<sup>49</sup> Allies and constituents in Congress, industry, and special interest groups reinforce stable, parochial perspectives. For example, such factors have made it very difficult for EPA to take explicit account of economic impact in setting environmental protection standards despite quite explicit guidance from the

President to do so. To compromise environmental goals goes against the grain of EPA lawyers' backgrounds, violates their conception of EPA's mission, and offends EPA's constituents in Congress and the environmental movement.<sup>50</sup>

Executives, Managers, and Operators. Tasks are shared not only by separate organizations, but also within organizations. Most organizations consist of three levels: executives, managers, and operators. Executives maintain the organization. They acquire resources, set up a communication system, provide inducements, and help formulate goals and objectives. Managers perform the specialized task of coordinating the activities of other persons. High level people in the organization, "mission managers," are preoccupied with the maintenance of rules and standards. Lower level "staff managers" take into account contexts and constraints. They have to do so in spite of pressure from "mission managers" to closely adhere to official procedures because of their proximity to operators. Operators actually perform the central task of the organization. They are the "street-level bureaucrats" who carry out the organization's function and fulfill its mission. Their behavior is generally influenced by contexts and constraints and they have substantial discretion.<sup>51</sup>

At least one analyst has even suggested that individuals at these different levels in an organization have different routines for processing information.<sup>52</sup> Executives are most apt to be "uncommitted thinkers," whose information processing is characterized by a refusal to be bound by past actions and a tendency to judge information by its source much more than by its contents.<sup>53</sup> Managers are most apt to be "theoretical thinkers," whose information processing is characterized by a tendency to judge everything in light of fairly fixed, general rules of the way the world operates.<sup>54</sup> Operators are most apt to be "grooved thinkers," whose information processing is

characterized by a tendency to put people and situations into one of a number of categories on the basis of initial information.<sup>55</sup> Of course, these types of thinking are found in other places inside and outside of formal organizations.

The relevance of this three part division of tasks within an organization for the organizational viewpoint is that it affects the output of organizations. The assignment of tasks to each of the three levels is relatively predictable, as are the results of such assignments. Therefore, the knowledge of which activities assigned to an organization will be further assigned to each level in the organization helps the analyst predict how the organization will respond to carrying out a given set of activities. For instance, a decision to license a nuclear plant involves a large number of subsidiary decisions concerning such issues as the safety of the plant and the need for power. Knowledge of which decisions will be made at which levels within the Nuclear Regulatory Commission can guide the analyst in predicting what sorts of information the organization will require for each issue and how the organization will reach decisions on each issue.

Inducements. Participants must be induced to participate--to join the organization, perform its tasks, and contribute to the accomplishment of its mission. Inducements may be tangible or intangible and include any valued benefit, service, or opportunity in exchange for which the individual is willing to play a part. Three general categories of inducements can be distinguished:

1. Material inducements. These are tangible rewards: money, or things and services readily priced in monetary terms. They include wages and salaries, fringe benefits, discounts, gifts, etc.



2. Solidarity inducements. These are intangible rewards arising out of the act of associating. They include offices, honors, and deference, the fun and conviviality of coming together, and such collective status or esteem as the group as a whole may enjoy.
3. Purposive inducements. These are intangible rewards that derive from the sense of satisfaction of having contributed to the attainment of a worthwhile cause. They include demands for the enactment of a certain law, the adoption of certain practices, or the alteration of certain institutions for the benefit of a larger public.<sup>56</sup>

The relevance of these inducements to the organizational viewpoint is that the ability of an organization to respond to its environment is constrained by the inducements of its members. Organizations, or parts of organizations, in which material inducements are primary will be most responsive to changes in budget levels and less responsive to changes in external activities or internal structure. For instance, sales forces within business organizations should be relatively more sensitive to commissions and other forms of compensation than to what they sell or how they are organized. Organizations or components in which solidarity inducements are primary should be most sensitive to internal reorganization. Many unions resist changes in work schedules for such reasons. Organizations or components in which purposive inducements are primary should be most sensitive to external activities. For instance, one would expect ardent environmentalists to continue fighting pollution in one way or another regardless of the budget of the environmental organization or its internal structure.

Organizational Essence. Perhaps the most important parochial priorities and perceptions of an organization concern the organization's essence. An organization's essence is the cluster of roles and missions the dominant group in the

organization believes the organization should perform.<sup>57</sup> For example, the organizational essence of the Bureau of Reclamation is constructing and operating dams and generating facilities. Often, organizational subunits differ in defining the essence of the overall organization. For example within the old Atomic Energy Commission, the divisions charged with regulating the nuclear industry viewed the AEC's essence as ensuring that nuclear activities are conducted with appropriate regard for health and safety. The research and development divisions saw the organization's essence as advancing the civilian application of nuclear power.

Action as Organizational Output. Organizational behavior is analogous to the operation of a computer. When organizations are called upon to act, they of necessity invoke one of a limited number of programmed routines. When the available repertoire of programs lacks an appropriate response to the situation, the organization is forced to "go with what it's got."

In activating responses, organizations exhibit the following traits:

1. Goals as Constraints. Rather than mandates to pursue, organizational goals tend to get formulated as disasters to avoid, such as sustaining a cut in personnel or budget. Thus organizational goals "emerge as a set of constraints defining acceptable performance."<sup>58</sup> Typical constraints include: avoiding budget or personnel cuts, operating within the law, and retaining authority to perform central organizational missions.
2. Value Disaggregation. Organizations disaggregate values. Organizations operate according to a highly simplified image of the environment which allows denial of the tradeoff relationship between competing

goals unless a highly structured, unambiguous external situation intervenes (the reality constraint).<sup>59</sup>

3. Sequential Attention to Goals. So long as the simplified, tradeoff-denying image of the environment remains intact, organizations pursue each goal independently, taking a given action in pursuit of only a single goal.<sup>60</sup>
4. Standard Operating Procedures. When organizations take actions, they act according to standard operating procedures (SOPs). What looks like a major decision--such as the choice of a route for the Alaska Gas Pipeline--is also the output of a variety of SOPs for processing applications, conducting studies, obtaining information, and rating alternatives. SOPs enable organizations to act collectively to perform important functions. But while SOPs are by definition well-suited to routine problems, they are similarly ill-equipped to deal with the unusual. And since they are often so firmly grounded in the incentive structure of the organizations, SOPs are resistant to change and to short-circuiting in exigent circumstances.<sup>61</sup>
5. Programs and Repertoires. Sets of SOPs constitute programs and repertoires for organizational response to specified contingencies. Like SOPs themselves, programs and repertoires are essential, but often inflexible and difficult to change.<sup>62</sup>
6. Uncertainty Avoidance. Organizations do not recognize uncertainty by calculating the probable consequences of their actions, much less seek out new information to update existing probabilistic estimates. Rather, organizations tend to deny the existence of uncertainty altogether.<sup>63</sup> They attach great importance to information supportive of their

simplified image of the environment while screening out unfavorable information (the reinforcement principle). Organizations assume that despite currently adverse information, time will somehow operate to establish a favorable trend (inference of transformation). And they reject any threatening line of argument or inquiry if any step in the line or argument or inquiry can plausibly be asserted to be impossible (inference of impossibility).

7. Problem Directed Search. On a day-to-day basis, organizations monitor the environment by focusing on a few incoming variables whose values affect the maintenance of organizational goals. Organizations proceed to act routinely until such a variable is pushed out of the acceptable range. In this event, organizations respond by conducting a problem directed search--either making marginal adjustments in current behavior or activating a SOP or program in the organization's repertoire--until performance falls once again within the acceptable range. A problem-directed search is simple-minded and biased. It looks for causes in the neighborhood of the problem and solutions in the neighborhood of the current action. Only if this most simple search does not produce an acceptable solution, will the organization move to a more complex one, usually by searching in organizationally vulnerable areas. In all cases, the search will be biased by the training, experience, and goals of the organizational participants.<sup>64</sup>
8. Organizational Learning. Generally, organizational behavior evolves slowly over time, as existing SOPs are incrementally modified to meet the requirements of new problems. Nonincremental change can occur, but

does so infrequently--generally in response to unequivocally disastrous outcomes stemming from application of routine procedures.<sup>65</sup>

Central Coordination and Control. Many problems that are complicated enough to divide and parcel out among various organizations are important enough to require high-level direction, such as that of the President, the Congress, a governor, or a state legislature. Central coordination and control of problems for which organizations have responsibility poses a formidable challenge. Inescapably, the responsible political officials must rely for information, alternatives, and implementation on those organizations whose behavior they seek to control and coordinate. Sometimes decisionmakers can invoke their formal authority to confer rewards and punishments on members of the organization. They can manipulate the system of incentives. Occasionally, they can play one organization off another--for example they can "triangulate" to acquire unbiased information. Most often though, government leaders can at most disrupt the behavior of organizations. Central coordination and control are elusive.<sup>66</sup>

Complexity of Joint Action. The American system of government allows a great deal of participation by a variety of individuals, groups, and agencies. Therefore, a government action that appears to be simple and direct may be more complicated than it seems because of the number of steps involved, the number of participants whose preferences have to be taken into account, and the number of separate decisions that have to be made. At the same time, it is a general truism that the greater the numbers of participants, perspectives, and decisions, the smaller the probability of organizational success. Given these characteristics, the chances of achieving a goal on time--even the chances of completing it at all--are sharply reduced. As a consequence, intended goals are rarely achieved by government organizations.<sup>67</sup>

Dominant Inference Pattern: Governmental Action as Organizational Output

Government actions are the output of organizational processes in three senses. First, actual occurrences are organizational outputs.<sup>68</sup> For example, the generation and sale of federal hydroelectric power is an organizational action: the action of the Bonneville Power Administration marketing power from dams and generating facilities built by the Bureau of Reclamation and the Army Corps of Engineers.<sup>69</sup>

Second, existing organizational routines and physical capabilities constitute the range of effective choice open to government leaders confronted with any problem.<sup>70</sup> Faced with prospective fuel shortages in the spring of 1979, President Carter could not immediately call on the Department of Energy's 80 million barrel oil reserve stored in Gulf Coast salt caverns because DOE had not installed pumps to draw the oil out, had not obtained environmental waivers required to use the lake water required to force the oil out, had not negotiated arrangements with adjacent pipeline operators to transmit the oil, and had not determined whether refiners along the pipelines could use the oil in storage.<sup>71</sup>

Third, organizational outputs structure the situation within which leaders must make their "decisions" about an issue. Organizations raise the problem, provide the information, and take the initial steps that color the face of the issue that is turned over to leaders.<sup>72</sup> For example, past practices of utilities, NRC, and DOE define a major portion of the current high level nuclear waste management problem facing the administration: what to do about the large inventory of wastes in temporary storage at federal installations and commercial spent fuel ponds. Similarly, how executive and congressional leaders view alternative energy resources such as solar heating and biomass is to a large extent colored by a

history of research and report writing done by units of organizations within DOE and EPA.

### 1.2.3 The Political Viewpoint (Allison's "Model III")

The political viewpoint recognizes that many important governmental decisions and actions are inherently political. Rather than representing the choice of any single entity such as the public, the Congress, the President (or a state legislature or governor), decisions and actions represent the compromises of elected officials, government bureaucrats, legislators and their staffs, and the representatives of outside interest groups.

The political viewpoint, as embodied in Allison's "Model III," concentrates specifically on the bargaining of elected, appointed, and career officials within the executive branch.<sup>73</sup> Here, we make some effort to extend the arena of play to contextual factors, to legislatures, and to extragovernmental actors. More conceptual work is required, however, to develop a viewpoint that fully reflects these roles.

#### Basic Unit of Analysis: Political Bargaining Games

In the political viewpoint, the basic unit of analysis is the political bargaining surrounding a given issue. For instance, the controversy surrounding the adoption of the windfall profits tax might be a unit of analysis. The person using the political viewpoint should be interested in the identity and attributes of the participants involved and the rules of that particular bargaining game, especially the action channels and deadlines that drove it to resolution (see below). If the subject under discussion does not involve a past game, the task of the analyst is to predict future games as well as the participants and rules that will be involved in them.

#### Organizing Concepts

Contextual Factors. Political culture, public opinion, the social system, and the economic system present policymakers with

demands and limit what actions they can take. The culture of the particular society within which decisionmaking occurs shapes the behavior of individuals and groups in government decisionmaking, as it does in other aspects of social life. Common values and beliefs help shape the demands made upon policymakers and act to inform, guide, and limit their behavior. Public opinion designates expressions of public attitudes or beliefs about current political issues. Public opinion helps shape the broad directions of policy more than day-to-day routine aspects of decisions relating to specific policies. American society is divided into a wide variety of social, ethnic, economic, political, and religious groups. Many of these groups seek to influence governmental action. Public policy formation on most major issues involves conflict and struggle among these competing groups. The economic system is concerned with the production, distribution, and exchange of goods and services. A prime source of conflict is economic. Those who possess economic power often possess political power. Often those who are dissatisfied with the existing relationship seek government assistance to protect or advance their interest.<sup>74</sup>

Agenda Building. The collection of social problems facing a particular society is not a static quantity, although many problems seem to persist for a long time and become bound up with the basic structure of social life. From time to time, specific problems rise to the surface, gain widespread visibility, and may even be translated into public policy. One-time problems may also fade in significance. The policy agenda consists of issues that are commonly perceived by members of the public as meriting attention and as being matters within the legitimate jurisdiction of public authorities. For an issue to obtain access to the policy agenda, it must gain:

(1) widespread attention or at least awareness, (2) shared concern of a sizeable portion of the public that some type of action is required, and (3) a shared perception that the matter



is an appropriate concern of government. For an item to become part of the policy agenda, its supporters must have either access to the mass media or the resources necessary to reach people. They may require more than money and manpower; often the use of emotional rhetoric is essential in attracting a larger audience than the original adherents of a cause.<sup>75</sup>

Issue Entrepreneurs. Social issues rarely emerge spontaneously from the unguided actions of large masses of people. They are generated sometimes by accidents of timing, but usually by conscious effort; sometimes unknowingly or unintentionally, but usually by "issue entrepreneurs" who have issue generation as their specific goal. The media can play a very important role in elevating issues to the agenda. Political parties also play a role in translating issues into agenda items. Political leaders, in addition, are active participants in the agenda-building process. (The strategic location of these leaders assures them of media visibility when they want to promote an issue and places them in an excellent position to bargain with other decisionmakers over agenda content.) Finally, participants in the private and not-for-profit sectors have to be considered. Corporation executives, foundation directors, and "public-interest" activists also play an important role in putting issues on the policy agenda.<sup>76</sup>

Established Associations and the Distribution of Effects. Issues can be divided according to how they affect established political associations. A cost may be perceived to be widely distributed or narrowly concentrated. Similarly a benefit, real or imagined, may be widely distributed or narrowly concentrated. Not everyone will agree on the distribution of costs and benefits, opinions about a particular distribution may change over time, and occasionally beliefs can be changed by skillful political advocacy. Nonetheless, if costs or benefits

are deemed highly concentrated, there is likely to be activity by established associations with little or no opposition. An established association stands to gain or to avoid a loss, while no one else is directly affected. If two established associations have opposing interests and costs or benefits are highly concentrated, then there is likely to be prolonged conflict between these associations. However, if neither costs nor benefits are concentrated in a particular sector, then broad ideological disputation involving "majoritarian politics," not established associations, is likely to prevail. Finally, if costs and benefits are concentrated for some and widely distributed for others, then associations are likely to be opposed by leaders (issue entrepreneurs, the media, congressmen with larger ambitions, and the like) who use compelling symbols in an effort to arouse the public and mobilize a large following.<sup>77</sup>

The "Iron Triangle." This term refers to a coalition made up of the industries, government agencies, and the congressional subcommittees with jurisdiction over them. The members of this triangle have an interest in regulation that is intense and direct, whereas that of the public is weak and diffuse and is therefore less well represented. The strength of such triangles varies over time and over the subject matter of regulation, and over the specific issue involved. There is some evidence that such triangles are weaker now than before, that "social regulation" such as pollution controls offers less fertile ground for the influence of such triangles than "economic regulation" such as entry controls, and that the triangles affect enforcement of existing regulations more than the establishment of new ones.<sup>78</sup>

Participants. At any given time, a number of specific participants will be involved in particular policy games. Participants are people with elected, appointed, and career jobs in the government and outside of it. Individuals become

participants in the energy policy game by occupying positions that entitle them to participate. For example, the participants in U.S. energy decisions include the President, the Secretary of Energy, the Secretary of the Treasury, the Chairman of the Council of Economic Advisors, and the Director of OMB; the immediate staff of each; the principal appointed deputies and career officials within each department and agency; chairmen of the congressional committees centrally involved in energy policy and other congressmen with strong interests and power in the area; members of the press and lobbyists for industrial, trade, and labor, and environmental interest groups.<sup>79</sup>

Parochial Priorities and Perceptions. The views a participant holds on a particular issue are inevitably colored by his organizational affiliation. In part, such bias stems from the tendency to appoint and recruit officials sympathetic to the goals and perspectives of the organization. For career officials, these proclivities are reinforced by the internal incentives of the organization, such as those relating to advancement and the necessity of getting along with peers. For appointed leaders and career officials alike, forcefully presenting the organization's point of view in dealings with outsiders is often essential to establishing and maintaining the participant's reputation for effectiveness both within the organization and outside.<sup>80</sup>

Goals and Interests. Priorities and perceptions stemming from organizational affiliation are often powerful predictors of a participant's stand on a given issue. However, these "organizational interests" are far from being the sole determinants of a participant's stand. Three other sets of interests are often equally powerful, or even more so: substantive, political, and personal.<sup>81</sup> Consider, for example, a hypothetical Assistant Secretary of Energy for Conservation and Solar Applications negotiating with OMB over the size and mix of the DOE budget for solar commercialization

activities. His substantive interest in creating a rich mix of alternative energy technologies might incline him to support a reduced solar commercialization budget in favor of more funds for other technologies. His political interest in mustering public support for the President's energy policy might lead him to support a highly visible solar demonstration effort because of popular support for solar energy. His personal interest might push him toward favoring solar R&D activities over commercialization efforts because he conceives of his present role and sees his future in the government and outside as a manager of R&D. Meanwhile, his organizational interest in maintaining the health of CSA might lead him to press strongly for vigorous R&D and commercialization efforts for solar energy.

Types of Officials and Their Behavior. Different individuals within the organization display different patterns of behavior depending on their motivations. "Purely self-interested officials" are motivated almost entirely by goals that benefit themselves rather than goals that benefit the organizations-as-a-whole or society-at-large. Two types of self-interested officials can be distinguished: "climbers," who consider power, income, and prestige as nearly all-important; and "conservers," who consider convenience and security as nearly all-important. In contrast, "mixed-motive officials" have goals that combine self-interest with loyalty to larger social values. Three types of "mixed-motive officials" can be distinguished: "zealots," who are loyal to relatively narrow policies or concepts; "advocates," who are loyal to a broader set of functions or values; and "statesmen" whose loyalties are to society-as-a-whole.<sup>82</sup>

Stakes and Stands. Stakes are the sum of an individual participant's substantive, political, personal, and organizational interests in the resolution of a particular issue, such as: What should be the size and character of this

year's budget for conservation and solar applications? A participant's stakes importantly influence his stand on an issue.<sup>83</sup>

Faces of the Issue. Issues typically present different faces to different participants. For example, high level nuclear waste management is to the Secretary of Energy a roadblock to the continued development of nuclear power; to the commissioners of the Nuclear Regulatory Commission, a challenge for effective regulation; to the U.S. Geological Service, a technical siting problem; and so forth. Some participants will view an issue as a threat, others as an opportunity. The face of an issue a particular participant sees depends not only on his goals and interest, but also on the context in which an issue arises. For example, the adequacy of NRC standards for power reactors might be primarily a technical issue if raised internally; while if raised by the Natural Resources Defense Council through intervention in a licensing proceeding, it becomes a legal and political issue.

Rules of the Game. Laws, custom, and bureaucratic routines, acting in concert, establish "rules of the game" for political bargaining. The rules define positions, paths for access to those positions, the relative influence of each position, and the action channels by which positions interact. The rules also restrict the range of governmental decisions and actions that will be subject to political bargaining. Finally, the rules sanction some kinds of moves--such as persuasion, bluff, and threat--while prohibiting others as inappropriate on legal, moral, or sportsmanlike grounds.<sup>84</sup>

Two of the most important elements established by the rules of the game are action channels and deadlines.

Action Channels. "An action channel is a regularized means of reaching a governmental decision or taking governmental action on a specific kind of issue."<sup>85</sup> For example, the action channel for halting work on the developmental commercial

plutonium reprocessing center at Barnwell, South Carolina, might have included a recommendation by the Under Secretary of State for Security Assistance, a differing recommendation by the Assistant Secretary of Energy for Energy Technology, recommendations to the President by the Secretaries of State and Energy, evaluations by the President's national security and domestic policy staffs, a decision by the President to halt development, communication of this decision to the Secretary of Energy, and transmittal of an order to the Savannah River Operations Office of DOE to wind down work on the project. Meanwhile, through a separate action channel, funds for continuing work would be removed from the next annual DOE budget. Participants with "hooks" on action channels such as these are the participants whose stands and moves count. "Action-channels structure the game" by determining who is involved, at what points in the process, with what relative influence.<sup>86</sup> For major categories of decisions and actions, certain action channels are well established--for example, the annual budgetary process. However, a participant excluded from one action channel may be able to force the play into another to which he does have access. For example, a Friends of the Earth lawyer would have no opportunity to influence the choice of proliferation resistant technologies analyzed by DOE's NASAP program if all decisions were made according to action channels internal to the administration. If, however, he brought a lawsuit under the National Environmental Policy Act demanding that an environmental impact statement be prepared, he might soon become centrally involved.

Deadlines. Obviously, at any given time a participant does not have a well-developed stand on every conceivable issue with which he may become involved. In the first place, he may be unaware of the issue, or his opportunity to influence its resolution. Second, he is too busy to develop a stand on every issue of which he is aware. Moreover, to the extent a participant's various interests cut in different directions with

respect to an issue, he may find it psychologically difficult to make the tradeoffs necessary to develop a stand. And even if he has developed a stand in his own mind, taking that stand before it becomes necessary to do so may limit his flexibility or cost him advantages in games involving other issues. Typically, a participant takes a stand only when a deadline forces him to do so. A variety of events may create deadlines: those associated with legally mandated processes, such as the annual budget cycle; those created by crisis events, such as an oil embargo or a damaging newspaper story; those created by the actions of officials with the requisite authority, such as congressional hearings or those set by a superior official; and those created by legal norms, such as the necessity of filing an answer to a civil complaint.<sup>87</sup>

Power. A participant's influence on government decisions and actions depends on three elements: bargaining advantages, skill and will in using bargaining advantages, and other participants' perceptions of each.<sup>88</sup> For instance, strategic use of action channels is as important to many industries as the traditional decision variables of prices, entry, and innovation. The strategies firms can use to influence government behavior include the following:

1. Firms can make strategic use of information. The ability to control the flow of information to the government agencies is a crucial element affecting decisions.
2. Firms can make strategic use of litigation. Litigation costs are generally small in comparison with the stakes an established firm or industry has in a regulatory decision.
3. Firms can make strategic use of innovation. The output of inventions can be controlled for strategic purposes.

4. Firms can produce more than one product or service and price some below cost. Providing below cost services to classes of customers favored by the redistributational policies of the government can be an extremely effective strategy.
5. Firms can coopt the experts. Because government policy is increasingly made by academic experts it makes sense for firms to coopt these experts by hiring them as consultants or advisers and giving them research grants.
6. Firms can take advantage of jurisdictional conflicts to play off one government agency against another.<sup>89</sup>

Dominant Inference Pattern: Government Action as Political Resultant

Governmental decisions and actions result from the pulling and hauling of political participants. Compromise is pervasive. Typically, the decisions and actions that emerge from the political process give no one participant everything he or she wants. However, neither the bargaining nor the results are random. The bargain struck in a particular case depends on the participants involved and the rules of the game in that case. Important attributes of the participants include their stands on the issue and their skill and resources in influencing others. Important aspects of the rules include the action channel through which the issue is resolved and the deadlines that drove it to resolution.<sup>90</sup>



## CHAPTER 2

### INSTITUTIONAL MAPPING

This chapter discusses one of the basic tools in institutional analysis, the institutional map. The first section provides a definition and framework for preparing such a map, including distinctions between preparing an institutional map and other similarly named activities. The second section discusses the uses of an institutional map. The third section provides guidance for preparation of an institutional map. It places particular emphasis on techniques for keeping the level of effort required reasonable. The fourth section is an extended example.

#### 2.1 THE "INSTITUTIONAL MAP"

An institutional map is analogous to the highway maps once available from gasoline service stations. It is a description of the institutional "baseline environment," not the design of a route through that environment. Institutional mapping refers to depicting the context of policy, rather than to directly designing policies or strategies for implementing policy. Institutional mapping is thus to be distinguished from "forward mapping" or "backward mapping" as used by Elmore<sup>1</sup> and Moore.<sup>2</sup> In this chapter, "forward mapping" and "backward mapping" refer to alternative ways of developing routes over the "highways" described by the institutional map.

##### 2.1.1 Definition

An institutional map is a systematic presentation of the key participants and activities involved in a policy problem and the connections among them. The policy problem could be the commercialization of a new technology, an attempt to increase youth employment,<sup>3</sup> or any of a myriad of other problems. In every case, the policymaker and the analyst will want to know the key participants and key activities. Such an understanding will be useful for a variety of purposes.

Another way of describing an institutional map is as a diagram of the "policy sector." A "policy sector" has been defined as the "collection of many diverse governments, bureaucracies, courts, public and private interest groups, local delivery systems, clients, and individual participants" concerned with or impacted by a particular set of policy issues.<sup>4</sup> Institutional mapping is a way of diagramming these components.

### 2.1.2 Framework

This section presents a framework for ensuring that institutional mapping is systematic, relevant to the problem at hand, and reasonable in effort. This framework is based on the two major elements of an institutional map--activities and participants--and how they interact.

#### Activities

Of these elements, activities are primary, in that they create the basic structure of the institutional map. An activity is a specific task or event involved in a policy problem. Examples include determining mineral rights, granting a permit, and disbursing funds. Indeed, analysts such as Elmore<sup>5</sup> recommend thinking of policy problems in terms of the specific tasks and events that give rise to the problem and the specific changes in those tasks and events needed to solve the problem. The most basic tasks and events are those most related to the problem. For instance, if the problem concerns the commercialization of a technology, the most basic tasks and events will be the physical and engineering activities that determine the development. If the problem concerns an economic transaction, such as the hiring of youth, the most basic tasks and events are the economic ones before, during, and after the employment contract has been formed between employers and young people.

Basic Activities. Picking a basic set of activities structures and limits the analysis. It structures the analysis because all other activities and participants are then grouped by basic activities. It limits the analysis because only other activities and participants of direct relevance to basic tasks and events need be included.

For instance, the basic activities involved in connection with most energy facilities are: (1) site selection; (2) construction; (3) operation; and (4) decommissioning. Depending on the facility, (a) obtaining financing, and (b) marketing the product of the facility may also be troublesome enough to warrant being broken out as separate basic activities.

Other Activities. Once the analyst has picked the basic activities, he or she must choose related activities. Two categories should be considered: activities having either direct physical or direct economic connection to the problem. In either case, the category should be considered in its broad form--that is, the physical category should include not just the output of the technical process, but also its byproducts, such as pollutants; the economic category should consider not just the effects directly and voluntarily imposed on those involved, but also socioeconomic spillovers imposed on those not directly involved.

For instance, most problems surrounding energy facilities will have to consider the physical activities involved in emission control and waste disposal as important, if not basic, activities. Such problems will also usually consider the economic activities involved providing labor and materials to the construction and operation phases of an energy facility.

A third category of activities that should be considered is governmental. In today's mixed economy, almost all physical or economic problems involve activities by the government. These governmental actions require procedures that affect all the participants.

For instance, most energy facilities require explicit governmental permission for siting, construction, operation, and decommissioning. In order to obtain such permission, the facility builders will probably have to prepare specific reports, participate in public hearings, and otherwise comply with special governmental procedures.

### Participants

The participants in activities are as important to the institutional map as the activities themselves. One of the most fundamental insights of institutional analysis is that different participants are apt to carry out the same activity in different ways. An independent regulatory commission, for instance, may be more appropriate for guaranteeing nuclear safety than a department of energy, which is more appropriate for promoting the development of the nuclear industry.<sup>6</sup> Although the insight that different organizations have different capabilities and priorities is not surprising, it runs counter to some of the standard assumptions of both engineering and economics, where physical and economic processes are supposed to operate similarly regardless of who participates. One useful way to think of participants is to group them into categories--governmental, economic, and other.

Governmental Participants. In addition to the obvious trichotomy of federal, state and local governments, the analyst preparing an institutional map should consider which specific agencies are involved in carrying out activities. The key participants do not always come labeled as such, and a little agency that has the power to approve a small portion of another agency's program may in fact be vital to the successful solution to the problem at hand. The Army Corps of Engineers, for example, may be the key to ensuring sufficient water for oil shale.<sup>7</sup> The courts, obviously, are also critical and must be considered along with executive and legislative actors.

Economic Participants. The economic participants include more than buyers, sellers, and brokers. Providers or withholders of the factors of production, such as laborers, investors, and property owners, have to be considered. In these instances, union officials, bankers, and realtors play the role of brokers. Research developers and suppliers may be critical in stimulating the application of innovative forms of energy.<sup>8</sup> Buyers and sellers of output, such as wholesalers, retailers, and customers also are involved. Without a market for alternative forms of energy, suppliers could not survive. The families of laborers and local governments that receive property tax revenue from economic activities also need to be included. Individuals and organizations dependent on buyers and sellers may be the key to particular policy problems.

Other Participants. This category includes nongovernment, noneconomic actors. In many instances, these outside participants are the key to policy problems. An example would be a university research program in advanced energy technology that made a major breakthrough. Interest groups in the traditional sense of organizations trying to influence the decisions and actions of governments are important. Sometimes interest groups are only potential participants.<sup>9</sup> They are not mobilized unless directly affected. An example would be neighborhood residents who oppose a particular powerplant siting. Their mobilization is related to a problem that directly affects them, unlike environmental groups that oppose construction of all nuclear plants.

#### Interactions Among Activities and Participants

An institutional map is not simply a list of activities and a list of participants. It includes a description of the interactions among activities and participants. This description brings life to what otherwise would be a dull, though orderly, series of lists. Put another way, the description tells how disparate activities and participants fit

together. For instance, the description would tell which activities came before others and which participants were involved in each activity.

What are the kinds of interactions that institutional maps describe? To begin with, they include obvious physical interactions: that is, one activity may cause another one, or one activity may always follow another for other reasons. Thus causation and sequence are two types of connections among activities. An example of causation is that converting utilities from natural gas to coal will cause more air pollution. An example of sequence is that drafting new regulations is likely to precede implementation.<sup>10</sup>

Second, the interactions may include economic ones. In commercializing an energy technology, participants interact through the exchanges that bind buyers to sellers, investors to manufacturers, and the like. Activities interact because the outputs of one activity are required inputs to a second.

In addition to physical and economic interactions, institutional interactions are useful to consider--i.e., legal, organizational, and political interactions.

#### Use of the Viewpoints for Institutional Mapping

One of the major uses of the viewpoints described in the previous chapter is to identify activities and participants and to describe the interactions among them. Each viewpoint generates a series of questions about a policy problem that the analyst can use for the identification and description required by institutional mapping.<sup>11</sup>

The Legal Viewpoint. Participants may be connected by private legal arrangements, as when they are partners in a contract with each other. An oil refiner, for example, has a contract with a producer for a regular shipment of petroleum. Participants also may be connected by public legal arrangements, as when a statute, regulation, or court decision

requires one participant to comply with the orders given by another. Those breaking energy regulations, for example, may be required to pay fines. Some activities may involve purely legal connections. Procedural rules can require one activity to precede another, and substantive rules can require one activity to give rise to another, as when an act of trespass by one party allows a second to institute a suit for damages.

The legal viewpoint gives rise to the following questions:

- a. What are the relevant federal, state, and local statutes, regulations, and adjudicatory decisions?
- b. What are the relevant legal principles?
- c. What standards must be met?
- d. What licensing procedures must be followed?
- e. What legal conflicts and uncertainties may arise?
- f. What processes may be used to resolve conflicts and uncertainties?

The Organizational Viewpoint. Examples of organizational connection abound. Two participants may be organizational components of a third. One kind of activity may be standard operating procedure for one participant, while another kind of activity will be outside the range of a participant's standard operating procedures. Organizational routine may determine that certain activities by one set of organizations are almost always followed by another set of activities by other organizations.

The organizational viewpoint gives rise to the following questions:

- a. What are the relevant public and private organizations--i.e., what organizations must take actions?
- b. What are each organizations

- i. goals and missions?
  - ii. standard operating procedures?
  - iii. resources?
  - iv. approaches to recruitment and training of members?
- c. How do the organizations typically relate?

From the organizational viewpoint, the analyst should be particularly concerned with aspects of interaction such as familiarity and compatibility. Familiarity summarizes interactions from participant to participant and from participant to activity. It is a measure of how often participants interact and how much they know about each other. If participants are familiar with each other, the history of their interaction reveals important information. If they are not familiar, the past sheds no light on their relationship. For participants familiar with each other, relationship refers to how they typically interact. That is, are they allies, neutrals, or enemies? Is their relationship based on equality or domination? For participants not familiar, compatibility summarizes the connection. Compatibility refers to the ability of unfamiliar participants to interact. The ability will depend on similarities between participants, or on the ability of participants to exchange valued goods and talents that each individually lacks.

Between a participant and an activity, familiarity answers the question: has this participant done this activity frequently before, sporadically before, not at all before? If not at all, has this participant done something analogous? Again, if the participants are relatively unfamiliar with an activity, compatibility can be used to summarize the relationship. Questions center on whether the activity is one the participant will want to do and will be able to do relatively well.



The Political Viewpoint. Political activities either increase or help resolve conflict. Participants are either for, against, or uninterested in particular issues. They may be in explicit or implicit coalitions with each other, or they may be explicit or implicit opponents.

The political viewpoint leads to the following questions:

- a. What are the relevant political interests (both in government and outside)?
- b. Who participates? Whose interests are affected and whose preferences count?
- c. What is the likely position of each participant with respect to relevant issues?
- d. What determines each participant's preferences and interests?
- e. How are preferences combined to determine outcomes? That is, what are the "action channels?"
- f. What are the sources of influence?
- g. Whose preferences count? That is, which participants are heavily involved and which participants are only marginally involved?
- h. How stable is the distribution of influence among participants?

### 2.1.3 Format for the Institutional Map

A format is a useful device for ensuring that the presentation of activities, participants, connections is systematic. One format is shown in Figure 2.1.<sup>12</sup> We used this format for a map of commercializing in situ uranium mining. The first element diagrams basic activities. If activities are long and complex, they may be usefully divided into stages and steps. In any case, they represent a flow (usually in chronological sequence). Next to each one of these

basic activities are activities related to the basic activity. The diagram shows these activities in three layers. The first layer is economic activities, because the basic activities for this policy problem were physical ones. The second layer contains the governmental activities related to the appropriate basic activity, or to economic activities related to the appropriate basic activity. The third layer contains other group activities related to (a) the basic activity; (b) economic activities; or (c) governmental activities.

The participants in each of the activities are described as well. The description may contain two items of additional information. The first is reason for involvement of the participant in the activity. If he is a governmental participant, a citation to legal authority plus any especially important applicable legal standards will be included along with other reasons. The other item is a citation to the source of information. It may be the name of a person to contact in a governmental agency, a reference to a journal or newspaper article, or some other reference.

In most cases, the analyst will want to join the diagram together with a narrative. Usually, each basic activity will be discussed in a separate section. Each section will contain a discussion of the layers of the diagram related to the particular activity.

## 2.2 THE USES OF AN INSTITUTIONAL MAP

The basic use of an institutional map is as a baseline for further analysis, though it need not always be the first step. Boundaries must be set on every problem including the drawing of such a map. Exploring constraints, impacts, or alternatives before constructing the map may help limit the activities, participants, and connections that needs to be mapped. For instance, Richard Elmore recommends focusing on behaviors at the "street" level.<sup>13</sup> These behaviors give rise to the problem and it is here he believes that specific changes can be made to solve the problem.

ECONOMIC		GOVERNMENTAL		INTEREST GROUP
Participants -- Activities		Participants -- Activities		Participants -- Activities
STAGE 1: EXPLORATION/ TESTING	<ul style="list-style-type: none"> <li>- LANDOWNERS and OWNERS OF MINERAL RIGHTS lease land or mineral rights</li> <li>- GEOLOGISTS</li> <li>- ENGINEERS</li> <li>- GEOPHYSICISTS</li> <li>- DRILL CREWS--drill exploratory wells</li> </ul>	<p>WYOMING</p> <p>Federal</p> <ul style="list-style-type: none"> <li>- BIA--approves lease of Indian lands</li> <li>- NRC--issues R&amp;D permit</li> <li>- US FOREST SERVICE--permits drilling, roads on its lands</li> <li>- BLM--must permit access roads on its lands</li> </ul> <p>State</p> <ul style="list-style-type: none"> <li>- WDEQ, LQD--issues R&amp;D permit, mining permit; WQD--approves above permits</li> <li>- WYOMING STATE ENGINEER--issues withdrawal/observation wells permits</li> <li>- CITY/COUNTY ENGINEERS--issue permits for access roads</li> </ul> <hr/> <p>TEXAS</p> <p>Federal</p> <ul style="list-style-type: none"> <li>- US FOREST SERVICE; BLM--as above</li> </ul> <p>State</p> <ul style="list-style-type: none"> <li>- RAILROAD COMMISSION, OIL &amp; GAS DIVISION--issues plugging permit</li> </ul>		(Unlikely at this stage.)
STAGE 2: MINE CONSTRUCTION	<ul style="list-style-type: none"> <li>- DRILLERS</li> <li>- MINING COMPANIES--(engineers and unskilled personnel)</li> </ul>	<p>WYOMING</p> <p>Federal</p> <ul style="list-style-type: none"> <li>- NRC--issues source materials license</li> <li>- EPA--regulates construction of wells --sets requirements for public drinking water supply systems</li> <li>- MSHA--oversees health and safety aspects</li> <li>- FISH &amp; WILDLIFE SERVICE--protects habitats of endangered species</li> </ul> <p>State</p> <ul style="list-style-type: none"> <li>- (Withdrawal/observations wells permits and mining permits required--see Stage 1)</li> <li>- WYOMING INDUSTRIAL SITING COUNCIL--issues industrial siting permit</li> <li>- WDEQ, AQD--issues air permit to construct and air permit to install mill processing equipment</li> <li>- WDEQ, LQD--issues site equipment staging approval</li> <li>- WDEQ, WQD--issues permits for potable water supply systems and sanitary sewer systems</li> </ul>	<p>WYOMING</p> <ul style="list-style-type: none"> <li>- FRIENDS OF THE EARTH--litigation</li> <li>- WYOMING OUTDOOR COUNCIL and POWDER RIVER BASIN RESOURCE COUNCIL (possible future participants)--may participate in hearings, offer written comment throughout licensing process.)</li> </ul>	
STAGE 5: RESTORATION AND RECLAMATION	<p>MINING CO. PERSONNEL--pumping of wells, removal of all structures and equipment</p>	<p>WYOMING</p> <p>Federal</p> <ul style="list-style-type: none"> <li>- EPA--UIC regulations prescribe requirements for well abandonment --UMTRCA regulations address restoration</li> </ul> <p>State</p> <ul style="list-style-type: none"> <li>- WDEQ, LQD--in situ permit addresses restoration requirements</li> <li>- WDEQ, WQD--developing regulations for restoration of groundwater quality</li> </ul> <hr/> <p>TEXAS</p> <p>Federal</p> <ul style="list-style-type: none"> <li>- EPA--as described for Wyoming</li> </ul> <p>State</p> <ul style="list-style-type: none"> <li>- TDMR--sets regulations for well abandonment (EPA UIC regulations follow TDMR regulations closely)</li> </ul>		(Potential participants listed above-- protests/litigation likely if land not properly restored, or wells are inadequately abandoned)

#### ABBREVIATIONS

##### Federal

BIA = Bureau of Indian Affairs  
 NRC = Nuclear Regulatory Commission  
 BLM = Bureau of Land Management  
 EPA = Environmental Protection Agency  
 UIC = Underground Injection Control  
 MSHA = Mine Safety and Health Administration  
 NPDES = National Pollutant Discharge Elimination System  
 UMTRCA = Uranium Mill Tailings Radiation Control Act

##### Wyoming

WDEQ = Wyoming Department of Environmental Quality  
 LQD = Land Quality Division  
 WQD = Water Quality Division  
 AQD = Air Quality Division

##### Texas

TDMR = Texas Department of Water Resources  
 TDH = Texas Department of Health  
 NPDES = See Federal

Figure 2.1. Excerpts from a Map of In Situ Uranium Mining

Source: D. Keller and R. Cole, "Institutional and Socioeconomic Aspects of In Situ Uranium Mining in Wyoming and Texas," for The United States Department of Energy, Office of Technology Impacts, Technology Assessments Division, June 1980. Pacific Northwest Laboratory, Richland, Washington 99352. BHARC-321/80/013.

As in many situations, the most effective way to construct the map is to proceed iteratively. The analyst needs to go back and forth between mapping and other techniques, until he or she is satisfied that another cycle of analysis would not be worth the cost. An institutional map, although "basic" in the sense that it will almost always be part of the analysis, is not necessarily the first thing that should be done.

An institutional map has at least three major uses beyond its basic one of providing a reservoir of institutional information. First, it is useful in assessing suggested solutions to a policy problem. Second, it is useful in comparing one policy problem to another. Third, it is useful in comparing geographic areas.

#### 2.2.1 Mapping and the Comparison of Policy Solutions

Institutional mapping is needed to predict institutional constraints and impacts associated with the physical or economic activities of the problem under examination. It also helps in designing institutional variants to proposed solutions. Institutional mapping, therefore, is an integral part of feasibility assessment, particularly implementation assessment,<sup>14</sup> a necessary step in integrating institutional analysis into policy analysis. The following chapters discuss these uses of institutional analysis and develop the idea of institutional mapping with special reference to energy policy.

#### 2.2.2 Mapping and the Comparison of One Policy Problem to Another

Mapping can be to compare one policy problem to another. That is, it enables comparisons to be made between "policy sectors." Comparisons might be necessary for a number of reasons. One is to search for a solution to the problem at hand. The analyst may be able to adapt an analogous solution from another problem. However, it is difficult to know which situations are truly analogous, and which adaptations can be

justified. At least one criterion for appropriate analogy is institutional similarity. Similarly, the problems with adaptation stem from institutional differences.

Comparisons of policy can be made along a number of dimensions. Among the dimensions are complexity, or the number of interactions among activities and participants; top or bottom heaviness, or the number of activities and participants at the federal level compared with the number at the state or local level; and loose or tight coupling, or the amount of direct control or influence activities and participants exert on each other.<sup>15</sup>

With a systematic presentation of activities and participants, as well as a description of the interactions among them, the analyst will find it relatively easy to count the number of required interactions, to compare activities and participants at the federal level to those of the state or local level, and to compare degrees of control or influence among participants and activities.<sup>16</sup>

### 2.2.3 Mapping and the Comparison of Geographic Areas

Mapping is also directly useful in comparing geographic areas. Just as the analyst can use an institutional map to compare policies, he or she can use an institutional map to compare policies in different geographic locations. Even when such comparisons are not the result the analyst is seeking, they are often useful as subsidiary parts of a larger analysis. For instance, the differences between states in institutional capabilities may exacerbate the problems of implementation.

## 2.3 HOW INSTITUTIONAL MAPPING IS DONE

Institutional mapping is more art than science. It cannot be taught according to step-by-step procedures such as those set forward in a book on cooking or carpentry. Nonetheless, a variety of techniques can be discussed. These techniques fall

into two categories: the techniques concerning the focus of institutional mapping and the techniques concerned with information sources.

### 2.3.1 Techniques Concerning the Focus of Institutional Mapping

A basic problem for most institutional mapping, as for most forms of analysis, is the selection of relevant information. The definition of an institutional map suggests that it diagrams the key activities and key participants and key connections, not all activities and all participants and all connections. But nature seems to delight in mimicry and camouflage. Separating the relevant from the irrelevant is hardly ever a trivial task.

The first technique for choosing what is significant is to recognize such distinctions have to be made. Too much information can be as damaging to good analysis as too little. All the standard injunctions apply. The analyst should "work smarter not harder;" should base his work on "inspiration not perspiration;" and should "think more and read and write less."

A second technique involves starting with the local behaviors one wants to change, rather than an overall federal goal. This can be called dynamic programming, or backward scheduling. One should work opposite "Mother Nature"--from field behaviors back to federal goals, from desired outcomes to causes, from departures to arrivals, and from finishing times to starting times.

These techniques keep in mind the analytical purpose for which one does an institutional map. If additional activities, participants, or connections contribute to that purpose, well and good; if not, they should be left off the map.

### 2.3.2 Techniques Concerning Information Sources

Information for institutional mapping can come from four sources: (1) previous institutional maps; (2) interviews with the participants; (3) official publications; and (4) academic

literature and other publications. These sources are given in decreasing order of their usefulness. Unfortunately, they are sometimes available in just the reverse order.

#### Previous Institutional Maps

Although institutional maps per se are a relatively new technique, the concerns they embody are quite ancient. Recent interest has been widespread, and many institutional maps do exist, as well as institutional discussions that contain most of the important information. For example, the Department of Energy has sponsored numerous institutional studies of commercialization of new energy-producing and energy-efficient technologies. Political scientists' interests in the implementation of government policies, particularly in the social and defense areas, have produced many discussions of the institutions involved in both areas. Of course, previous work has to be checked for its suitability; but such work is often quite useful, even if incomplete or otherwise not perfect in some respects.

#### Participants

The second most valuable way of obtaining information is conducting interviews with the participants. Those in the organizations, agencies, and interest groups are likely to have a good understanding of who is involved, what they do, and why they do it. Unfortunately, individual participants may lack the willingness or ability to tell the analyst what he or she needs to know. Therefore, although using participants as sources of information is often unavoidable, it requires care and cross-checking when it is done.

A few relatively straightforward guidelines apply to cross-checking. The analyst should check with more than one source whenever possible. Each source should be queried about the identity, actions, and motivations of other participants. All the information from sources has to be treated with a degree of

skepticism. The analysis, when it is finally completed, has to be kept as separate as possible from the views of specific participants.

It is important not to neglect participants, even if they appear not to be directly involved. Those not directly involved often are relatively good, unbiased sources of information. These sources include government agencies studying the problem but not otherwise active in it; journalists who have written about the problem; interest groups with a general interest in the problem but without any specific activity related to it; as well as political scientists and other researchers who have paid attention to the institutional aspects of the problem.

#### Official Publications

Official publications in this context relates to the authority of the publication, not who has published them. The most prevalent example of an official publication in this sense is a public law, not a government sponsored research report, which is discussed in the next section. Statutes, regulations, court decisions, and agency decisions are valuable sources of information. Private legal arrangements--memoranda of understanding between government agencies and contracts between private parties--also are of interest. These documents identify participants, describe activities, and establish connections among them. Although reality may deviate from formal legal rules, the rules always have some force and are almost always relevant to the purpose for which the map is being prepared.

A second set of legal publications, both less prevalent and with less authority, are the rules each organization uses to prescribe its own conduct. In many government agencies, and in private corporations, these prescriptions are given the force of law via regulation and corporate charter.



A third type of official publication is statements of position from individuals or organizations in power. These statements may take the form of speeches, press releases, policy papers, or leaflets. Such statements are useful for identifying participants, predicting their activities, and even suggesting motivations.

A final category of publications are announcements of activities by participants. These include stockholders reports for private corporations, notices of hearings from governmental agencies, and calls to action from interest groups. Attendance lists for various functions as well as mailing lists for various purposes can prove very useful.

#### Other Publications

Other publications include the writings of researchers, observers, and participants that do not contain enough institutional information to be called institutional maps. Technical reports may contain a description of the physical activities. Law review articles may contain detailed analysis of a particular law. Newspaper articles may describe particular incidents. Participant may write about what they did. Information handouts from participants and histories of past attempts to deal with the particular problem also may be relevant.

#### Summary of Information Sources

All of the sources contribute partial information. Sources, therefore, should be cross-checked. Also, it is valuable to iterate the analysis. Maps should be updated after receiving new information, rather than waiting to receive all the information that is sought. Initial analysis then can guide further information gathering.

## 2.4 AN EXTENDED EXAMPLE: NUCLEAR WASTE<sup>17</sup>

Nuclear waste management involves state and local governments. A map should help predict how much time will probably be needed to resolve controversies and questions, as well as what strategies are apt to be useful in achieving agreement on answers.

### 2.4.1 Federal Government

What are federal activities, who are federal participants, and what are the connections among them?

The Department of Energy is one participant. Among its many roles is responsibility for constructing and operating the nuclear waste repository system. As a part of that effort DOE has to publish a generic Environmental Impact Statement on its commercial waste management program, along with many site specific or action specific EIS's. DOE also has to investigate candidate geologies, set criteria for site selection, and then use those criteria to choose a site. DOE also has to apply for and secure all necessary licenses and permits to build an operating repository, and then it must actually construct the repository and operate it.

The Environmental Protection Agency, which is developing environmental protection criteria for radioactive waste, is another participant. After adoption of the criteria (the draft criteria were released by EPA November 1978, comments have been received, and EPA is due to issue the final version of those criteria shortly), EPA will issue standards for different types of wastes that will set the basic acceptability levels that will then govern the rest of the waste management process.

A third participant is the Nuclear Regulatory Commission, which is in the process of developing new regulations that will specify how nuclear waste should be handled, how waste should be classified and what criteria should determine site selection for repositories. NRC also will publish procedures that must

be followed by DOE in the development of a commercial waste repository, and it will implement those procedures when it receives an application from DOE for a permit or license to construct and operate a waste repository.

The Department of Transportation is another participant. DOT is responsible along with NRC in developing the regulatory framework for the transportation of nuclear wastes, including packaging criteria, routing requirements, and other related requirements.

These are some of the main agencies with formal authority over nuclear waste, either because of their regulatory role or their program role. But other parts of the federal government, independent from any of those agencies just named, clearly have roles in nuclear waste management. The Department of Interior contains the U.S. Geologic Survey (USGS), whose geologists are doing research on nuclear waste management. As the independent representatives of the geological profession, these geologists may play a critical role in making decisions about the ultimate stability of deep geologic repositories. The National Oceanic and Atmospheric Association (NOAA) in the Department of Commerce is responsible for research on the possibility of disposing waste in the seabed. The President's science adviser and Office of Science and Technology Policy in the Executive Office have an important advisory role on all scientific matters, and recently have chosen to exercise that role in an important and visible way on the issue of nuclear waste. Proposals, indeed, have been made to substantially increase the role of OSTP in waste management decisionmaking. The Council on Environmental Quality, also in the Executive Office, has to ensure the integrity of the NEPA process within the federal government. CEQ also has a policy advisory role to the President on all environmental matters. Both these mandates and its own willingness to be involved give CEQ an important role in waste management policy. In addition, the Office of

Management and Budget in the Executive Office questioned waste management options that would require large federal expenditures. Also important in political terms is the President's Domestic Policy Staff, where key individuals have played an important role in the waste management deliberations at the highest level of federal government.

Congress too must be considered. It helps draft the legislation that will govern waste management. It also has an important role in providing a forum for public debate and discussion about waste management policy. State governments represent themselves at congressional hearings, and collections of state governments (National Conference of State Legislatures, the National Governors Association, and the like) are frequently represented. Finally, the research and reports of the General Accounting Office have shaped the conduct of waste management, and the Office of Technology Assessment, an arm of Congress, is also involved in a research role.

#### 2.4.2 State Government--Types of States

States differ with respect to their interest in nuclear waste management, and the kinds of officials that will be involved in the issue. The reactions of states and their relations with federal agencies will vary. "Host" states, or states that are potential candidates for a waste repository site, have the strongest interest in paying attention to what is going on. They have the greatest interest in exerting control over developments within their borders, and the greatest number of agencies and officials with an interest in waste management.

Somewhat less involved in waste management are so-called "neighbor" states, which are states that are either adjacent to or along transportation routes for a proposed waste repository in a nearby state, or states that are downstream hydrologically from a proposed waste repository, and so have some concern about potential effects of repository safety indirectly, even

if they are not located on transportation routes or particularly close to the repository site itself. Texas's interest in a site in southeastern New Mexico is the most prominent example, but it is safe to predict that proposals for a waste repository at Hanford will get Oregon officials active and interested. The level of involvement of neighboring states is apt to be less intense than in host states. The state itself is not being forced to take the risks of being the "dumping ground" for atomic garbage. The number of opportunities for a neighboring state to participate is smaller, since its formal ability to influence the situation will center mainly on transportation and will not include such activities as would be present in a host state, such as land use planning, energy facility siting permits, and concern about socioeconomic impact.

A third category is "interested states," states that seek to influence the development of any aspect of waste management policy, but seek to do so in general terms. Such states participated in the 1977 NRC workshops on high-level waste site suitability criteria. They did so as interested states, not solely as states trying to protect their own direct interest. These distinctions blur a bit of course. When a coalition of states including California, Minnesota, Illinois, New York, and others submitted joint comments, the general tone was that of uninvolved states commenting on general policy, but two of these states have had a direct interest in waste management as it affects activities within their own borders: Illinois, because of a low-level waste site, and New York, because of problems at West Valley and because it has been designated as a prime candidate for salt repository or at least salt investigations. In making comments and interacting with the federal government, Illinois and New York are working on a general policy level and also are motivated by concerns about what will eventually happen within their own borders. So the host/neighboring/interested state distinction is not one which

can always be kept completely distinct, but it helps to keep in mind when talking about state and federal interaction on nuclear waste.

#### 2.4.3 State Government--Elected Officials, Agencies

Sometimes it is useful to map states generically, even though generalizations vary from state to state. In most cases, the bigger and more complex the state, the more like the federal government it will be, and the smaller the state, the less like the federal government it will be. The organization of functions within state governments, however, is quite similar in concept, even among states of fairly disparate size. Consequently, it is not too misleading to think about state governments as a general class, and then to realize that the larger of them may have tendencies that come from size and complexity, and the smaller of them have tendencies that come from being smaller and less formal.

The governor is the chief elected official in a state, and as such has the most formal authority of any single individual as well as a great deal of informal power. But in practice, a governor is limited by the interests and actions of other elected officials, the executive agencies under the governor, as well as the politics of citizen pressure within the state.

Equal in importance to the governor is the legislature. Single individuals within the legislature do not have the same power as the governor, but the legislature is the policymaking body of the state and can be expected to reserve to itself the right to determine state policy with respect to waste disposal. The legislature can pass laws that flatly prohibit a waste repository. It can restrict subsidiary activities, such as housing and related support facilities near the repository, or it can restrict the ability of members of executive agencies to cooperate with the federal government in the process of developing information on waste disposal. The thing to remember about a legislature is that it is a separate and equal

branch of government. Legislators see themselves not as equal to bureaucrats and the agencies but as their bosses. Efforts to work with states by focusing on the executive agencies to the exclusion of legislatures are bound to fail. Legislatures can influence executive agencies informally, or they can do so formally by cutting budgets or putting restrictions on the uses to which money can be put, or by revoking authority of executive agencies to act in certain ways.

Next in importance is an elected official whose role in the states of New Mexico and Illinois has been quite prominent in recent months. That official is the attorney general. The attorney general, the chief legal officer of a state, in those states where he or she is elected, is usually the second most visible and important official next to the governor. Elected attorneys general are particularly apt to take a strong interest in nuclear waste because it is the sort of issue that can enhance their visibility and their image. If they can be seen as independent public servants protecting the public from unnecessary risk, they can improve their chances of re-election or election to higher office. But practically all attorneys general, whether elected or appointed, have an important legal role in interpreting state law through: (a) the issuance of formal opinions; (b) the provision of legal counsel to state agencies (in many states); and (c) the ability to represent the citizens of the state in lawsuits (in some states). In short, an Attorney General frequently has the incentive and the opportunity to monitor waste management closely, to take a stance as the defender of the public interest and to use the considerable legal resources at his or her command to take actions on behalf of the state.<sup>18</sup>

These are the main elected officials with a formal role in dealing with waste management in the state governments, but it is worth noting that in particular states there may be others. For example, in the state of Washington, there is an elected

Commissioner of Lands who oversees the State Department of Natural Resources. As an independent elected official, his importance increases considerably, and if it happened to be the case that a candidate repository site within this state involved lands under the control or influence of the Commissioner, then the fact that he is an independent official would increase the complexity of dealing with him and his department as well as with the Governor and Attorney General, the Legislature and everybody else.

Several of the executive agencies within state government get involved in nuclear waste as a potential repository site progresses in its development. The physical activities involved in constructing and operating a nuclear waste repository are the basic activities that determine the course of development. All other activities and participants are described as they appear as steps in this physical process.

To begin with, some states regulate underground drilling and exploration, and the agency that regulates such activity could become involved at the stage at which a federal contractor gets permission to do core drilling as part of its site investigation process.

Another important agency within state government is the environmental agency, in its role as the reviewer of environmental impact statements. Sometimes located in an overall state environmental agency, and sometimes located in separate organizations are the state air quality and water quality organizations. The air quality organization is particularly worth attention because of uncertainties in the Clean Air Act Amendments of 1977. The 1977 amendments brought radioactive emissions into the framework of the Clean Air Act. They both allow states to have a major enforcement role in regulating air quality emissions and also allow states to set standards for particular kinds of air pollution. These standards can be stricter than federal standards. They give



state governments potentially a very important role in the legal control of radioactivity within their states. That role is now being tested by the state of Minnesota, whose Air Pollution Control Agency is attempting to develop the information base which will allow it to write stricter plant boundary radiation emission standards than those now in effect through the NRC. Whether Minnesota has the authority to write those regulations under the law as it now stands is open to disagreement. Some states are waiting for the Administrator of the Environmental Protection Agency to issue a list of radioactive pollutants that he finds sufficiently hazardous. This list would then be formally included within Clean Air Act enforcement mechanisms. States like Minnesota, however, feel they do not have to wait for an appraisal from EPA and are going ahead on their own. How this will all work out for siting a waste repository bears watching as developments occur, but at the moment it is certainly possible that this regulatory power could be a major way in which state agencies gain a formal legal handle on the control of a waste repositories.

Another organization in state government which is likely to be active is the state radiation control program.<sup>19</sup> This program is important since it is frequently the state's only source of expertise on the subject of radiation protection. The radiation control officer is the official within the state government to whom the governor will most likely turn for scientific advice on anything dealing with nuclear energy.

Another important function within the state government which shows up in different places in different states depending on how the state is organized is that of emergency planner for radiation accidents. In some states, the radiation control program officers are the lead officials for emergency response, while in other states the emergency response function is a part of civil defense or even the National Guard. Emergency response is an area receiving increased scrutiny,

with a great deal of pressure being put on NRC from public interest groups to pay more attention to the adequacy of state emergency response plans and the way they interact with federal emergency response capabilities. NRC is presently engaged in an effort to get state governments to prepare adequate emergency response plans, and, at last note, six states had gotten NRC concurrence for their new emergency response plans. So this area is somewhat like air pollution control: one in which the framework of responsibility and the extent to which the states have a detailed role in the field is changing fairly rapidly.

The regulation of transportation is still another major function at the state level that is apt to influence the siting of a waste repository. During construction, the movement of heavy equipment along state roads leading to the repository site will require special permits. Any construction activity that might require the routing of power lines across state roads will also require state permits. In the operation of a waste repository, the state is likely to get involved in the regulation of the transportation of waste from the site. It is likely to restrict routing and the manner of transportation of the waste. The state has a general interest in controlling the transportation of hazardous materials along its highways, and in the case of spent fuel, if the spent fuel rods are moved in casks that require overweight load permits, then the state would have (by one interpretation of the current regulatory framework) the ability to grant or deny the permit to carry overweight loads along certain roads. Note that if the transportation plans for a repository do call for shipment of spent fuel in casks that require overweight permits, then the state may seek to control such traffic not simply out of a concern for the potential safety of the repository or the transportation, but also out of a concern for the condition of its roads. One reason for weight restrictions is that trucks beyond a certain weight damage roads and require road repairs

at a much faster rate. State officials with limited budgets will ordinarily try to minimize such traffic, and if a waste repository proposes to operate substantial amounts of waste traffic into it, the state may very legitimately demand fairly substantial payments for the maintenance of its road network, or even the upgrading of it before such transportation is allowed to begin. So the organizations within the state that are concerned about both road conditions and highway safety are important factors in a waste repository and ought to be involved in planning and consultation.

Another potentially important agency is the state energy facility siting council, or a similar siting organization, which is usually an organization that attempts to combine the viewpoints of a number of state agencies and make a determination as to the appropriateness of sites for proposed power plants. About 25 states have some variety of power plant siting authority, and in some states, such as the state of Washington, the authority of the council is much broader. The chairman of the Washington Energy Facility Siting and Evaluation Council has stated that it is the intent of the state of Washington that any repository within the boundaries of the state, whether on a federal reservation or not, be subjected to review by that Council, and that the Council should have the same authority to make a determination of the suitability of a repository site as it would have for a power plant.

Finally, the State Public Utility Commission has an interest in a waste repository because of its fiscal impact on rate payers of any utility that has ownership of a nuclear power plant. The level of the PUC interest in the issue is not really dependent on whether the repository is within the state or not. But it is another state organization that is apt to have officials concerned about the development of waste management policy.

#### 2.4.4 Lessons Learned

In the preceding institutional map, a number of insights appear. One insight is that the chances for successful interaction among federal and state governments are better when officials in each government understand the position of those they are dealing with. One hears frustration voiced by both sides. Federal officials complain that states are disorganized both collectively (that is, all the states together cannot agree) and individually (a single state does not have the resources, talent, or ability to deal well with the problem). The states look at the plethora of federal organizations and ask for a single federal organization to take over all aspects of waste management.<sup>20</sup>

So both sides expect the other to act with coherence and clarity, but smoothness of operation is ordinarily not possible with problems of this complexity in governments like our own where authority is shared among so many different organizations. When expectations are awry, then attempts to correct the situation result in frustration and an unwillingness to devote effort to the interaction, with the view that it is the other guy's fault that it is not working out. In waste management, the state-federal interaction is unavoidable. Given that, yielding to the easy temptation of blaming the incompetence of the other level of government for difficulties in reaching agreement will lead to an inability to come to grips with what is actually to be done with the wastes.

In short, there is no alternative but for federal and state officials to deal with each other on a broad variety of fronts related to waste management. The more officials are able to put themselves in the other guy's shoes and understand the problem from his or her perspective, the more likely officials who are trying to reach agreement will be able to do so.

The map of federal and state government interactions identifies a number of important points of contact, such as the

following: (1) between the highway safety agencies, the Department of Transportation and NRC on the transportation of nuclear materials; (2) between the state agency responsible for commenting on environmental impact statements and DOE on its environmental impact statements; and (3) among the state air quality agency, EPA, NRC, and DOE on radioactive emission criteria. At each of these interaction points, it is possible to make some predictions about how officials will react or what actions governmental organizations will take given different situations. Making these predictions is uncertain business. Nevertheless, the theoretical perspectives summarized in Chapter 1 one can draw the following suggestions.

In order to determine what a government will do, one first does what was done above--that is, describe the activities involved, the participants involved, and the connections among them. Having done that, the question then becomes, what determines how each of those participants will act? Here, of course, much depends on the individual holding the position at the time--on his or her priorities, on his or her perceptions of the issues, on the way that individual is influenced by others, and so forth. But there are some regularities about the way individuals make their decisions.

One of those regularities, worth noting for waste management, is that what looks like the same essential decision to an outsider--for instance should a waste repository be sited in a particular state--does not look the same to participants in organizations with different responsibilities. As the political viewpoint emphasizes, the same issue presents a different face to different participants.<sup>21</sup> For example, consider the question whether a waste repository should be allowed to be sited in a particular state. To an outsider, that is the best definition of the issue. But to the state patrol, it may be an issue of "would the transportation of these materials through the state contribute to a decline in

highway safety?" To planners, the question would be, "is this sort of development consistent with the land use plan that has been developed for the area?" To state budget offices the issue may be that of the fiscal impacts of the repository, and are they tolerable. To the state energy siting organization, the question may be "will the repository go through the siting evaluation and decision procedures that have been established, and can a decision be based on whether it should be permitted to go through that process?" To a state science adviser, the question may be the scientific adequacy of the underlying data supporting the decision to go with a continental geologic repository. To the civil defense agency responsible for emergency response, the question may be, "will there be emergency response problems associated with the waste repository that will overtax our capability?" To the state generally, and the state Legislature in particular, the question may be "is this something being forced down our throat by the federal government?"

So the issue looks different depending on who is viewing it, and who is viewing it depends on which governmental processes are being invoked at different points. Therefore, it is important to have a systematic overall view of the institutions of state governments that are participants in waste management problems. It is also important to realize how the issue will vary at different points in the overall process.

Note that by and large, many or most of these processes are established by law. However, although the law is an important source of these processes, it is by no means the only way in which they become established. For example, the final decisions by a host state about a waste repository are going to be a combination of the formal processes of both state and federal government as they interact and the informal political processes that operate. As was noted earlier, state legislatures hold the legal authority to restrict or revoke the

freedom to act of most of the rest of the state government. If the politics of siting a waste repository gets too hot, the legislature may revoke all legislation that established formal processes and may make an ad hoc decision.

Another important set of participants are the states' congressional delegations. Although they are members of the federal government, when one talks about state/federal interaction, a congressman is in a position to intervene to protect the state against the federal government. Such was the case in the Lyons, Kansas case in the early 1970's, when intervention by Congressman Skubitz was one of the pressures put on AEC over the issues. Ultimately an amendment by Senators Pearson and Dole in the 1974 Appropriations Act for the Atomic Energy Commission put a restriction on AEC's ability to push forward with the Lyons project. In Congress, the inherent right of a delegation to look after its own interests is well recognized, and should a state's interests be importantly at stake, one could predict that the state's congressional delegation would be just as active in the negotiations and discussions over the resolutions of the issues as would the elected officials of the state government.

Also missing from the discussion up to this point is a discussion of the court system, mainly for the reason that interactions with the judicial branches of both state and federal government are formal, proceeding through means of lawsuits, and are less apt to be the business of non-lawyers seeking to work out sensible compromises between competing positions, although it is also well to bear in mind that legal resolution of problems is a potential alternative when other forms of state-federal interaction break down. There has also been little or no mention of the public (in all its various forms) or of the press, both of which interact with state, local, and federal governments in ways that influence the positions certain officials take. Such influences can produce

pressure to make decisions or to defer them. But trying to map all of the ways that an important and controversial policy problem like the proper disposal of nuclear waste gets dealt with is a difficult job. Trying to map all the influences in a completely comprehensive view of the world is probably something no one is wise enough to do. Focusing on the complexities of the participants that make up both state and federal governments, and the connections among them, however, does deepen one's understanding.



Chapter 3  
INSTITUTIONAL ASSESSMENT

Institutional mapping is descriptive. It depicts "what's out there" or "who are those guys." Institutional assessment is explanatory and predictive. It helps one understand the reasons for current practices and the prospects for change. Specifically, institutional assessment addresses four kinds of questions. One is the role of institutional factors in shaping some present outcome, such as the pace of geothermal energy resource development in California. A second question concerns the institutional constraints and opportunities that may arise in trying to achieve some future outcome, such as greater domestic coal production. A third question concerns the effects of institutional factors on the likelihood that a particular policy initiative will achieve a desired outcome. For example, will legislation creating the Synthetic Fuels Corporation and authorizing it to guarantee loans speed the production of synthetic fuels? Alternatively, the question might be put as the relative feasibility of several alternative policies in achieving some desired outcome--for example, various strategies for siting high level nuclear waste repositories. A fourth question is the effect of policy decisions and actions on institutions ("institutional impacts"). For example, what laws, organizations, and political issues would be affected by the development of commercially viable fusion power?

Institutional assessment is important in the energy area for at least three reasons. First, many present outcomes in the energy area are heavily influenced by the play of institutional factors. For example, President Carter has stated that the institutional difficulties in managing radioactive waste are more important than the technical difficulties.<sup>1</sup> Similarly, the recent Ford Foundation energy study stresses the rate of institutional factors in inhibiting energy conservation.<sup>2</sup> Thus one needs to understand how institutional factors are

contributing to present outcomes before one can design policies that might change outcomes.

Second, energy policymakers have repeatedly asked for institutional assessments of this sort. For example, several years ago the Energy Research and Development Administration, the Federal Energy Agency, and the Environmental Protection Agency asked us to identify the institutional factors that were contributing to a then-current outcome: sluggish development of geothermal energy resources in California.<sup>3</sup> Similarly, DOE's Regional Issues Identification and Assessment Program calls for an assessment of the institutional constraints and opportunities that would arise in achieving future hypothetical levels of energy production and consumption, allocated among regions and energy resources.<sup>4</sup> Thus while the policy analyst may be anxious to identify and assess particular policies, the policymaker often wants to know what is causing or could cause the problems--independent of particular policy departures.

Third, as explained in some detail below, the central core of the analysis is basically the same whether one is trying to explain the cause of present outcomes, predict future outcomes, or evaluate a policy or alternative policies. Thus it makes sense to develop one central core of models and techniques for use in the energy area.

In this chapter, we outline the central core of institutional assessment, as it applies to all four types of questions. We use the structure from this central core to organize our guidance. We then draw on the theoretical materials presented in Chapter 1 to discuss some propositions about the likely performance of institutions. As discussed in Chapter 1, these propositions are general statements about the world that the analyst should assume will apply unless the relevant facts of a specific situation are enough different from normal to call the proposition into question. Using the central core to apply the propositions to a particular situation constitutes institutional assessment.

### 3.1 THE CENTRAL CORE OF INSTITUTIONAL ASSESSMENT

The central core of institutional assessment has a number of elements. First, it has a basic concern with outcomes and what causes them. Second, it uses an organizing structure of decisions, actions, and outcomes. Third, it has a focus on institutional variables--laws, organizations, and political processes. Finally, it employs two different but complementary logical systems for thinking about problems.

#### 3.1.1 Basic Concern: Outcomes

Whether one is trying to understand present practices, predict future practices, or predict the consequences of a particular policy, one's basic concern is with outcomes: selectively delimited states of the world importantly affected by government actions.<sup>5</sup> Examples of outcomes might include the existing number of solar collectors installed on American houses or a reduction in oil imports of 20% by 1985. The programs to achieve such goals would not be outcomes, but actions. (This point is discussed further in Chapter 4, Section 4.2.1 and in Chapter 5, Section 5.2.3.)

#### 3.1.2 Structure: Decisions, Actions, Outcomes

What causes outcomes? Most analysts point to a lengthy, sequential process in which a policy is adopted that leads to action by government that leads to outcomes. For Allison and Halperin, the movement is from policy initiation to authoritative governmental decision to final governmental action to outcome.<sup>6</sup> For Berman, the movement is from authoritative policy decision to government program to adoption of a local project to implemented practice to outcome.<sup>7</sup> The differences in detail doubtless stem partly from differences in substantive policy concern. Berman, concerned mainly with social policy, has to account for interactions between federal, state, and local government. Allison and Halperin, concerned with national security policy, do not. For present purposes the differences

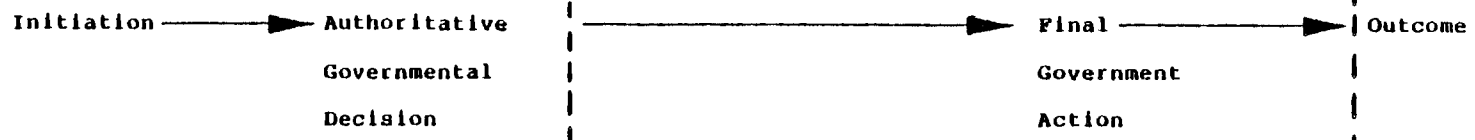
among these and other schemes are less important than their fundamental similarity. As illustrated in Figure 3.1, the basic steps boil down to three: (1) reaching a decision, (2) taking a government action, and (3) achieving an outcome.

Of course there is some danger of depicting this process too simply. Three additional elements must be added. First, other causal relationships are at work. The decision is not the sole determinant of action and action is not the sole determinant of outcomes. Rather, each of these is a major determinant that interacts with institutional factors (legal, organizational, political) and other factors (technological, economic, cultural) at each stage. Second, decisions, actions, and outcomes have multiple consequences. A decision does not only result in government action; government action has a wide range of outcomes. In short decisions and actions have side-effects, or impacts. Third, causation does not run just one way. Actions may affect decisions. Outcomes may affect decisions and actions. In other words, the process is dynamic and iterative. These refinements are reflected in the still very crude diagram in Figure 3.2.

### 3.1.3 Focus: Institutional Variables

As we reiterate throughout this work, institutional analysis does not cover everything. In fact, it does not even cover all of policy analysis. Instead, it covers the institutional aspects of policy analysis. Institutional aspects include the effects of and the influences on institutional variables. Institutional variables, as we have already discussed in the two previous chapters, fall into three sets: those surrounding laws, organizations, and political processes. If the institutional variables influence decisions, actions, or outcomes, they are institutional constraints or opportunities; if they are affected by or part of decisions, actions, or outcomes, they are institutional impacts.

Allison  
& Halperin



Berman

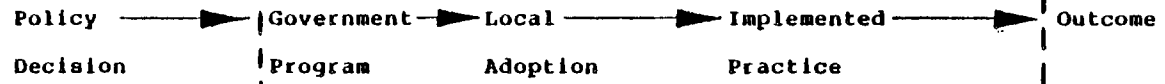


Figure 3.1

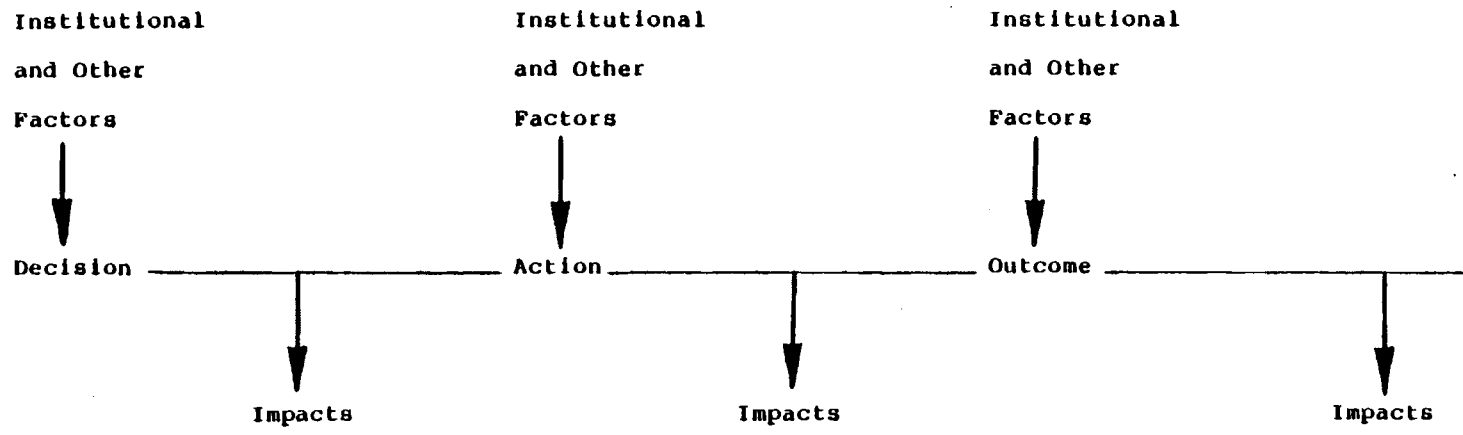


Figure 3.2

One complication does exist. The perception that institutional impacts will occur sometimes acts as an institutional constraint or opportunity before the decision or action is taken. We discuss the underlying impact in the impacts section. The reader has to keep in mind that these impacts, if perceived before they occur, may function as constraints or opportunities as well.

### Institutional Constraints and Opportunities

For a decisionmaker trying to "make things happen," institutional considerations may often seem to appear primarily as constraints. For instance, companies trying to build electric power plants find that compliance with the NEPA process takes time and money. Or a state utility commission's procedures may be poorly equipped to accommodate the cost implications of a new technology. Interest groups are determined to be heard. And so on. Of course, what appear as constraints often serve important societal interests. Laws, such as environmental standards and procedures, represent a societal judgment that clean air and water are worth the time, trouble, and money required for compliance.

These institutional considerations may represent opportunities rather than constraints. Richard Elmore argues that even some of the variables habitually viewed as constraints are in fact opportunities.<sup>8</sup>

Bargaining, compromise, and negotiation are the principal means used to secure a distillation of diverse or competing views. To recognize that laws, organizations, and politics constrain or further a particular governmental or private action is only to recognize the obvious: that decisionmakers must either use their opportunities to achieve their goals within their constraints, or seek to change the opportunities, the goals, or the constraints.

The starting point for identifying institutional constraints or opportunities is construction of an institutional map, as discussed in the previous chapter: that is, a systematic presentation of the participants and activities involved in a policy problem. For policy problems concerning deployment of a technology, the map should be drawn with reference to the basic activities required to bring the technology into commercial use. The task then becomes identifying the institutional constraints or opportunities that may arise in connection with each activity. The following series of questions, based on the viewpoints presented in Chapter 1, serve to highlight the major types of constraints or opportunities that are likely to arise.

Each set of constraints or opportunities--legal, organizational, and political--is best addressed by asking a series of questions aimed at revealing elements which might act to retard or facilitate specific courses of action. The questions posed in Chapter 2 (2.1.2) provide an initial listing of problems which must be addressed if the desired outcome is to be achieved. Listed below are more specific questions which should be addressed in a detailed legal, organizational, and political assessment.

For legal constraints or opportunities:

1. What laws are applicable? What roles do they define for the entrepreneur; for the regulator; and for other concerned parties?
2. Do the laws which apply to actions of entrepreneurs (economic participants):
  - a. Provide an outright prohibition of certain desired ends?
  - b. Make for difficulties in achieving necessary intermediate or instrumental goals?
  - c. Make it unacceptably burdensome to comply with requirements?



- d. Make certain ventures financially impossible?
  - e. Provide clear or unambiguous definition of compliance requirements?
3. Do laws applying to regulators (governmental participants):
- a. Provide a clear definition of regulatory organizations' responsibilities and jurisdiction?
  - b. Clarify or confuse agency mandates?
  - c. Provide maximal, or minimal, discretionary latitude?
4. Do laws affecting actions of concerned parties (interest group participants):
- a. Facilitate or limit possible influence over agency decisions?
  - b. Provide political leverage over entrepreneurs and regulators?
  - c. Limit or constrain opportunities to intervene in the decisionmaking process?
5. What are the available approaches for changing the law?
- a. Litigation?
  - b. Legislation?
6. What are the costs (time, money, trouble), probability of success, and risks of complying with the legal requirements?

For organizational constraints or opportunities:

- 1. Are organizational responsibilities clearly, or vaguely, defined? Do responsibilities overlap?; are they inconsistent with each other?; are there gaps in responsibilities?; and are the matters of concern routinely handled or are they irregularly examined?
- 2. What are the likely consequences of relying on existing organizational arrangements?

- a. Likely success?
  - b. Certain failure?
  - c. Delay with an unclear outcome?
3. What new organizational capabilities are required?
- a. New organizations?
  - b. Reform of existing organizations?
    - i. New missions?
    - ii. New resources (management, manpower, skills, dollars)?
    - iii. New operating procedures (e.g., personnelsystems)?
4. How can required organizational capabilities be secured?
- a. Persuasion?
  - b. Legislation?
  - c. Litigation?
5. What are the costs (time, money, trouble), probability of success, and risks of trying but failing associated with each approach?

For political constraints or opportunities:

- 1. Whose agreement or acquiescence must be secured?
- 2. What is required to secure their agreement or acquiescence? (That is, what interests must be accommodated?)
  - a. Substantive interests?
  - b. Political interests?
  - c. Personal interests?
  - d. Organizational interests?
- 3. What resources does the decisionmaker have available to accommodate interests adequately to secure agreement or acquiescence?
- 4. What bargains may be struck?

5. What are the costs (time, money, trouble), probability of success, and risks of trying but failing associated with each approach?
6. What are the consequences of proceeding in the face of political opposition?

### Institutional Impacts

It is now a commonplace that governmental decisions and actions typically generate impacts other than or in addition to the societal outcomes desired. Coal-fired generating facilities pollute the air. Building a power plant in a new area brings in-migration. Hydroelectric dams flood wilderness areas. Increasingly, public officials are taking account of such impacts in reaching decisions and taking actions. This development should not be surprising. In the first place, the law requires it. For all federal actions significantly affecting the human environment, the National Environmental Policy Act of 1969 requires preparation of an environmental impact statement.<sup>9</sup> For federal regulations likely to have a significant economic impact, Executive Order 12044 requires preparation of a regulatory impact analysis.<sup>10</sup> For major federal policy and program initiatives, Executive Order 12074 requires preparation of an urban and community impact analysis.<sup>11</sup> Legal requirements aside, intelligent choice depends on consideration of such impacts. Selection of a policy alternative that ignores impacts other than dollar costs may seriously misstate the costs and the benefits of the alternative and lead to inappropriate decisions.

In the spirit of the National Environmental Policy Act, many impact assessments have tended to concentrate on impacts affecting environmental quality, such as air pollution, water pollution, ecological relationships, and the like. Executive Orders 12074 and 12044 have broadened this focus to include economic impacts.<sup>12</sup>

More recently, these orders, the new Council on Environmental Quality regulations implementing NEPA,<sup>13</sup> and certain court decisions<sup>14</sup> have broadened the focus still further to include "social impacts." Social impacts have been defined as "change(s) in the conditions of daily social life that (are) perceived as important and that can be attributed to an event."<sup>15</sup> As with environmental and economic impacts, attention to impacts on social life is critical because such consequences may alter the stream of costs and benefits associated with a governmental decision or action.

One important category of social impacts is institutional impacts. These include legal, organizational, and political impacts: that is, the impacts governmental action can have on legal activities, on the behavior of public and private organizations, and in the political arena. This chapter defines categories of legal, organizational, and political impacts.

The distinctions between legal, organizational, and political impacts follow the three viewpoints introduced in Chapter 1. As with the viewpoints themselves, the three basic impact categories are not meant to be mutually exclusive. Often, the consequence of a governmental decision or action can be described from more than one viewpoint. For example, the Fuel Use Act of 1978 resulted in a proposed requirement for a Fuels Decision Report, which constitutes both a legal impact (new regulation) and an organizational impact (new procedure). Use of the viewpoints helps ensure that important impacts are not left out. It also helps capture subtle aspects of important impacts. For example, legal requirements such as that for a Fuels Decision Report are rarely self executing; usually, they require a period of organizational learning and adjustment on the part of the regulating agency and the organizations being regulated. This section defines several categories of legal, organizational, and political impacts. These categories, which draw heavily on the organizing concepts introduced in Chapter 1, are summarized in Figure 3.3.

Legal Impacts. Legal impacts are changes in legal conditions. They can be divided into three categories. The first category is legislation--the formulation and elaboration of laws by legislatures, administrative agencies, courts, and voting populations. For example, passage of the Natural Gas Policy Act resulted in the promulgation of a new rate structure under the statute.<sup>16</sup> The second category of legal impacts is the creation, modification, or resolution of legal issues. Legal issues are areas of conflict or uncertainty about legal rights, duties, and powers. For example, in implementing the Fuel Use Act of 1978, DOE had to decide whether to limit the scope of "cost exemption" to the cost of boiler and pollution control equipment. A legal impact of this proposed standard was uncertainty about whether DOE was acting within the scope of its authority. The third category of legal impacts is adjudication--the authoritative application of a law. This impact is important not only because it resolves disputed legal (and factual) issues. The process of adjudication imposes costs on litigants and society that should be included in weighing the merits of an action that is likely to have this result.

Organizational Impacts. Organizational impacts are changes in the attributes of public and private organizations. Organizational impacts include four categories. The first category is the existence of organizations--in other words, their creation or abolishment. For example, a program of transferable coal burning tickets could lead to the formation of an entitlements exchange. The second category is changes in the structure of organizational arrangements--that is, the assignment of roles and missions. For example, the passage of federal environmental statutes that leave implementation to the states (as does the Safe Drinking Water Act) inevitably requires that existing state agencies assume additional responsibilities. The third category is organization procedures. Procedures in this context refer to standard operating procedures (SOPs) that the

- I. Legal Impacts
  - A. Legislation
  - B. Issues
  - C. Adjudication
  
- II. Organizational Impacts
  - A. Existence of organizations
  - B. Organizational roles and missions
  - C. Organizational procedures
  - D. Organizational capabilities
  
- III. Political Impacts
  - A. Games
  - B. Participants: stakes, stands, resources
  - C. Action channels
  - D. Authoritative decisions and actions

FIGURE 3.3. Categories of Institutional Impacts

organization applies in everyday activities; programs, which are sets of SOPs to deal with assigned activities; and repertoires, which are sets of alternative programs.<sup>17</sup> Of particular interest is the fit between new requirements, such as those relating to natural gas pricing, and existing procedures.<sup>18</sup> The greater the divergence, the longer implementation may take and the greater the dislocation to the organization involved. The fourth category consists of organizational capabilities. Capabilities include such things as budgets and hardware as well as the training and experience of personnel.<sup>19</sup>

Political Impacts. Political impacts are changes in political conditions. The subcategories closely follow the organizing concepts of the political viewpoint. The first category, to use Allison's term, concerns the games being played.<sup>20</sup> "Games" in this context refers to the issues over which political bargaining takes place. In response to government actions, political participants may shift their activities from one issue or game to another.

The second category concerns the participants themselves: those involved in the various games, their stakes and stands, and their resources. "Stakes" in this context refers to what the participants stands to gain or lose if the political game involved comes out one way or another. The "stand" of the participant refers to the position he or she espouses and the role he or she plays in a particular game. The resources of the participants include their skill in using political resources, their will to use them, and such other resources as time, money, and support from other political participants.

The third category concerns action channels. "Action channels" in this context are regularized patterns of interaction among political participants. One of the most important aspects of action channels are the deadlines they impose. Along with some generalized norms of political behavior in the United States, action channels constitute the rules of the game for

political participants. The rules of the game obviously have an important influence on who wins and who loses.

A final category of political baseline conditions concerns authoritative decisions and actions. Authoritative decisions and actions are the results of political games. They include the election or defeat of public officials; positions taken; laws passed; and resources spent. When these decisions and actions take the form of statutes, regulations, or adjudicatory decisions, they become legal impacts. If they involve new organizations, new organizational capabilities, or new organizational procedures, they also become organizational impacts.

#### 3.1.4 Complementary Logics: Forward and Backward Mapping

What is the logic of explanation and prediction? Two different logics are often used. With apologies for the inevitable confusion, we must confess that one is called "forward mapping" and the other is called "backward mapping."

Forward mapping is used to predict the consequences of a policy decision. This technique starts by positing a policy decision, predicts the action and any other impacts that are likely to result from the decision, and then predicts the outcome and any other impacts that are likely to result from the action. One is then in a better position to judge how likely the policy is to produce the desired outcome as well as the range of side effects that are likely to occur along the way. In making these predictions, the analysis relies on propositions from the theoretical literature about the likely consequences of similar decisions and actions in similar circumstances.

Backward mapping is used to understand why an outcome is presently occurring or how it might occur in the future. In explaining an existing outcome, the analysis starts with the outcome and then backs up through the process, successively asking how what happened at the preceding step interacted with



institutional and other factors to result in what happened at the given step. Such an assessment thus identifies the institutional and other factors that have led to the outcome. In predicting the likelihood that some future outcome will occur, the analysis starts with the posited outcome and then backs up through each step in the process, identifying the ability of each participant to take necessary actions and the resources required until it reaches a policy decision that could provide the necessary resources. The likelihood that the outcome will occur thus depends on the joint probabilities that necessary actions will be taken and the resources made available. As does forward mapping, backward mapping relies on general propositions about institutional behavior to make the necessary forecasts or backcasts at each step in the analysis.

There is a lively, though sometimes esoteric, debate about whether forward mapping or backward mapping is the better technique.<sup>21</sup> This debate tends to veer off into the questions of policy analysis methods generally and of decentralization and delegation versus centralization and control. We deal with these questions briefly in Chapter Five. For present purposes, three points should be kept in mind. First, the approach should match the task. Forward mapping is primarily for predicting the consequences of particular policies. Backward mapping is primarily for explaining or predicting particular outcomes. Second, the approaches are not mutually exclusive. The analysis can often benefit from a second round that uses the other technique. Third, the behavioral tendencies that facilitate predictions are the same for both techniques.

Whether the analysis proceeds as forward mapping or backward mapping, the questions are essentially the same:

1. Under what circumstances will the policy decision be reached? (Or, what outcomes would lead to this policy decision?)

2. What government actions will the policy decision lead to? (Or, what policy decisions would lead to this action?)
3. What outcomes will the government action lead to? (Or, what government actions would lead to this outcome?)

For each question, the focus of institutional analysis is on the influence of institutional constraints and opportunities that affect the answer, and on the institutional impacts that are part of the answer. The rest of this chapter is structured around these three questions.

### 3.2 REACHING THE DECISION

Authoritative governmental decisions take one of three basic forms: executive decisions, legislative enactments, and judicial decisions. Institutional assessment is concerned with such decisions in the course of explaining present outcomes or predicting future outcomes absent some particular policy initiative. In predicting the consequences of particular policies, of course, the policy decisions are assumed. Explaining and predicting authoritative governmental decisions is a major task, perhaps the principal task, of political science. Summarizing even a representative sample of relevant propositions here is beyond the scope of this report. For purposes of illustration, we do scratch the surface.

#### 3.2.1 Legislative Enactments

Wilson offers several useful rules of thumb for explaining and predicting the enactment of regulatory legislation, which also seem applicable to most types of legislation in the energy area. First, people are "more threat-oriented than opportunity-oriented."<sup>22</sup> In other words, they are more sensitive to sudden large decreases in net benefits than they are to increases. As a consequence, legislation is more likely to result when large numbers of people experience discomfort. For example, sustained gasoline lines are more likely to result in

legislation than the opportunity to conserve energy through greater use of insulation. Second, legislation is more likely to result when either its costs or benefits are concentrated on fairly small groups of firms or individuals.<sup>23</sup> One such situation arises when a small group can make large gains by imposing unobtrusive costs on a much larger group. Price and entry restrictions are prime examples.<sup>24</sup> Another such situation arises "when a historical development or proposed policy creates both concentrated benefits and concentrated costs."<sup>25</sup> Typically, the result is some kind of charter between the parties in conflict. An example may be the Northwest Power Bill, which strikes a delicate balance between the interests of publicly owned utilities, investor owned utilities, and the aluminum industry. Yet another such situation occurs when highly concentrated costs are imposed on a few in order to secure widely distributed benefits.<sup>26</sup> Prime examples are consumer and environmental legislation, and more recently the windfall profits tax on petroleum. Ordinarily, such legislation results from the crusade of one or a small group of Congressmen who have found a highly visible issue on which to enhance their public reputation. As a consequence, legislation of this sort tends to focus on some readily identifiable "evil," consist of very "tough" measures, involve procedural rather than substantive bargains, and in its details reflect political imperatives rather than a close matching of means to ends.<sup>27</sup>

### 3.2.2 Executive Decisions

Those participants having the authority to make major policy decisions--the President, cabinet chiefs, governors, and the like--would generally prefer to avoid doing so. Executive decisions are generally made only when some actin forcing device compels them. These devices include crises (such as an oil embargo), the availability of new technology or hardware capability (such as the commercial reprocessing facility at Barnwell), changes in shared images (such as the proliferation

risk of civilian nuclear power exports), routine deadlines (such as those imposed by the annual budget cycle), and self-generated efforts (such as the decision to cancel the Clinch River Breeder reactor).<sup>28</sup>

The details of the decision taken depend critically on the bargaining process described as the Political Viewpoint in Chapter 1. In gauging the likely result answers to the following questions are likely to help:

1. Who participates in the bargaining? Whose preferences count?
2. What determines each participant's preferences? (Substantive interests? Political interests? Personal interests? Organizational interests?)
3. How are preferences combined? That is, what action channel is used? Who is thereby given access to the decision process? Which participants are "heavies" and which are "lightweights" in the process?
4. How stable is the distribution of influence among participants (and what are their sources of influence?)<sup>29</sup>

However, the result of this bargaining process is ordinarily shaped by organizational considerations. In particular, since participants must rely on organizations for information about a problem, the information provided is likely to reflect the organization's goals and interests as well as its standard operating procedures for gathering the information. For example, the Central Intelligence Agency is said to have grossly overstated the Soviet Union's coming oil shortage--essentially because CIA neglected to anticipate any effects higher prices might have on use.<sup>30</sup> Decisions are also constrained by virtue of organizations' control of the alternatives served up for choice. Two points are of special importance in this connection. One, alternatives generally reflect existing organizational SOP's, programs, and capabilities. Rarely do

organizations custom tailor a solution to the problem at hand. Second, in framing alternatives, organizations seek to maximize their autonomy. This means an organization will avoid presenting alternatives that require joint operations with another organization, will avoid agreeing to undertake an alternative without maximum freedom to execute it autonomously, and will typically only offer a single, preferred alternative for the decisionmakers' consideration.<sup>31</sup> Thus in explaining or predicting executive decisions, it is important to ask:

1. What organizations are involved?
2. How do their goals and procedures affect available information?
3. How do their goals and information affect the alternative courses of action considered?<sup>32</sup>

In short, executive decisions involving major policy departures typically represent the confluence of (a) an action forcing device that places the problem on the high-level decisionmaker's agenda, and (b) the interests of subordinates with a solution in mind for which they are in search of a problem.<sup>33</sup>

Some analysts separate executive decisions into those made by executives, managers, or operators. Section 1.2.2 of Chapter 1 discusses this division and a few of the propositions that go along with it. More propositions concerning executive level decisions are discussed by Newstadt,<sup>34</sup> concerning manager level decisions by Heclo,<sup>35</sup> and operators by Wilson.<sup>36</sup> and Lipskey<sup>37</sup>

### 3.2.3 Judicial Decisions

Obviously, judicial decisions result from lawsuits. Lawsuits require a defendant, a plaintiff, and a cause of action. For most judicial decisions with significance for energy policy, the defendant is an executive branch regulatory agency (such as the Economic Regulatory Administration) or an

independent commission (such as the Nuclear Regulatory Commission) or an executive department (such as the Department of Energy). The plaintiff is a private firm (such as Texaco), a trade association (such as the National Association of Manufacturers), a public interest group (such as the Environmental Defense Fund), another federal agency, or a state or local agency. The cause of action is likely to be an improperly conducted rulemaking, a wrongly decided agency adjudication, a defective EIS, or some other failure to comply with the U.S. constitution, a federal statute, or a federal regulation. If the plaintiff has standing, if the court has jurisdiction, if the plaintiff has exhausted administrative remedies, and if the agency's action is ripe for judicial review, the court will hear the case. Unless the parties otherwise settle their differences, the court will render a decision.

The substance of the decision will reflect the court's interpretation of the law through the processes of reasoned elaboration and statutory interpretation described in Chapter 1. Except in very extreme circumstances, a court almost never reverses an agency for making the "wrong" decision--that is, on substantive grounds. An exception to this general rule concerns the validity regulations that implement new and complicated statutory schemes. An example is the recent invalidation of many portions of the Environmental Protection Agency's new regulations implementing the 1977 Clean Air Act Amendments.<sup>38</sup> In general, the courts are more comfortable reversing an agency for failing to follow proper procedures. However, in light of the Vermont Yankee case<sup>39</sup> and the agencies' increasing sophistication in following litigation-resistant EIS procedures, reversals on procedural grounds may also become fairly rare.

### 3.3 Taking the Action

As everyone now knows, neither legislative enactments nor executive decisions nor judicial decisions are self-executing. They depend on the actions of government organizations for their

execution. Almost inevitably, organizations implementing policy decisions divert resources, deflect goals, dissipate energies, and generally misadminister policy.<sup>40</sup> In any given case, the question is mostly one of degree: that is by how much do the actual actions of implementing organizations differ from actions necessary to make the policy work? The answer usually depends on a combination of institutional complexity, the specific characteristics of implementing organizations, and the type of action contemplated by the policy.

### 3.3.1 Institutional Complexity

Ordinarily, the translation of a policy decision into a final government action requires a number of intermediate actions within the government. In general, the more organizations that must take actions, the more levels of government involved (e.g., federal, state, local, tribal), and the larger the number of transactions required, the more the final action is likely to differ from the action contemplated by the policy decision and the longer any action will take in coming.<sup>41</sup> This proposition has led thoughtful observers of the nuclear waste management problem, for example, to be possibly intractable: it involves over half a dozen federal agencies, all four levels of government in several different states, several agencies within each state (and possible local and tribal) government, and countless individual transactions. It is difficult to think of a more extreme case. But most energy policy issues tend to share this characteristic to a substantial degree.

When actions must be taken in such a complex setting, it is frequently assumed that better "control" measures can improve the prospects for getting the desired actions. These measures include management information systems, periodic audits, more detailed instructions, formal reporting requirements, and so on.<sup>42</sup> Unfortunately, there is little evidence that such measures accomplish much. On the other hand, the same can be said of more delegation and decentralization, however enlightened

they seem.<sup>43</sup> As a result, centralization and control passes in and out fashion, with no documented, systematic effect on the tendency of organizations to take (or not to take) necessary actions.<sup>44</sup> Presently, decentralization appears to be in favor--witness, the Energy Management Partnership Act.

The world is not altogether bleak, however. Indeed, the Kennedy School of Government at Harvard University has a case-writing program that concentrates on gathering success stories, and the program has no lack of material. Ideas do get translated into policies, policies into actions, and actions into improved outcomes. The trouble for the analyst is that the literature offers little in the way of effective guidance for predicting when success will occur, other than in very specific cases. (The literature does offer a great deal of ineffective guidance.)

### 3.3.2 Organizational Characteristics

The characteristics of each organization also have a major effect on the likelihood that a given organization will take required actions. In general, an organization's willingness to undertake actions depends on their compatibility with the organization's goals and its dominant roles and missions. If assigned functions are not viewed as part of its essence, an organization will devote as few resources as possible to performance of the function.<sup>45</sup> The expectation that DOE would not devote adequate internal funds to solar energy research may have been part of the reason for creation of the Solar Energy Research Institute. An organization's willingness to take actions also depends on the implications for organizational autonomy, which they highly value. Thus, "organizations are often prepared to accept less money with greater control rather than more money with less control."<sup>46</sup> For instance, research funding organizations traditionally favor funding specific projects rather than general programs, even though the money available in the latter case might be higher. Note that DOE



National Laboratories are funded largely project by project. Similarly, organizations are reluctant to undertake shared operations. When directed to do so, they will negotiate treaties with the other organizations involved, so that each can operate independently, even if the result is poor coordination.<sup>47</sup> Finally, organizations do a half-hearted job of taking actions in support of another organizations goals. For example, the Treasury Department has been extremely grudging in its implementation of energy conservation tax credits, a DOE policy. Only under the threat that another organization will take over the mission does an organization try to perform well in such a situation.<sup>48</sup>

The ability of organizations to undertake required actions depends primarily on how the actions match the organization's existing standard operating procedures, programs, repertoires, capabilities, and resources.<sup>49</sup> For example, the enforcement of building energy performance standards by state and local jurisdictions that currently enforce no building codes at all is going to be slow and spotty.<sup>50</sup>

Another indicator of both ability and willingness to take action is the organization's age, as argued by Bernstein.<sup>51</sup> While Bernstein formulated his propositions with respect to regulatory agencies, they translate to the behavior of other kinds of organizations as well. New regulatory agencies operate at a disadvantage relative to those to be regulated. Such an agency "lacks administrative experience, its policy and objectives are vague or unformed, its legal powers are unclear and untested, and its relations with Congress are uncertain."<sup>52</sup> Young agencies are aggressive and creative. They tend to interpret their mandate broadly.<sup>53</sup> Mature agencies take a managerial approach to regulation. They tend to adopt a protective posture vis a vis the industry they are regulating.<sup>54</sup> Mature agencies also become relatively inflexible. Their goals tend to become fixed and they solve

problems by precedent rather than analysis. The "professionalism" of agency staff reinforces these tendencies.<sup>55</sup>

### 3.3.3 The Policy Itself

While institutional setting and the characteristics of implementing organizations are critical in determining what actions will be taken in response to a policy decision, the nature of the policy decision itself is also critical. One important aspect is the clarity of direction in the policy decision. As many observers have noted, the bargaining that characterizes the process of reaching a decision carries over into the process for taking actions.<sup>56</sup> Especially in the case of legislative enactments the decision is apt to reflect the differing, even inconsistent, objectives of those involved. The implementing organizations are left to "carry out the terms of the treaties that the legislators have negotiated and ratified."<sup>57</sup> Not surprisingly, the vaguer or more ambiguous the policy direction embodied in the "treaty", the more the actions taken will be determined by institutional setting and organizational characteristics.<sup>58</sup> Implementation of the Fuel Use Act of 1978 by the Economic Regulatory Administration may be a case in point.<sup>59</sup>

In addition the actions taken to implement particular types of policies tend to follow fairly predictable patterns. We have found it useful to divide governmental actions into five broad categories:

- o Coercion (requirements, taxation)
- o Exchange (market activity)
- o Donation (disbursements, services)
- o Exhortation
- o Reorganization (creation and abolition of organizations)

Coercion refers to authoritative action by the government that requires persons in the private sector to take certain actions or to abstain from specified activities. Examples are

environmental standards and income taxes.<sup>60</sup> Civil and criminal sanctions may be used to enforce compliance with coercive governmental acts.

Exchange relationships between the government and the private sector involve the purchase and sale of commodities and services.<sup>61</sup> Ordinarily, the government is the buyer; however in some circumstances, the government acts as a seller of goods (electric power) or services (uranium enrichment).

Donation by the government to the private sector refers to the uncompensated transfer of money or goods and services to the private sector.<sup>62</sup> Disbursements, involving money, take the form of grants-in-aid, subsidies, and transfers. Services, involving nonmonetary items, include such things as the performance of research.

Exhortation refers to the government simply talking to the private sector, requesting its compliance with governmental goals, and appealing to its self interest or to its moral, ethical, or patriotic ideals. An example is DOE's "Don't Be Fuelish" program. Although vague hints of future sanctions, rewards, or governmental market activity may accompany exhortation, in the classic mode this type of governmental action is not backed up by any immediate coercion, exchange, or donation.

Reorganization refers to the creation or abolition of organizations in the public sector.<sup>63</sup> The government may reorganize itself by creating a new agency (the Environmental Protection Agency) or by modifying the mandates and structure of old agencies (splitting the Atomic Energy Commission into the Nuclear Regulatory Commission and the Energy Research and Development Administration). Of course, the government may also attempt to create or abolish organizations in the private sector. However, this end is usually accomplished through the use of requirements, exchange relationships, donation, exhortation, or a combination, and so is best considered as a special case of those types of actions.

The literature discusses some of these action types much more than others. As a consequence, the number of propositions about the institutional aspects of each type vary greatly in number. The most complete single work we have found is by Mitnick. Coercion, especially requirements, has been discussed the most; exchange has probably been discussed the least. In addition, most of the discussion has centered around the connections between actions and outcomes, not between policies and actions.<sup>64</sup>

#### Coercion: Requirements

Stephen Breyer has described the recurring patterns in various forms of regulation.<sup>65</sup> The recurring actions tend to follow from problems inherent in the form of regulation.

Cost of service ratemaking, such as that practiced by state public utilities commissions in setting electricity rates, for example, has the following problems: (1) regulators must determine the rate base in light of historical cost, (2) there is no analytic basis for determining an appropriate rate of return, (3) incentives for efficiency are difficult to provide, (4) rates are difficult to adjust to reflect changes in cost of service or demand for service, (5) there is no analytic basis for allocating fixed or joint costs.<sup>66</sup> As a result ratemakers operate according to precedent, arbitrary rules of thumb, and political considerations. The upshot is long periods of stability marked by periodic major adjustments and very little flexibility or innovation in rate structures.<sup>67</sup>

Most agencies find historically based price regulation ("rent control"), such as the regulation of the wellhead price of natural gas, easiest to implement immediately following an authoritative decision to adopt. At that point the historical price for the good or service is easy to determine and a uniform rule can apply to all sellers. If kept in force for a long period of time, however, the need to deal with exceptions (new products, unprofitable firms, new investment), the problem of

allocating various "vintages" of the product (e.g., old gas versus new gas), the difficulties of enforcement tend to push the regulatory agency into cost of service ratemaking. The system becomes unwieldy because the number of firms tend to be large--a situation that cost of service ratemaking is not well-equipped to handle.<sup>68</sup>

Because of the impossibility of formulating a workable and objective "public interest" criterion, public interest allocation (e.g. of television stations, airline routes, and natural gas) tends to be based on political or arbitrary considerations. And as a consequence, "what" is being allocated often blurs into "who" will get "it"; agency hearings become unmanageable; and incumbents are almost always favored in the renewal process.<sup>69</sup>

Historically based allocation (e.g. of the natural gas by the Federal Energy Regulatory Commission under the "curtailments" regime) is "unstable, and tends to evolve toward public interest allocation" because of the need to make exceptions and the need to institute price controls if goods are in short supply.<sup>70</sup>

An agency required to set standards (such as EPA for environmental pollution and NRC for nuclear safety and safeguards) face a variety of problems. Regulatory statutes and the court decisions interpreting them tend to contemplate that standards will be based on sophisticated analysis of alternative standards based on their environmental, health, safety, and economic consequences as determined by research in modeling. In the usual case, the agency is operating under tight deadlines and has limited personnel and dollar resources. Nor may the available modeling and other techniques be accessible and helpful. As a consequence, regulators tend to rely on precedent, rules of thumb, and negotiation with affected parties more than on comprehensive analysis.<sup>71</sup> Standard setting agencies are also concerned with two other imperatives: the need to adopt standards that are enforceable and the need to survive judicial review. Enforceability tends to bias regulators to favor

"design" requirements over "performance" requirements. The treat of judicial review tends to formalize the search for relevant information and the considerations of alternatives.<sup>72</sup> Strict observance of notice and comment procedures and constraints on ex parte communication tend to stifle informal back and forth with knowledgeable outsiders as well as wide-ranging exploration of alternatives. The general practice is to rely on preexisting studies and standards for guidance. As a consequence standards tend to resist change over time, especially dramatic change. Standards tend to evolve at most incrementally.<sup>73</sup>

Individualized screening (such as nuclear power plant licensing) suffers from most of the same problems as standard setting. In particular, the vagueness of statutory standards and the limits of modeling and testing techniques mean that agencies must rely heavily on subjective judgment in acting on applications.<sup>74</sup> In addition they may have even more difficulty in obtaining accurate information because the typically adjudicatory context imposes even more formal constraints than does rulemaking (the typical forum for standard setting) and affords even fewer resources.<sup>75</sup>

#### Donation: Disbursements

The budgets of organizations that administer grants-in-aid, subsidies, or transfers are ordinarily highly dependent on the amount of money the agency can move. Since protection and enhancement of budget allocation is a key organization imperative, grant dispensing agencies frequently act to maximize dollar volume, often at the expense of careful attention to the results of the funded activities.<sup>76</sup>

#### Exchange and Services

Organizations making expenditures, especially for research, development, and production of expensive hardware, tend to follow a similar pattern. In addition the processing organization may come to so identify with the activities of the organization

performing the R&D and production work, that critical judgment of the results is further impaired. This phenomenon is reinforced by the intermingling of personal (e.g. in a system project office), common professional orientation, and a "cost plus" contracting regime. As a consequence, such projects often gather momentum that makes failures difficult to stop before unnecessary resources are diverted.<sup>77</sup>

### Exhortation

The primary institutional impacts of exhortation are likely to be political. For those within the government making the exhortation, this form of activity constitutes a stand from which it may well be very difficult (or at least embarrassing) to retreat. Exhortation may help legitimize the point of view endorsed by the exhortation; but it may also serve as a rallying point for opponents. Exhortation may also create expectations of future coercive, market, donative, or reorganizational activities resulting in impacts similar to the reality of such activities, though in muted form.

Exhortation must fall within the target's "zone of indifference" to be effective--that is professional norms, economic self-interest, conscience or the like must be almost sufficient to achieve the outcome in the absence of the encouragement.<sup>78</sup> In short, exhortation may push people over the brink, but not up the hill.

### Reorganization

Unless the reorganization involves regulatory activity, legal impacts are apt to be minimal. Legal issues could include authority for the reorganization (e.g., if accomplished by executive order rather than statute). Primarily, however, the institutional impacts of reorganization tend to be organizational and political.

The most significant aspect of organizational impacts is the likely divergence between what is expected by the reorganization

plan and the reality. The existence of organizational subunits, and their preferred roles and missions, tend to have remarkable vitality whatever the new reorganization charts say. Budgetary autonomy, retained personnel, monopolies on knowledge and skill, and distant lines of authority between the head of an organization and its subunits ensure that the process is at best slow and adaptive. Similarly, capabilities change very slowly, especially hardware, and more especially hardware that is developed by a process that requires long lead times. Procedures are also slower to develop than usually is expected, and the procedures of organizational subunits carried over from past arrangements remarkably hearty.

The political impacts center on games concerning the legitimacy of new organizational arrangements, especially in defining new roles and missions and in developing new capabilities. In this game, the new organization itself becomes a participant, as do its clients, opponents including competing organizations, and disaffected participants within the new organization itself. Action channels include the annual budgetary process (within the organization and before Congress) as well as the organization's own procedures such as those relating to budget, personnel, and training.

#### 3.4 ACHIEVING THE OUTCOME

Just as final government actions do not often fully reflect policy decisions, some "slippage" between action and outcome is the norm.<sup>79</sup> In other words, the "target" of the policy in question does not behave as anticipated or as desired. The general reasons are obvious enough. The target must be aware of the government's action, understand it, know it applies, and then respond as desired. Policy analysts have a strong tendency to ignore the first three elements (awareness, understanding, and knowledge of applicability). And addressing the fourth element, they often substitute a simplification for the problem. They assume that the targets of government policy are



profit-maximizing firms or utility maximizing individuals that will respond in fine-tuned fashion to whatever incentive structure the government's actions have created. A moment's reflection suggests the range of difficulties with this set of assumptions. Many targets of government policy are entities such as other government organizations (e.g., localities), regulated utilities, and oligopolistic firms that cannot be reliably expected to respond readily to government incentives. If the targets are organizations of any size, their response will depend on the compatibility of the desired response with internal SOPs, professional norms, and organizational structure. Moreover, there is no reason to expect passivity. Targets that disapprove of the government's action will try to ignore it, evade it, resist it, or change it. Finally, even targets that try to respond as desired must adjust procedures and marshal resources--a process that will take time and involve false starts, especially in response to a new government program.

Assessing how the targets of government actions will respond is thus very much like assessing how the implementors of government policy will respond. In both cases, the response depends on the interplay among institutional complexity, the characteristics of responding organizations, and the policy or action itself. Most propositions about institutional setting and organizational characteristics apply in translation to the achievement of outcomes. For example, just as vague policies lead to variability in government action, "the more susceptible projects are to unique adaptations in their local setting, the less influence the 'input' from a government program may have on locally implemented practices or their outcomes." <sup>80</sup> We leave readers to perform such translations for themselves. Here we discuss the effects of particular types of actions on achieving outcomes.

### 3.4.1 Coercion

The legal impacts of coercion are apt to be especially important. If the mandate for coercion is statutory, the most immediate legal impact is legislation in the form of the implementing regulations issued by the responsible agency. The issuance of regulations frequently gives rise to additional impacts in the form of legal issues (conflicts or uncertainties) concerning the scope of agency authority under the statute, the meaning of the regulations issued, and jurisdictional ambiguities about the persons and activities covered by the regulation. These issues may be resolved through the rule-making process. They may also result in adjudication. Adjudication may also occur over the application of the regulations to particular parties.

The organizational impacts of coercion occur primarily with respect to the regulator and the parties regulated. For the regulator, organizational impacts take the form of the time, trouble, and money required (both absolutely and in diversion from other activities) to create necessary organizational subunits, acquire capabilities in the form of personnel, knowledge, and equipment; and develop the procedures necessary for the operation and enforcement of the regulatory requirements. For regulated parties, the organizational impacts are of two sorts. One set is parallel to the organizational impacts on the regulator; that is, developing the organizational subunits, capabilities, and procedures necessary to comply with regulatory requirements. The other set involves alteration of roles and missions, capabilities, and procedures in response to the particular incentive effects of the regulatory requirements themselves. For both the regulator and the regulated parties, organizational impacts are likely to add up to a large amount of disruption for a period of time until operation, enforcement, and compliance become routine. When regulatory requirements are altered before the organizations are able to work through this

adjustment process, requirements are likely to be continually disruptive and rarely achieve their objectives.

The political impacts of coercion center on the games affected by such actions. Basically, these games concern three issues: (1) the legitimacy of the regulated parties' existence or central activity; (2) the aspects of the regulated parties' activities that are the subject of regulation; and (3) the appropriateness and legitimacy of the regulations themselves. Thus the games involve attempts to abolish or severely restrict the regulated parties' activities. They also involve attempts to repeal, modify, or intensify the enforcement of the types of requirements in question. New requirements give opponents of the regulated party and the regulated party bargaining resources. They may also create new participants in the form of the regulator itself. Similarly, requirements often create action channels in the form of implementing procedures, such as the licensing process.

Cost of service ratemaking inhibits innovation and flexibility on the part of regulated firms in several ways. First, the general practice of allowing firms to pass along increased costs to customers stifles the incentive to hold down costs. Second, however, the uneven application of this "cost plus" principle can lead to still more inefficiency--for example by allowing utilities to recover higher fuel costs but not the costs of constructing more fuel-efficient generating facilities. Third, the typical inflexibility of rate setting commissions impedes experimentation with innovative rate structures--<sup>81</sup>though in the electricity industry this may be changing somewhat as a result of the Public Utilities Regulatory Policy Act.

Historically based allocation can create perverse incentives. For example, the prospect of such allocation leads targets to raise prices or increase consumption in anticipation of controls.<sup>82</sup> Recall, for example the scrambling of federal agencies to create new slots in anticipation of the Administration's recent employment freeze.

Coercion that involves uncertain punishment disproportionate to the offense creates a variety of problems. Not the least are cooptation of enforcement personnel and the low credibility of extreme penalties.

### 3.4.2 Exchange

The legal impacts of exchange center primarily on the process of procurement. Impacts may include legislation in the form of modified procurement regulations; legal issues about whether the government has the necessary authority for certain types of purchases or particular purchases; and adjudication over contract awards, including possible fraud on the part of government officials or private sellers.

The principal organizational impacts involve the creation of sellers (and sometimes buyers) in both the public and private sectors. The pattern of government purchases can alter organizational roles and missions (by wedding organizations to development or production of the particular types of items purchased by the government); can affect private sector capabilities through the incentives effects of particular types of contracting; and can alter private sector procedures for the conduct of research and development, for marketing, and for production.

The political impacts of exchange stem from the creation of games involving the question of what the government shall purchase, as opposed to produce itself, and from whom the government shall purchase. The participants include potential buyers and sellers, in both the public and private sectors. New exchange programs often create action channels for this type of activity in the form of source selection and contract award processes, as well as the annual budgetary approval process for the government organization producing the item or making the purchases.

### 3.4.3 Donation

In general the impacts of donation parallel the impacts of exchange, with two exceptions. First, organizations outside the government may be less responsive to government objectives because the incentives may be weaker. Second, donation may be more politicized because there are apt to be even fewer objective standards for governmental grants than there are for governmental purchases.

Disbursements and Services (as well as price and entry restrictions) create "clients" and "partners". These beneficiaries often become allied with legislative sponsors and implementing organizations with the goal of preserving and expanding such programs. As a consequence, once created such programs are rarely abolished.<sup>83</sup> Whether the targets respond to achieve desired outcomes depends on the congruence of their own goals and those of the policy.<sup>84</sup> Even when goals are congruent, such policies have great potential for abuse. Inevitably, grant and expenditure receiving institutions try to obtain as much funding as possible while maintaining flexibility in use. For example, private firms use government money to develop products for the private market. Such practices often succeed because achievement of government objectives is difficult to measure and use of funds is difficult to monitor. Such slippage is prevalent even when the government attempts to fashion incentives whose reward is "contingent on demonstration of certain performance, with the amount of reward proportionate to the degree of performance."<sup>85</sup> The problem lies in the difficulty of identifying and measuring performance relative to what would have happened without the incentive.

### 3.4.4 Reorganization

In governmental reorganization, the action is the outcome in some sense. As a consequence, advocates of reorganization have a tendency to exaggerate its impact on the world, just as they exaggerate the government's ability to reorganize itself. The

basic proposition about the connection between a reorganization decision and reorganization actions is that the actions will sum to less than the decision seemed to imply; the basic proposition about the connection between a reorganization action and outcomes is that the world will be changed less than one might think.

Nonetheless, the institutional analyst does have more to say. First, institutional considerations do affect the connection between reorganization actions and outcomes. If the reorganization requires entirely new legal, organizational, or political arrangements in order to achieve its desired outcome, then it is likely to fall short. On the other hand, if the reorganization requires a shift from one set of arrangements to another existing set, the reorganization is less likely to fall short of desired outcomes. The crucial issue becomes the power of those supporting the new arrangements versus the power of those supporting the old.

In addition, reorganizations are by definition changes in institutional arrangements. Thus, to the extent that policy decisions do lead to actions, those actions will have institutional impacts. The world outside of government might well change as institutional arrangements outside of government are altered to respond to the new organizations and processes inside government. If the outside arrangements do change, non-institutional changes (technical, economic, cultural) might also follow. Notice however, that the connections are relatively indirect. Changes in the world stemming from government reorganization are apt to be slow, slight, and relatively unpredictable. At the least, the analyst should be quick to slap a wide band of uncertainty around any definite predictions the advocates or opponents of reorganizations are apt to make.

CHAPTER 4  
INSTITUTIONAL PLANNING

4.1 INTRODUCTION

Institutional planning is the action arm of institutional analysis. Institutional planning brings institutional considerations to bear on the design of policy alternatives. Such planning will result in some combination of guidance for operating within the given institutional context and the design of new institutional arrangements for changing that context.

Guidance for operating within the given context may involve recommending one alternative over another on institutional grounds or recommending modifications to an alternative chosen on other grounds. For instance, many economists recommend charging polluters per amount of emission, rather than establishing allowable emission limits. In the course of institutional planning, the analyst may recommend against the economist because the institutional disadvantages of pollution charges outweigh its economic advantages. Alternatively, the institutional analyst may suggest modifications or additions to the pollution charge alternative in order to fit it within the institutional context.<sup>1</sup>

The design of new institutional arrangements may involve suggesting new activities, new participants, or new forms of interaction among participants and activities. To use the pollution charge example again, the institutional analyst may recommend a special procedure for setting specific pollution charges, a new organization to carry out such a procedure, or a method for existing participants in pollution activities to get together in order to establish such charges themselves. (The EPA's concept of a region-wide bubble for meeting ambient air standards has some of this last flavor.

A point to keep in mind throughout institutional planning is that while the best solutions are often the simplest, the search for solutions cannot be simple-minded. Just as non-institutional problems may have institutional solutions, institutional problems may have non-institutional solutions. Richard Zeckhauser provides an example of the first phenomenon in an article that discusses collective action as a way of dealing with physical uncertainty.<sup>2</sup> We know fire is apt to strike one of us, but we do not know which one. Providing fire service collectively spreads the cost and eliminates the need to guess which one of us will in fact be on fire. Ted Turner's Atlanta TV station is an example of the second phenomenon. By broadcasting through satellite, Turner obtains a national audience for his advertisers without going through the established networks. In the energy area, the Price-Anderson Act is an institutional, collective solution to the financial risks posed by nuclear power development. Similarly, a major breakthrough in fusion or solar energy might evaporate many of the institutional problems surrounding energy.

#### 4.2 GUIDANCE FOR OPERATING WITHIN THE EXISTING CONTEXT

In many instances where institutional analysis is called for, one takes as given the existing array of organizations and processes. The task of institutional analysis becomes to help one understand the institutional environment and to design or select alternative policies that are compatible with it and that can accomplish some substantive objectives. Reform or redesign of the institutional environment may not be an option, either because it is outside the control of the decisionmakers of concern, or because it would be so difficult, so time consuming, or so costly in staff resources and political capital as to not be worth the effort. Small institutional reforms may be--such as minor adjustments in agency jurisdiction, or redefinition of a few terms in administrative regulations, but that is all.



In providing this guidance, the institutional analyst uses knowledge of the given context gained through institutional mapping and institutional assessment. He or she adds to this knowledge the creative act of developing ways to work within this context. As such, institutional planning is an act of creation, subject to as much or as little advice as other acts of creation. Some authors, such as Rudolph Flesch, offer a great deal of advice on how to be creative.<sup>3</sup> Flesch even uses institutional examples, such as President Franklin Roosevelt's proposal for the Lend-Lease Act.<sup>4</sup> In general, such advice is usually a combination of general points--look at the problem from a new angle, ignore it for a while, try to explain it to someone who knows very little about it--and specific tricks concerning issues on the level of when to think and where to sit while doing so.

Of course, the naysayers and skeptics among us maintain that creativity cannot be taught; at best, it can be learned through experience, at worst, it is an innate skill that one either has or does not. We adopt a middle ground, partially from disagreement among ourselves.

We offer five principles, keyed directly to the problems confronting the institutional analyst trying to find ways around institutional problems. We describe each of these in more detail below.

#### 4.2.1 Keep Your Focus on the Ultimate Objectives

Institutional analysis necessarily involves a concern with all the laws, organizations, and political games between here and there, posing a great danger that the analyst will come to consider solutions to institutional problems without considering the effect of those solutions on the ultimate outcome sought. A solution that satisfies all the powerful participants but leaves nagging problems should not be good enough. If the institutional problem is an agency that refuses to cooperate,

achieving its cooperation by doing something that leaves the ultimate problem unsolved should not be an acceptable resolution.

As mentioned in Chapter 2, Elmore discusses this problem in detail, advocating what he calls "backward mapping."<sup>5</sup> (He gives credit to Mark Moore for the term.) Backward mapping, not to be confused with institutional mapping, starts with the specific behaviors that one wants to change (usually behaviors of non-government individuals, groups, or organizations). It then seeks handles for changing those behaviors, and the most direct connection between those handles and the organization for which the analyst is developing alternatives. We discuss this technique more below. The important element of it for this principle is its direct and explicit focus on ultimate outcomes rather than intermediate institutional ones.

Consider the problem of achieving widespread solar use. The desired outcome should be something like collectors on buildings, gathering energy. It should not be "a healthy solar industry" or "a sophisticated, commercially-available technology." These are means to the end, not the end themselves. Indeed, some solar advocates argue that widespread use will more readily come through use of relatively simple systems put in place by building owners themselves. The energy policy analyst needs to keep focusing on the outcome he or she wishes to achieve.

The mistake of substituting the intermediate for the ultimate is of course not limited to institutional analysis. Paul Tillich wrote an entire book on this trap as it occurs in religious faith.<sup>6</sup>

#### 4.2.2 Consider the Full Range of Alternatives

As stressed earlier, institutional problems are not easy to solve, and the analyst may have to look far and wide to find solutions. This need should not be seen as a shortcoming of

institutional analysis, but as an opportunity to make a creative contribution to the problem at hand. Indeed, Allison argues that the comparative advantage of the policy analyst may well lie in the ability to design new alternatives.<sup>7</sup>

As stressed earlier, institutional problems may have non-institutional solutions. This principle bears repeating, because it is so easy to forget. Technical people look for technical solutions, economists look for economic solutions, and institutional analysts look for institutional solutions. This almost irresistible temptation needs to be fought at every turn. Our preference for working in multi-disciplinary teams is also a response to this danger. Our use of three separate viewpoints is as well.

Consider the institutional problems surrounding gasoline consumption. If it needs to be reduced in order to reduce dependence on foreign oil, the analyst needs to keep a full range of alternatives in view. A technical solution might be to make gasoline vehicles more efficient. For an economic solution, gasoline might be made more expensive. An institutional solution might be to persuade or require people to drive less. A combination solution might be to shift ridership from individual vehicles to a new, more attractive type of group vehicle.

Even entirely within the institutional range, the analyst has a fair degree of choice. In our work, we have distinguished four basic ways in which one organization, usually a government, deals with others: (1) coercion, (2) exchange, (3) donation, and (4) exhortation.<sup>8</sup> For a government, coercion is usually administered in one of two forms--taxation or requirements. Government exchange is usually market activity

(buying or selling) by a government agency. Government donation takes one of two forms--disbursements, or services. These four basic relationships and their six concrete forms should be part of the analyst's repertoire, the tools he or she considers applying to the problem at hand.<sup>9</sup> Often, a shift from one form to another will solve many institutional problems without detracting from the effect on the ultimate problem under consideration.

Consider the problem of achieving greater solar use. Building owners could be given tax credits if they install solar collectors (as they are now), could be required to install collectors (an aspect of a San Diego law), could be sold collectors, perhaps even at special rates, by a government agency (TVA is doing something like this), could be provided demonstration grants (as HUD has done), could be provided information and other services (as the Energy Extension Service is to do), or could be urged to install collectors through statements of government officials. Of course, any combination of the above could also be provided. In addition, a similar range of options exists to influence the producers, as opposed to the consumers, of such solar systems.

Our three viewpoints also suggest that each of these options have legal, organizational, and political aspects that might be modified in order to circumvent institutional problems. Laws can be changed by constitutional amendment, by congressional statute, by presidential executive order, by administrative agency rulemaking or adjudication, or by court decree. Private organizations can even work around many provisions of public law through provisions of private law established by corporate charters, contracts, and normal business or social procedures.

Organizations exist in numerous forms. (Seidman identifies more than a dozen types of federal governmental organizations.)<sup>10</sup> In addition, each form varies in

goals, activities, structure, and membership. The analyst will almost always have some freedom to consider various organizations, or at least various components of a given organization, as candidates for dealing with some aspect of a policy problem. Shifting from one component to another where possible may help solve numerous institutional problems.

Similarly, the analyst can often consider pushing for resolution of an issue in more than one political game. Shifting from one to another changes participants, action channels, deadlines, and many other aspects of the rules, so that intractable problems in one game may be relatively easy to solve in others.

Consider again the solar collector problem. Tax credits have to be established by Congress and administered by the IRS, but many other options are not so limited. Exhortation, for instance, has far fewer constraints (at least formal constraints). Grants need budgetary authority and appropriations from Congress, but existing authority and appropriations often provide room for creative interpretation at the agency level. They also allow a wide choice of organizational components for administration, and a wide choice of procedures for deciding who gets how much.

#### 4.2.3 Keep Solutions Simple and Direct

In Chapter 1, we introduced Pressman's and Wildavsky's concept of the complexity of joint action. The U.S. system is so open that a large number of participants have an effective claim to inclusion in many decisions or actions. To accommodate the large number of participants requires a large number of activities. The large number of participants and activities carries with it at least the potential for an astronomical number of interactions. As a consequence, even the most simple and direct actions are more complicated than they appear at first. The less simple and direct quickly become so complicated they collapse under their own complexity.

The impact of this phenomenon on the analyst should be to instill a great preference for solutions that do not require many participants or many activities. In solving a problem, the government should work through as few agencies and as few levels of government as possible.<sup>11</sup> Of course, institutional factors themselves constrain the ability to adopt simple, direct actions. Neither state nor local governments appreciate direct federal intervention in their jurisdictions. Almost no organization of any sort appreciates action by others in areas it considers its own. As a consequence, various organizations at various levels want to be included, and often have the power to stop actions if they are not included. Therefore, the analyst has to work in the area of the possible. However, that limitation should not lead him or her to abandon the search for simplicity and directness.

Consider the solar collector example once again. Exhortation and tax credits for building owners do have the advantage of operating as direct interchanges between the federal government and the private owner. Grants, in contrast, are apt to be given to states or local governments for distribution. At the very least, applications may flow through regional offices of the federal administering agency. Requirements are similarly apt to be complicated by local interpretation and enforcement. Market activity and services are apt to involve intermediate levels of complexity in this instance.

Simplicity and directness are not ultimate objectives; the analyst may still prefer one of the less direct alternatives on other grounds. Nonetheless, they are factors to be considered, and they do suggest the folly of choosing any alternative that falls way short of the goals they pose.

#### 4.2.4 Build in Flexibility

One of the prevailing characteristics of institutional contexts is that they vary sharply from one situation to another. Different policy areas, or different geographic

regions, are apt to involve very different institutional contexts. The impact of this phenomenon should be to instill a preference for the kind of flexibility that allows a program to adapt to these differing institutional contexts.

This point is discussed most directly by Elmore, in arguing for education and employment programs that allow variation from one region to another.<sup>12</sup> He argues that local principals and teachers, or local employers and training organizations, are in the best position to adapt a program to the local institutional context. He poses the problem as one of motivating them to do so and providing the resources they need.

Of course, flexibility runs into constraints as do simplicity and directness. Flexibility implies variability, complicating the tasks of the overall administrators and those charged with oversight and evaluation of such programs.<sup>13</sup> Nonetheless, it is still a consideration that should be weighed along with others. In some cases, flexibility does compete with directness. Providing motivation and resources to local officials is admittedly less simple and direct than dealing directly from the national level. Choosing among such competing considerations always requires examining the particular situation.

In our solar example, the Internal Revenue Service will have a difficult time judging the suitability of all the solar designs proposed as candidates for tax credits. Local energy officials may be in a better position to judge the appropriateness of specific designs in their specific local climates. In this case, the individual building owners probably have enough personal incentives to choose appropriate designs that the expertise of local officials may not be necessary. In a case of tax credits for energy conservation beyond the levels economically justifiable in the local economy, the expertise of local officials may be essential in certifying the acceptability of individual actions.

#### 4.2.5 Use History

With these first four principles in mind, the analyst is still faced with the problem of actually finding ideas that meet them, and convincing others that his or her ideas have merit. Institutional analysis has not attained the status, either as science or art, that the expertise of its practitioners is readily recognized.

Our answer has been to seek historical examples. Although all such examples are analogies, that need to be translated to the present context, we have found history to provide a ready source of appropriate analogies. In addition, repeating something that has already been found effective is so compatible with the tendency of large organizations to repeat themselves that variants of historical examples are easy to understand and accept. Use of them also adds to our credibility as analysts, for many of these same reasons.

The best book we have found on this subject is "Lessons" of the Past by Ernest May.<sup>14</sup> He has three theses: (1) that public officials (in his case, those concerned about foreign policy) are influenced by beliefs about history; (2) that the officials ordinarily use history badly; and (3) history can be used better. He suggests that historians should be asked to do the following: supply perspective on events, provide information about past policies, advise new officeholders, analyze the analogies that officials are apt to use, and even extrapolate historical trends into the future. We endorse his theses and suggestions.

However, May's book covers a grander and more systematic use of history than we are suggesting, at least in the initial stages of analysis. We are saying that all large organizations tend to repeat themselves or change incrementally. Therefore past practice is always relevant. In addition, many institutional problems have historical analogues. Someone else has already faced almost every problem an institutional analyst will be asked



to solve. If he or she solved the historical problem, the historical solution might be applicable, even if it needs translation to the present. If he or she tried something that failed, the historical attempt provides a warning to the analyst tempted to suggest something similar.

If the analyst starts down this path, as we suggest he or she do, then the warnings and examples of May become relevant. In addition, good advice on how to do history is contained in the book by Barzun and Graff cited in Chapter 1.<sup>15</sup> Bad use of history may be worse than no use at all. Good use of history is both effective and credible.

#### 4.3 INSTITUTIONAL DESIGN<sup>16</sup>

In some instances the analyst will not be able to design a path through the existing institutional context. The obstacles may be too severe, or the necessary institutions for carrying out an alternative may simply not exist. In those instances, the job at hand is to redesign the institutional environment--to create new organizations, or to create new procedures or decision processes for existing organizations.<sup>17</sup> Such analysis may be done for or directed at decisionmakers whose responsibility extends to such major actions, and who define the basic problem as one of incapacity of existing institutional arrangements. Or such analysis may be done for decisionmakers without the responsibility or ability to consider and implement such reforms themselves, but whose substantive responsibilities include problems that cannot be solved in any other way. Just when redesign of institutions is an appropriate option is a sensitive point, and deserves further examination.<sup>18</sup>

For example, consider the problem of relationships between state governments and the federal government over the siting of nuclear waste repositories. In 1975 or 1976, it was implicit in federal policy that siting such repositories was a federal matter, and that state governments had no direct entitlement to participate. At that time, who could or should have been

analyzing possible reforms of the decisionmaking process for waste repositories? Certainly within Congress and the Executive Office of the President, staff responsible for oversight of nuclear waste matters could have been considering possible institutional reforms. At the highest policy-setting levels within the responsible agency--the Energy Research and Development Administration--staff could or should have been considering such questions. Further down in ERDA--in its nuclear waste offices, and in the field offices where officials were dealing with the problem directly--it is more uncertain when consideration should have been given to reforming the institutional arrangements for decisionmaking. It would be unwise and unreasonable for field offices and subordinate officials to continually spend their time analyzing policies and decisions outside their control. But at some point, as the persons closest to the effects of perhaps unworkable policies and organizational structures, those officials have a responsibility to consider how a more workable institutional environment might be structured, to bring their experience and expertise to bear on the analysis, and then to communicate that to higher decisionmakers.

#### 4.3.1 Organizations and Decision Processes

The reader is by now familiar with the complex of governmental, economic, and interest group activities, participants, and the interactions among them that we lump under the heading "Institutions." For the sake of simplicity, this chapter will refer to only two institutional concepts: organizations and decision processes. In this context, a decision process is a combination of standards, procedures, and participants for reaching important societal decisions. State energy facility siting processes are one example. The federal process for licensing nuclear power generation facilities is another.

In designing organizations, the focus is on the creation of a new organization to deal with a problem.<sup>19</sup> One is concerned with defining the jurisdiction of a new organization, its organizational type, its structure, and its relationship to the organizational environment around it. The splitting of the Atomic Energy Commission into the Nuclear Regulatory Commission and the Energy Research and Development Administration is one example of an organizational design problem; the creation of the Department of Energy by combining ERDA and the Federal Energy Administration and other offices is another; the restructuring of nuclear waste management functions within the Department of Energy and the creation of the Office of Nuclear Waste Management is yet another.

Designing new decision processes largely takes for granted the set of existing organizations and their responsibilities, and seeks to establish new relationships among them, in particular a set of relationships designed to produce a particular decision or decisions. In the design of decision processes, the primary focus may be on governmental participants (either relationships among agencies within the government, or relationships among federal, state, and local governments), but frequently nongovernmental participants, such as voters, citizens groups, and private organizations will also be important considerations.

#### 4.3.2 Method of Analysis

Designing institutional alternatives is a subset of designing policy alternatives generally. It is subject to many of the same steps and techniques. (See the discussion of these steps in the next chapter.) Institutional design problems are least like other policy design problems in the areas of objectives and alternatives. Therefore, the bulk of the attention in this chapter is paid to the objectives and alternatives of concern to institutional design.

### 4.3.3 Objectives and Criteria for Institutional Design Objectives for the Design of Organizations

In any decision problem, the specific set of objectives or criteria need to be tailored to that problem. In an organizational design problem there are a few organizational criteria that are customarily important to combine with the specific objectives or criteria that are derived from the particular problem at hand. These organizational criteria include:

1. Workability--the organization must first of all be capable of performing the tasks for which it is responsible.
2. Accountability--for public organizations, it is a commonly held value that those organizations should be accountable for their conduct, ultimately to the people and usually by means of control measures that tie them to the relevant elected officials. Accountability is held to be important both because it is a prerequisite for a government of, for, and by the people, and also because it is thought that an organization that is held accountable for its conduct will have more incentives to work toward better performance than one that is not accountable.
3. Adaptability--for organizations being created to handle functions that will last for some period of years, it is important that they have the ability to adapt their behavior to changes in the problems facing them, changes in the external environment, and other changes likely to occur.
4. Efficiency--an organization ought to be designed so that it can accomplish its functions with a minimum of resources for a given function. Thus the creation of several organizations to handle the same task might

ordinarily be opposed on grounds of efficiency, unless the nature of the particular task put a high value on redundancy.

### Objectives for the Design of Decision Processes

Procedural objectives are somewhat less clear-cut than organizational objectives. They are broken into two types: feasibility and equity. The other three objectives for organizational design--accountability, adaptability, and efficiency--can be important in designing decision processes, but are apt to be considerably subordinated to the twin mandates of feasibility and equity (or fairness).

1. Workability. This is the same objective as described previously, but when thought of in terms of decision processes, it may be helpful to think of it as a requirement that new processes be compatible: compatible with the problem they are intended to resolve, compatible with the legal framework, and compatible with political and organizational imperatives that motivate the participants in the process.
2. Equity/Fairness. That a decision process is not fair to all concerned is perhaps the most common criticism. Spelling out precisely what it means for a process to be fair is difficult, for fairness is only partly a matter of conforming to written rules of conduct, and is partly a matter of conforming to unwritten but understood ideas of procedural equity. Some dimensions of fairness include:
  - who is part of the process;
  - at what point in the process is someone entitled to participate;
  - what kind of participation is someone entitled to--are they entitled to be informed about a

prospective decision, to provide comment and advice on a prospective decision, to make the decision, or to veto a decision;

- what weight does a participant have in a decision (sole authority to decide, voting rights as part of a decisionmaking group, veto rights, or other rights based on some formal decision rules).

Designing a process that will appear fair to participants requires an understanding of which elements of the decision process are perceived as important for fairness by the participants, and then designing a process which matches their expectations.

#### 4.3.4 Designing Institutional Alternatives

##### Designing Organizations

There are many different facets of an organization and its ties to its environment that can be varied in order to produce different organizational alternatives. To understand the variety of approaches, consider the organization as a "black box," about whose inner structures we know nothing. Without dealing with the inner workings of an organization, one can vary the jurisdiction of that organization, its authority, its resources, its control by higher authorities, and the number and type of organizations performing a given function. If one then extends the range of options by examining the internal workings of an organization--peering inside the black box--one can then alter the way it performs by varying its internal structure and its systems for recruiting, training, and rewarding personnel. Descriptions of some of the more common variables in organizational design follow. For all of these, the assumption is that one has a given function one wants to see performed, and is seeking to design an organization or set of organizations to perform that set of functions.

Number of Organizations. Should a single organization perform a function or should there be many? For example, should a single organization operate all commercial low level waste disposal sites in the country, or should there be separate organizations operating different sites (as is done now)?

Scale and Degree of Integration. What is the appropriate size organization to handle a given problem and does a problem require either a vertically or horizontally integrated organization? For example, in the field of nuclear energy, there have been calls for the creation of a nuclear fuel cycle organization that would handle all aspects of the nuclear fuel cycle, from the mining and milling of uranium, to enrichment, to production of electricity, to the handling of nuclear wastes. That would be a vertically integrated organizational alternative. An example of a horizontally integrated organizational alternative would be the creation of a nuclear waste management organization that handles the disposal of all forms of nuclear waste at all sites in the country.

Public vs. Private. Should a given function, such as operation of low-level waste disposal sites, be handled by the government, or be handled by private organizations?

Control Measures. What type of reporting requirements, power of hiring and firing, control over budget, sunset laws, or other control measures should be used to provide accountability for an organization or to produce incentives for a particular kind of performance?

Organizational Form. For a federal government function, should that function be performed by a new cabinet department (such as DOE), by an independent executive agency (such as EPA), by an independent commission (such as NRC), or by a governmental corporation (such as TVA)?<sup>20</sup>

Jurisdiction. Over what problems should an agency have authority (sole or joint)? For example, what should be the

extent of EPA's authority to set standards for radioactive emissions, compared to that of NRC?

Internal Organizational Structure. How should an organization be structured to accomplish a given function or set of functions? For example, should DOE be organized by type of energy source (an assistant secretary for nuclear, one for fossil energy, one for conservation, etc.), should it be organized by stage of maturity of a technology, or should it combine these organizing principles, as is presently the case?

#### Designing Decision Processes

Decision processes were defined above as a combination of standards, procedures, and participants directed at a particular type of decision. The following is a list of variables relevant to the design of decision processes. Many of them would be equally applicable to procedures designed only to produce an exchange of information or advice among participants.

Scope. What issues or decisions are to be covered by this process?

Participants. Which governmental or non-governmental organizations or groups participate in the process? (Note that if the process is defining a relationship among levels of government, it is important to define the participants not only in terms of the federal government and the state government, but also in terms of the specific agencies or officials within each level of government that are authorized to speak for that government.)

Degree of Legal Authority. Are the rules of the process established by statute, by written contract between the participants, by informal memorandum of understanding between the participant, or by still more informal written or verbal statements of policy by different participants?

Method of Decisionmaking. How does the process bear on ultimate decisions? For example, a process can merely be



advisory to a decisionmaker, who is not bound to accept its results. If the process is a decisionmaking one, participants may make collective decisions by means of voting. For example, a voting body of representatives of states in a region could be empowered to make certain decisions by majority vote, or two-thirds vote, or the like. Or a process may establish sequential decisionmaking, in which different participants take turns deciding to approve or disapprove an action. An obvious example of such a process is the procedure for passing a bill into law, in which each house of Congress and then the President must make a separate decision to approve a bill in order for it to become law.

Overrides and Appeals. Can anyone override a decision reached by this process? Can anyone appeal a decision reached by this process, or appeal an override? If so, who can appeal, who can override, who is the final authority?

Grounds for Decision, Grounds for Appeal. Are there restrictions on the grounds for reaching decisions within the procedure? Are there restrictions on the grounds for appeal?

The alternatives that emerge from various combinations of these elements fall into three categories: (1) technical processes; (2) market processes; and (3) political processes.<sup>21</sup> Technical processes attempt to assemble the proper expertise so as to reach a technical optimum. They include such concrete forms as the following:

- creating an agency with relevant expertise to make such decisions;
- assembling a panel of experts for each such decision;
- appointing a single court master or arbitrator.

Market processes attempt to inject individual exchanges into the decision. They include such concrete forms as the following:

- allowing a good to be allocated to the highest bidder;
- auctioning off undesirable facilities by placing them in the

communities that demand the least compensation; providing states the power to make economic contracts with each other (interstate compacts).

Political processes steer somewhat a middle ground between a technical optimum and the amalgamation of individual decisions. They attempt to reach an acceptable decision, one that respects the wishes of the majority, the intensity of preferences, and the rights of minorities. They include such concrete forms as the following:

- juries and jury-like decision panels (those with no fixed standards to apply);
- agencies with established standards to apply;
- elections with voting by designated participants within specified limits;
- a specified decisionmaker who must follow established procedures, including public hearings.

Other forms of these three basic types also exist, as well as decision processes that are combinations of the three basic types.

#### 4.3.5 Predicting the Performance of an Institutional Alternative

In conventional policy analysis, the customary method of predicting the performance of an alternative is to build a descriptive model of the phenomena within the world that affect and are affected by the alternatives one wishes to study. Then the changes in the world that would result from the implementation of a particular alternative are predicted by changing the input assumptions of the model to represent a new alternative, and then discovering what the model predicts the subsequent changes in the environment would be. For example, one might predict the results of a moratorium on the issuance of operating licenses for nuclear reactors by using a set of energy supply and demand models combined with input/output models of the economy at large; alter those models by assuming no growth in nuclear electricity capacity beyond the present and then run

those models to see what they would predict for year by year effects on the demand for other energy forms, the supply of those forms, the total cost of energy to the consumer, the effects of that change in cost on different segments on the economy and so forth. The accuracy of those predictions would depend on the extent to which the descriptive models have described the important variables, and the extent to which they accurately reflect the way those variables relate to each other.

The intellectual task of predicting the performance of institutional alternatives has a very similar logic. In order to make accurate predictions, one has to know both the relevant variables that affect and are affected by the alternative one is studying, and one has to understand how those variables relate to each other. The tools and techniques described in other chapters of this report are tools and techniques that help identify the relevant institutional variables, and that help explain the relationships among them. For example, the legal, organizational, and political viewpoints that have been discussed in Chapter 1 are helpful ways both of categorizing institutional variables and of understanding the relationships among them. Institutional mapping is a name for building a systematic presentation of this information. Backward mapping (see Chapter 2) is a logical device that enables one to take the problem at hand--such as siting a nuclear waste repository--and decide which aspects of the large and complex institutional environment surrounding that problem are relevant to include in the analysis of its institutional problems.

Analyzing the present is what these techniques seem best suited for, and is where the strongest part of an institutional analysis is likely to be. The link between understanding the present and being able to predict the future is uncertain and deserves a few comments. The farther into the future one is attempting to predict, the more tenuous the link between one's present understanding and one's predictions. Thus, if one is

attempting to assess the institutional problems that might be faced by a fusion economy or a breeder economy in the 21st century, a detailed understanding of present environmental law or present political constraints is of only the slightest help. Also, the more dramatic the departure from present practice one is proposing, the more difficult it will be to make predictions based on present practice and performance. The performance of dramatically new organizational or procedural alternatives will be difficult to predict even over a short period of time. (These difficulties in prediction plus the difficulty of dealing with complexity make "muddling through" with institutional alternatives only incrementally different from present practice quite attractive).<sup>22</sup>

Analogous situations may be instructive in predicting performance of an alternative. If the problem of reliability in a waste management system is thought to be similar to the problem of reliability in air traffic controller organizations, then the effects of organizational alternatives on that reliability could perhaps be investigated by studying the present air traffic controllers situation. Lessons from analogous situations can be limited by the resources needed to learn different areas in sufficient detail to have an adequate base of understanding from which to reason back to one's primary problem.

Past history within a problem area can be another base of information on which to base predictions about the future. For example, in nuclear waste repository siting, there is a base of experience with intergovernmental and citizen-government relationships from attempts to site a repository at Lyons, Kansas; Alpena, Michigan; and more recently in New Mexico. The lessons of experience should not be neglected, although their usefulness will be limited by the extent to which the procedures and organizational variables then in effect were dramatically different from what is now being tried.

Principles and propositions from organizational and political theory may aid one's predictions. Scholars of organizations, and politics have developed a body of theory about these phenomena that can be applied to a problem at hand. For example, estimates of the future performance of a new regulatory organization might be tempered by knowledge of the theories of "regulatory capture," which hold that over time the regulatory organizations tend to become heavily influenced by the views of the industry they are supposed to be regulating.<sup>23</sup>

The foregoing discussion suggests the difficulty of predicting the future performance of organizational alternatives. The most sensible advice that one can give about making these predictions is that the strength of one's recommendations and predictions ought to be related to the strength of the basis for them. Where information from the present, the past, analogous situations, and theory all are found to bear on the problem and to point toward a conclusion, one's confidence may be high. But often the basis for predictions may be more tenuous, judgment ever more important, and modesty in recommendations and explicit recognition of uncertainty more appropriate.

It is also important as a part of an exercise in prediction to make an "implementation estimate"--an estimate of the prospects that one will be able to implement one's chosen institutional alternative.<sup>24</sup> Note that it is important in making an estimate of the chances that an alternative can be implemented to be alert to who wins and who loses under a given alternative. It is occasionally the case that organizational, and particularly procedural alternatives, are described, analyzed, and argued for in terms of abstract principles of government, without regard to either the effects of the reforms on substantive policy outcomes or the organizational and political interests of affected participants. Being alert to participants who are advantaged or disadvantaged by reform,

either in terms of their substantive policy interests or their political and organizational stakes, is important to understanding who will support or oppose an institutional alternative, as well as what the ultimate effects of that alternative will be.

#### 4.3.6 Other Analytic Steps

##### Valuing Outcomes/Choosing Alternatives

These steps of the analytic procedure are almost intuitive steps in an institutional design problem, especially when compared to the manner in which these steps could be carried out in a piece of quantitative analysis. In that sort of policy analysis, the formal techniques of cost benefit analysis, utility theory, and decision analysis are available to handle the problem of making analytic tradeoffs among differing objectives, to handle the problem of uncertainty in outcomes, and so forth. The explicit objective of using these analytic tools is to make a "value-maximizing" decision, a choice of the best alternatives. In the complexities of an institutional design problem, one is ordinarily looking for a satisfactory alternative, one which achieves some minimum level of performance on each objective.

##### Implementation

Following a choice of an institutional alternative, the task becomes to put it into effect. An "implementation plan" is a strategy for doing just that, and is discussed at more length by Allison.<sup>25</sup>

##### Evaluation

After an alternative has been implemented the task is to figure out whether it is working. The procedure of evaluating existing programs is quite similar to the procedure of analyzing prospective alternatives, and used much of the same logic and tools discussed earlier.

## CHAPTER 5

### POLICY ANALYSIS AND INSTITUTIONAL ANALYSIS

In Chapter 1, we asserted that institutional analysis can complement "traditional" policy analysis and its heavy reliance on concepts drawn from microeconomics, decision theory, and engineering. In Chapters 2, 3, and 4 we discussed the contents and methods of institutional analysis. In this chapter, we return to the original argument by attempting to show how these techniques can improve the quality of policy analysis. This task is both presumptuous and difficult. It is presumptuous because there is obviously no one approach to traditional policy analysis. Any brief depiction courts caricature and runs the risk of creating a straw man. It is difficult because countless others before us have identified problems with traditional policy analysis and proposed solutions. Both the problems and the solutions have strong affinity with the problems and solutions addressed by institutional analysis, but they are not the same.

To sort through these difficulties, we have adopted the following approach. In Section 5.1, we sketch one widely taught version of traditional policy analysis. In Section 5.2, we identify some of the shortcomings various authors have attributed to the traditional approach, and in Section 5.3 their proposed solutions. In Section 5.4 we describe roles that institutional analysis can play both in complementing traditional policy analysis and in applying techniques others have proposed to address its shortcomings.

#### 5.1 THE BASIC POLICY ANALYSIS PROCESS

The policy analysis process consists of a series of steps that should be considered in analyzing alternative government policies. The steps suggested below, or variants of them, are currently being taught in many schools of public policy or policy analysis around the country, notably the John F. Kennedy

School of Government at Harvard, the Woodrow Wilson School at Princeton, the Institute for Public Policy at Michigan, and the School of Policy Analysis at the University of California at Berkeley. Stokey and Zeckhauser discuss these steps in A Primer for Policy Analysis.<sup>1</sup> They are:

1. Defining objectives
2. Designing alternatives
3. Predicting consequences (usually through the use of one or more models)
4. Evaluating consequences
5. Choosing an alternative
6. Implementing the chosen alternative
7. Monitoring the results

The rest of this chapter discusses these steps.

#### 5.1.1 Defining Objectives

The analyst examines the status quo in order to determine what the objectives of government policy should be. As already discussed in Chapter 2, Richard Elmore has suggested that the most effective way to conduct this examination is to note the specific low level behaviors that give rise to the problem, and note what changes in those behaviors are necessary for the problem to be solved.<sup>2</sup> Others, such as Howard Raiffa,<sup>3</sup> favor the formulation of broad goals and derivation of specific objectives as deductions from those goals. Some analysts emphasize changes in the state of the world with respect to the problem; other analysts emphasize changes in the position of the government vis-a-vis the problem. Tradeoffs have to be made between short-run and long-run objectives and personal and public ones.



### 5.1.2 Designing Alternatives

In designing alternatives, the analyst addresses the question: what, if anything, can the government do about the problem? The imaginative design of a rich set of alternative policies is probably the most important step in policy analysis.<sup>4</sup> It is also probably the least studied, the least taught, the least susceptible to formal analytic techniques, and the least well done.<sup>5</sup> At a minimum the analyst should try to avoid construing the breadth of available options too narrowly. For example, instead of thinking only about alternative regulatory approaches, he or she should at least consider alternatives to regulation (such as market activity or exhortation). Of course, the analyst is often constrained in designing alternatives--by statutory authority, by the capabilities of implementing organizations, by political considerations. Still, the limits to the analyst's own inventiveness are probably a more powerful constraint than are generally recognized.

### 5.1.3 Predicting Consequences

Ideally the analyst predicts the consequences of the alternatives in terms of specific objectives. However, objectives are often qualitative or otherwise hard to measure, and so predictions are made at first in terms of more measurable items.

In making these predictions, the analyst will often try to use a variety of explicit models. These models will embody descriptions of the processes at work. For instance, they might include engineering models of an energy conversion technology. They might include economic models of the business transactions involved in commercializing a technology. They might also include sociological or psychological models of the processes involved in consumer choice.

#### 5.1.4 Evaluating Consequences

Because nature is complex and resources are limited, one alternative will rarely dominate another in the sense that it is better than the other on all objectives. Instead, some alternatives will be better on some objectives and others will be better on other objectives. Therefore, in evaluating consequences, the analyst assigns weights to the performance of each objective, compares the performance of each alternative with respect to each objective, and then scores each alternative in terms of its weighted performance.

#### 5.1.5 Choosing an Alternative

As an intellectual exercise, evaluation of alternatives is neither easy nor mechanical because it requires making tradeoffs between incommensurate objectives. Real life choice may be even more complicated, because the analyst or those whom the analyst represents may be only a small part of the decision process. The analyst or his or her organization could have a preferred objective, but given that they do not have total choice, they will have to worry about considerations like coalition behavior and strategic voting to ensure that the final result is as much to their liking as possible.<sup>6</sup>

#### 5.1.6 Implementing the Chosen Alternative

In real time, the policy analyst's task ends before an alternative is implemented. Implementation, by definition, is left to the executives, managers, and operators within the public and private organizations charged with carrying out the chosen policy. In conceptual time, however, implementation should be a principal concern of the analyst.<sup>7</sup> In translating policy into actions and eventually outcomes, the implementation process critically affects performance. The analyst who ignores implementation is likely to seriously misstate the costs and benefits of alternative policies.

### 5.1.7 Monitoring the Results

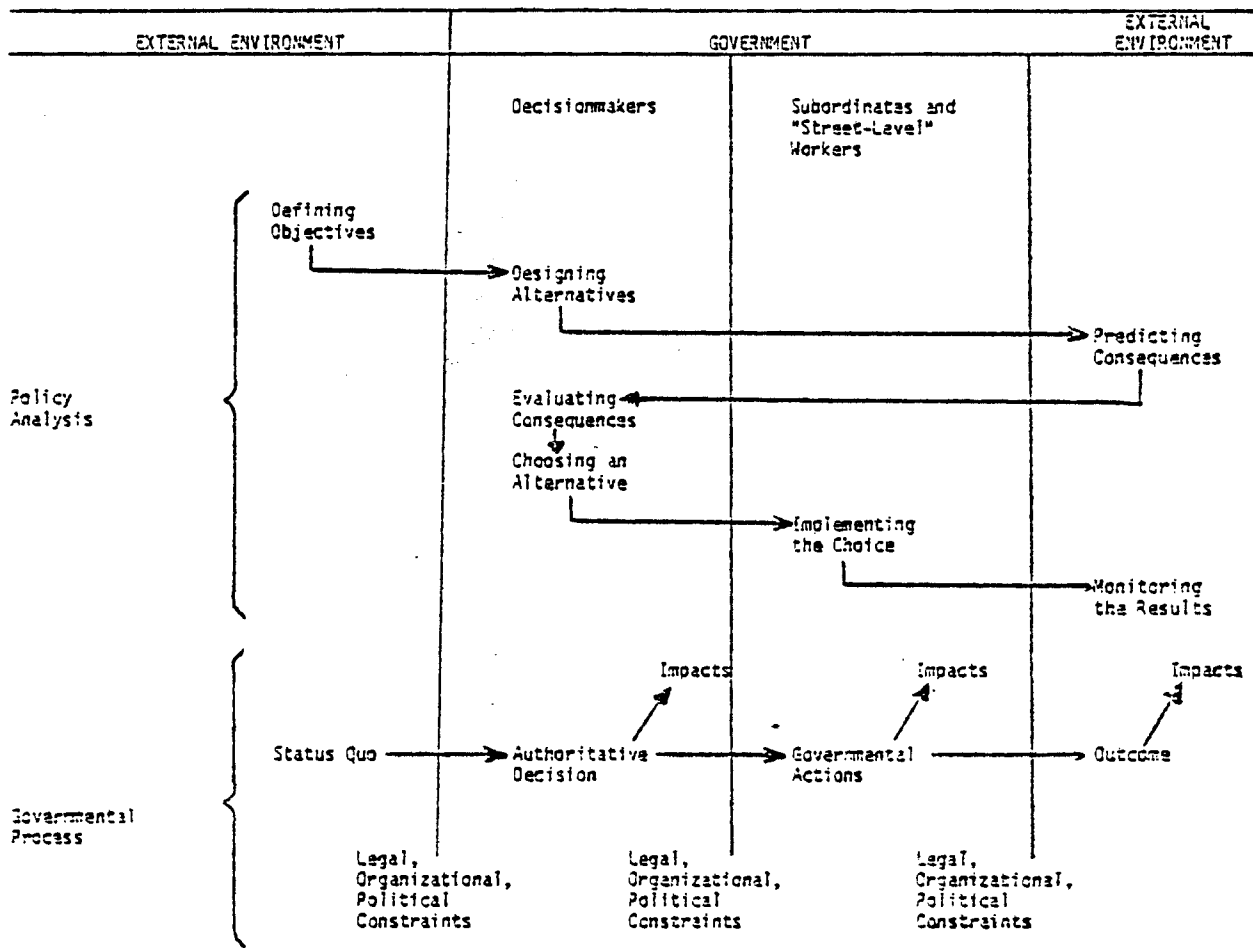
As with implementation, monitoring results is not itself an analytic task. Again, however, the analyst should consider whether and how performance can be monitored in designing alternatives and predicting their consequences. Because the ultimate success of a policy cannot be measured unless results can be monitored, the strong presumption ought to be that the ability to monitor results is important.

### 5.1.8 The Fit Between Policy Analysis and Government Process

Obviously, policy analysis does not exist in a vacuum. It serves the governmental process for moving from the status quo to an authoritative decision to governmental actions to outcomes (changes in the status quo). Figure 5.1 illustrates the relationship of policy analysis to the governmental process. Objectives are defined with respect to desired change in the status quo in a portion of the external environment (such as energy markets). Alternatives are designed as different authoritative decisions the government could reach to achieve objectives. Consequences are predicted in terms of probable outcomes in the external environment. Consequences are evaluated and an alternative chosen in the form of an authoritative decision (such as Congressional legislation or an executive order). Choices are implemented through government actions. Results are monitored as outcomes and impacts in the external environments.

## 5.2 PROBLEMS OF THE BASIC POLICY ANALYSIS PROCESS

Unquestionably, the traditional policy analysis paradigm is a powerful tool for structuring problems of public choice. Yet practically since its early development at RAND and other institutions in the 1950s, and its application to problems of defense policy by the Pentagon's Systems Analysis Office in the 1960s, the process has prompted reservations and



**FIGURE 5.1.** The Fit Between Policy Analysis and the Governmental Process

criticism.<sup>8</sup> Indeed some of the most thoughtful criticisms have come from leading developers and practitioners of policy analysis such as Charles J. Hitch and James R. Schlesinger.<sup>9</sup> The more prominent criticisms include the following: that individuals and organizations typically lack the resources to perform policy analysis as traditionally conceived, that policy analyses that do get performed ignore problems of implementation, and that analysts and decisionmakers typically neglect the "gap" between actions and outcomes.

#### 5.2.1 Limited Resources

Academic theorists have long stressed the inability of individuals and organizations to gather, analyze, and act on large quantities of uncertain information. In the case of individuals, this inability stems from the limited mental capacity of human beings and the psychological tendency to avoid complexity, especially if it is threatening. In the case of organizations, resistance to analytic problem-solving stems from the practice of factoring problems into small pieces, thereby precluding high-level optimization, and from the human-like tendency to avoid complexity.<sup>10</sup> More mundanely, government officials typically lack the time, money, and staff to undertake comprehensive analyses of even the major decisions, much less the day-to-day choices, that often cumulate to yield "policy."

#### 5.2.2 The Implementation Problem

As innumerable case studies demonstrate, and as we have argued above, decisions are rarely self-executing. Choice of a policy alternative does not ensure that appropriate government agencies will take necessary actions. Policy analysis seems poorly equipped to cope with this obvious truth: first, because "soft" or "unquantifiable" data bearing on implementation are tempting to exclude from the analysis; second, because policy analysis techniques have little to say

about how such factors could be included; third, because the logic of policy analysis tends to perpetuate an illusion of hierarchical control that masks autonomy and leads to systematically low estimates of implementation problems even when they are recognized. Thus from the standpoint of implementation, traditional policy analysis may lead to worse results than no analysis at all.

### 5.2.3 The Output Fallacy

Just as policy decisions do not automatically result in necessary government actions, government actions do not automatically result in desired results. Outputs do not equal outcomes. Traditional policy analysis tends to overlook this fact, in two ways. First, policy analyses tend to define objectives in terms of outputs rather than outcomes. Second, even when an analysis does define objectives appropriately--in terms of outcomes--it typically neglects the causal linkages between action and outcome, and thus tends to underestimate the difficulty of translating actions into outcomes. In both cases, the analysis can lead to the wrong choice, relative to what would have been chosen had the objectives been appropriately defined in terms of outcomes and the difficulties of achieving outcomes appropriately estimated.

## 5.3 SOLUTIONS TO PROBLEMS OF THE BASIC POLICY ANALYSIS PROCESS

Numerous analysts have proposed various fixes to address problems of traditional policy analysis. Indeed, many solutions have come from the tradition itself--Stokey and Zeckhauser for example stress the importance of formulating objectives concretely and of tending to implementation. Other solutions have come from outside the tradition.

### 5.3.1 "Muddling Through"

In a classic 1959 article, Charles Lindblom formulated a strong alternative to the basic policy analysis process, an approach he labeled "muddling through" or the method of

"successive limited comparisons."<sup>11</sup> Addressed explicitly at the limited resources problem, Lindblom's approach also takes note of the pervasive difficulty of agreement on and ranking of objectives in many policy contexts. Accordingly, he proposes an approach that differs from traditional policy analysis at almost every step of the way. Whereas traditional policy analysis first formulates and ranks objectives, his approach defers this task and makes it implicit rather than explicit. Whereas traditional policy analysis identifies a large set of wide-ranging alternatives, his approach concentrates on a few incremental adjustments from present practice. Whereas traditional policy analysis often calls for heavy use of economic and other models to predict consequences of alternatives, his approach relies primarily on past experience. Whereas traditional policy analysis calls for evaluation of consequences with respect to objectives, his approach calls for choosing the policy directly by agreement among participants (and thereby only revealing something about their preferences and their relative importance). While advanced as a solution to the problem of limited resources, muddling through also addresses the implementation problem. It addresses the implementation problem by emphasizing the importance of agreement on policy by participants (which enhances the prospects that appropriate actions will be taken), by focusing on alternatives that depart only modestly from present practice (which are easier to implement and less likely to encounter opposition), and by relying heavily on experience to predict consequences (which is often more reliable than models).

### 5.3.2 "Multiple Perspectives"

Allison, Steinbruner, and others have stressed the importance of multiple perspectives in addressing policy problems.<sup>12</sup> Primarily, the use of multiple perspectives addresses the implementation problem. The analyst

adopts several alternative perspectives, models, or paradigms that describe how governments act. For example, Allison offers Model I (value maximization), Model II (organizational output), and Model III (political resultant). Steinbruner offers the analytic paradigm and the cybernetic paradigm, which are closely akin to Models I and II. In predicting the consequences of a policy alternative, the analyst gauges the likely response of government agencies and other participants to the alternative according to one perspective, and then performs the exercise with one or more other perspectives, and then performs the exercise with one or more other perspectives. This process leads the analyst to focus on factors that might have otherwise eluded his or her attention. It is also a form of sensitivity analysis. If one or more perspectives reveals major implementation difficulties, the alternative probably has to be modified or abandoned. The technique of using multiple perspectives also addresses to some degree the limited resources problem. It offers several armchair models for predicting policy consequences that do not require a great deal of data or information processing capacity (especially if the analyst is familiar with the government agencies involved).

### 5.3.3 Implementation Analysis

Not surprisingly, implementation analysis primarily addresses the implementation problem. Its classic formulation by Allison essentially seeks to remedy the inattention of traditional policy analysis to implementation problems at each stage of the process.<sup>13</sup> Implementation analysis thus constitutes a "missing chapter" to traditional policy analysis. Among other things, implementation analysis should lead the analyst to identify operational factors that may affect the costs and benefits of an alternative, adjust cost-benefit estimates in light of these factors, and redesign initial alternatives (as specified by traditional policy



analysis) to incorporate implementation concerns.<sup>14</sup> Although in principle, these techniques could help address the outcome fallacy as well, the specific steps described by Allison (and others) offer little help beyond the injunction to work the problem all the way to outcomes.<sup>15</sup> Thus this advice is presented in the context of getting the traditional part of the analysis right.

#### 5.3.4 Backward Mapping

While the outcome fallacy may be a peripheral concern in Allison's version of implementation analysis, it is a fundamental concern in Elmore's version, labeled "backward mapping."<sup>16</sup> True, Elmore is concerned with the implementation problem, roughly as we have defined it: "the implicit and unquestioned assumption that policymakers control the organizational, political, and technological processes that affect implementation."<sup>17</sup> But he is especially concerned with what we have labelled the output fallacy, or what he would call the failure to state "the specific behavior at the lowest level of the implementation process that generates the need for a policy."<sup>18</sup> His solution is to reverse the order of the analysis: that is, to start with the outcome and work back to a policy that will achieve it, while paying close attention to the sorts of operational factors discussed in Allison's version of implementation analysis. Elmore's approach incidentally addresses the limited resources problem as well: it tends to focus the analysis quickly on realistic alternatives.

(In diagnosing the problem, Elmore confusingly and unaccountably confounds the practice of starting with objectives and working through to outcomes with the failure to attend to implementation problems--labelling the combined pitfalls "forward mapping." The two are not necessarily related. Allison's version of implementation analysis, for example, starts with objectives. Although a case could be made

that starting "objectives first" leads to improper estimation of implementation problems, the case is not obvious.)

### 5.3.5 Market Perspective

Yet another solution to the output fallacy is less an approach than an emphasis: always to give serious consideration to policies that rely on market incentives to achieve outcomes. Thoughtful expositors of this perspective include Charles Schultze and Richard Nelson.<sup>19</sup> An implication of their arguments holds that appropriate use of economic incentives can reliably produce desired outcomes, relieving the analyst from the necessity of specifying elaborate mechanisms for translating actions into outcomes and relieving society of the cost of paying for such mechanisms.

## 5.4 ROLES INSTITUTIONAL ANALYSIS CAN PLAY

No form of institutional analysis--institutional mapping, institutional assessment, institutional planning--is an alternative to policy analysis per se. Nor is institutional analysis simply another solution to the problems of traditional policy analysis. Rather institutional analysis can make important contributions both to policy analysis and to the various approaches for dealing with its problems.

### 5.4.1 Institutional Analysis and the Basic Policy Analysis Process

Institutional analysis has roles to play in each of the steps of traditional policy analysis, as previously described.

Institutional analysis has at least two major uses in defining objectives--identifying whose objectives are important and identifying institutional objectives.

More than one decisionmaker is almost always involved in choosing alternatives and carrying them out. As a consequence, the objectives of individuals and organizations other than the analyst are important for solving policy problems.

Institutional analysis, particularly institutional mapping, can be useful in identifying whose objectives are going to be important, these methods also provide some insight into what the objectives are likely to be.

Institutional analysis, particularly institutional assessment can help the organizations choose objectives. Such analysis can help in identifying legal objectives, organizational objectives, and political objectives. Some of these objectives arise because the analyst has to pay attention to how the chosen alternative will be implemented. Others arise because the policy problem occurs in an institutional context, and the analyst or at least some of the participants may care about the impact of the context.

#### In Designing Alternatives

Institutional analysis, particularly institutional planning, can help in designing alternatives for solving the policy problem. These institutional alternatives can be either institutional variants of existing alternatives or entirely new ones.

An example of an institutional variant of an existing alternative is the difference between doing something by statute and doing it by administrative regulation. Another example is the difference between having one organization do something and having another organization do it. Yet another is the difference between seeking to have the choice of alternatives made in one political context (such as one congressional committee) versus another (such as another congressional committee).

Entirely new institutional alternatives involve the creation of activities, participants, or connections among them. For instance, the government may want to form a new organization to deal with some problems. It may want to sponsor new forms of economic or other groups. These

alternatives would create new participants in the policy sector surrounding the problem.

The alternatives could also be to create new activities. For instance, opening government land for uranium exploration creates a whole new set of activities. Establishing a testing and certification program for new products creates a whole new set of activities. Requiring new procedures for government decisionmaking, (such as the preparation of an environmental impact statement) has created whole new sets of legal activities.

New institutional alternatives will include new connections among participants and activities. New activities, such as the preparation of an environmental impact statement, may be required of existing participants. Some reorganizations do not create new organizations but merge old ones. Other activities encourage political interest groups to form coalitions, while other alternatives change the order in which activities take place.

#### In Predicting Consequences

Institutional assessment is useful in predicting the consequences of alternatives. It is particularly useful when the gap between the authoritative decision and the final outcome is filled with many organizations that must take actions. This situation arises whenever the federal government requires state and local governments to participate in achieving the desired objectives. In other words, the existing participants, their activities and connections, may function so as to "warp" an outcome that would be expected according to economic or engineering models. This form of institutional analysis is useful in looking for the potential for this divergence and suggesting what it might produce.

### In Evaluating Consequences

Institutional analysis is helpful in evaluating consequences in the same way it is helpful in defining objectives: first, it helps the analyst identify whose evaluations are important; second, it may also suggest how the participants will make those evaluations; third, it is useful in adding institutional components to evaluation; and finally, it offers some help in deciding on weights for various objectives. For instance, the legal doctrine of precedent suggests that a weighting used in the past has some claim to be used again, unless the situation is entirely different, and the political viewpoint may suggest whose objectives should be weighted more heavily than others.

### In Choosing Alternatives

Institutional analysis, especially institutional mapping, can help in choosing an alternative. It helps in identifying who will make the choice; and it helps in describing the process of choice. Once again, the participants include governmental, economic, and interest group ones. The choice processes include legal, organizational, and political ones.

Another way in which institutional analysis can help in choosing an alternative is to bring to light the institutional embodiments of choice, so that the analyst can know when an authoritative decision has in fact been made. In other words, there are legal, organizational, and political signs that a choice has been made. A new law will appear, new organizational procedures will function, and new, as opposed to old, political conflicts will arise.

### In Implementing the Choice

Institutional analysis, particularly institutional assessment, can make a major contribution to the task of analyzing the implementation of a chosen alternative. One can use institutional assessment to identify the barriers to the

implementation of a chosen alternative and the likely divergence between expected and actual results. If the alternative is still the one to be chosen, even given these constraints, the analyst can use this form of institutional planning to help design methods to overcome these constraints.

#### In Monitoring the Results

Institutional analysis, particularly institutional assessment and institutional planning, can help in the task of monitoring results. First, institutional assessment can suggest the institutional phenomena that might need to be monitored. Second, institutional planning can suggest institutional alternatives for performing the monitoring. For instance, legal requirements for reporting; organizational procedures for conducting site reviews; political requirements for congressional testimony about results.

#### 5.4.2 Institutional Analysis and Solutions to the Problems of Policy Analysis

Institutional analysis has a strong affinity with many of the solutions to the problems of policy analysis, as discussed above. Nonetheless, institutional analysis is not simply another solution or a reformulation of existing solutions. Rather it has distinctive roles to play in each.

#### In "Muddling Through"

Institutional analysis can support muddling through in roughly the same ways it can support institutional analysis. Recall that muddling through still requires the specification of alternatives, the prediction of consequences, the choice of a policy, and the implementation of the choice. Institutional mapping can help identify alternatives by describing current practice and possibilities for incremental change. Institutional assessment can improve prediction of consequences by giving some formal structure and logic to drawing on "lessons of the past." All three forms of institutional

analysis can help identify whose agreement will be required in reaching a choice and the likely responses of each participant to the various alternatives. Institutional assessment and institutional planning can support implementation analysis, as described below.

#### In Using Multiple Perspectives

The primary contribution of institutional analysis to the use of multiple perspectives is the introduction of a new perspective: the legal viewpoint. Especially in the prediction of consequences, use of the legal viewpoint can alert the analyst to constraints and opportunities not captured by any of Allison's models or Steinbruner's paradigms.

#### In Doing Implementation Analysis

It would be incorrect to assume that institutional analysis in general or institutional assessment and planning in particular are synonymous with implementation analysis. In a nutshell, implementation analysis is a specific step in (or addition to) policy analysis, while institutional analysis could be a part of every step.

The history of each term is admittedly confusing. Implementation analysis arose as an attempt to explain why decisions based on technical or economic analysis were not adopted, did not become programs, or did not achieve societal outcomes. Because the original analyses were technical or economic, the factors most often left out were institutional ones. Therefore, these institutional factors had to be a part of those implementation analyses. Allison's analysis of the Cuban missile crisis,<sup>20</sup> Steinbruner's analysis of the multilateral force,<sup>21</sup> and Coulam's analysis of the F-111 procurement<sup>22</sup> all fall into this pattern.

However, implementation analysis need not be limited to institutional analysis. In fact, one can interpret Elmore's discussion of youth employment programs as a call for

implementation analysis involving economics rather than institutional analysis.<sup>23</sup> Government officials often focus more on laws, organizations, and politics than they do on the physical or economic phenomena. Thus institutional analysis forms a part of implementation analysis, but not the only part.

#### In Backward Mapping

As with implementation analysis generally, institutional analysis can contribute to backward mapping, but the two terms are not synonymous. Steps in a backward map can include technological or economic steps as well as institutional ones. Similarly, backward mapping can contribute to institutional analysis--especially institutional assessment and institutional planning--by providing a logic and structure for these approaches, as discussed above.

#### In Applying Market Perspectives

Institutional analysis has three main roles to play in applying market perspectives. One, it helps identify particular market mechanisms that might be used. Two, it offers some perspective on how results might differ from those expected on the basis of economic analysis. Three, it highlights the difficulties that may arise in getting market oriented policies adopted and implemented because of legal, organizational, and political factors.

### 5.5 THE COMPARATIVE ADVANTAGE OF INSTITUTIONAL ANALYSIS

Of all of these ways of using institutional analysis, three are most important in the sense that institutional analysis has a comparative advantage over the alternatives. Most important is the use of institutional analysis in the task of implementing the choice. The second most important is the use of institutional analysis in predicting consequences. The third is the use of institutional analysis in designing alternatives.



### 5.5.1 Implementing the Choice

Institutional analysis has its biggest comparative advantage in this task because the task is often overlooked and institutional analysis emphasizes it. The important contributions of institutional analysis are in identifying constraints to implementation and in designing methods to overcome those constraints.

### 5.5.2 Predicting Consequences

The most important contribution of institutional analysis to this task is the emphasis that institutional analysis gives to the potential divergence between results expected on the basis of economic or engineering models and actual results. Beyond that, the important contribution of institutional analysis is to give the analyst a way to think about where such divergences most likely are to occur and what forms they are likely to take when they do occur.

### 5.5.3 Designing Alternatives

At least one widely published policy analyst has suggested that the most important contribution of policy analysis to government decisionmaking is its capacity for suggesting new alternatives.<sup>24</sup> Institutional analysis probably makes its most important contribution to this task not in suggesting entirely new alternatives, but in suggesting the institutional variants to alternatives already proposed.

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5. Graham T. Allison, "Implementation Analysis: 'The Missing Chapter' in Conventional Analysis. A Teaching Exercise" in Benefit-Cost and Policy Analysis, edited by Richard Zeckhauser, et al. (Chicago: Aldine Publishing Company, 1974), p. 386.
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10. Hart and Sacks, The Legal Process, pp. 718-723.
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13. 42 USC 6831 et seq.
14. 44 et. R. 68120 - 68181 codified as 10 CFR 435.

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16. 5 U.S.C. 500-576; 701-706. Most states have enacted a similar statute.
17. 5 U.S.C. 553 (b)-(c).
18. 5 U.S.C. 553 (c), 556-557.
19. See Richard B. Stewart, "Vermont Yankee and the Evolution of Administrative Procedure," 91 Harvard Law Review (1978):1805, 1811-1814.
20. Vermont Yankee Nuclear Power Corp. v. Natural Resources Defense Council 98 S. Ct. 1197, 1211-1214 (1978).
21. See Clerk Byse, "Vermont Yankee and the Evolution of Administrative Procedure: A Somewhat Different View," 91 Harvard Law Review (1978):1823.
22. See Richard B. Stewart, "The Reformation of American Administrative Law," 88 Harvard Law Review (1975): 1669, 1752-1756, and the cases cited therein, especially Medical Committee for Human Rights v. SEC, 432 F.2d 659 (D.C. Cir. 1970), vacated as moot, 404 U.S. 403 (1972) (rejecting SEC's refusal to formally investigate DOW Chemical's exclusion of certain matters from management's proxy materials) and Environmental Defense Fund, Inc. v. Ruckelshaus, 439 F.2d 584 (D.C. Cir. 1971) (requiring EPA to institute formal proceedings to cancel the registration of DOT).
23. 42 U.S.C. 2239 (a).
24. Stewart, "Reformation of American Administrative Law," pp. 1751.
25. 42 U.S.C. 4321-4361.
26. 42 U.S.C. 4332 (c).
27. 5 U.S.C. S.
28. 28 U.S.C. 1331.
29. Hart and Sacks, The Legal Process, pp. 664-669.
30. Hart and Sacks, p. 374.
31. Poe v. Ullman, 367 U.S. 497, 509 (1961), quoted in Laurence H. Tribe, American Constitutional Law. (Mineda, N.Y.: The Foundation Press, 1978).

32. Tribe, pp. 56-57.
33. Hart and Sacks, The Legal Process, pp. 161-171.
34. Hart and Sacks, The Legal Process, p. 1411.
35. Hart and Sacks, The Legal Process, pp. 1413-1416.
36. Hart and Sacks, The Legal Process, p. 1411.
37. 5 U.S.C. 701-706.
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42. See Stewart, "Vermont Yankee" pp. 1811, and Stewart, "Reformation of American Administrative Law," pp. 1756-1760, 1781-1785 and cases noted thereunder.
43. Vermont Yankee, 98 S. Ct. 1214.
44. Strycker's Bay Neighborhood Council, Inc. v. Karten.
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60. Allison, Essence of Decision, p. 82.
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63. Allison, Essence of Decision, p. 84.
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90. Allison, Essence of Decision, pp. 162-163, 173.

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2. Mark Moore developed this term in the classes he taught at the Kennedy School of Government at Harvard University.
3. Richard F. Elmore, "Policy Paper: The Youth Employment Delivery System," Paper prepared for the Vice President's Task Force on Youth Employment, August, 1979.
4. Paul Berman, "The Study of Macro- and Micro-Implementation," Public Policy 16 (Spring, 1978):157-183, 165.
5. Elmore, "Mapping Backward," especially pp. 5-6. Elmore, "Policy Paper," especially p. 7.
6. See Joel Primack and Frank Van Hippel. Advice and Dissent. (New York: Basic Books) 1974.
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12. Also see Jeffrey L. Pressman and A. Aaron Wildavsky, Implementation (Berkeley, CA: University of California Press, 1973), and Alfred Marcus, Promise and Performance: Choosing and Implementing an Environmental Policy. (Westport, CT: Greenwood Press) 1980.

13. Elmore, "Mapping Backward," especially pp. 5-6.
14. Graham T. Allison, "Implementation Analysis: 'The Missing Chapter' in Conventional Analysis. A Teaching Exercise: in Benefit-Cost and Policy Analysis, edited by Richard Zeckhauser, et al. (Chicago: Aldine Publishing Company, 1974), p. 371.
15. Berman, "The Study of Micro and Macro-Implementation," p. 165.
16. Pressman and Wildavsky, Implementation.
17. This example is adapted from a lecture given by Randall Smith to a number of officials involved in nuclear waste management.
18. Note also that in some states, such as Texas and Ohio, the Attorney General supervises the function of environmental review within state government. This function, including the review of the adequacy of environmental impact statements is most often found within the executive agency answerable to the Governor, but not always.
19. The formal role of this office in dealing with the waste repository may not turn out to be decisive, since its role in non-Agreement states is largely a matter of controlling sources of radiation not regulated by the Atomic Energy Act, and in Agreement states its role is restricted in important ways. But the officials within this organization are likely to have as much interest and involvement with potential waste repositories as anyone within the state.
20. When this sentiment was voiced at the NRC's Atlanta meeting in January 1979, the state officials that voiced it seemed not even to be particularly concerned about the problems of a regulatory and a regulated activity being part of the same organization, the defect that many saw in the old Atomic Energy Commission.
21. Graham T. Allison, Essence of Decision: Explaining the Cuban Missile Crisis. (Boston: Little Brown, 1971) p. 178.



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4. See Frederic A. Morris, et al., Institutional Barriers to Developing Power Generation Facilities in the Pacific Northwest, PNL-RAP-36/ (Battelle Pacific Northwest Laboratories, Richland, WA, October 1979).
5. Graham T. Allison and Morton H. Halperin, "Bureaucratic Policies: A Paradigm and Some Policy Implications," in Raymond Tauter and Richard Ullman eds., Theory and Policy in International Relations (Princeton: Princeton University Press, 1972), pp. 44-45.
6. Allison and Halperin, pp. 44-46.
7. Paul Berman, "The Study of Macro- and Micro-Implementation Public Policy," (Spring 1978):167.
8. Richard F. Elmore, "Mapping Backward: Using Implementation Analysis to Structure Policy Decisions," paper presented at the annual meeting of the American Political Science Association, Washington, D. C., September 1979.
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10. Exec. Order No. 12,044, 43 Fed. Reg. 12,661 (1978).
11. Exec. Order No. 12,074 43 Fed. Reg. 36785 (1978).
12. Exec. Order No. 12,044 Sec. 3; Office of Management and Budget, Urban and Community Impact Analysis, 43 Fed. Reg. 37779 at 37780 (1978).
13. Council on Environmental Quality, NEPA Regulations -- Terminology, 43 Fed. Reg. 56003 (1978) (to be codified in 40 C.F.R. 1509.8).
14. McDowell v. Schlesinger, 404 F. Supp. 221, 6 Envir. L. Rep. 20224 (W. D. Mo. 1975), Breckenridge v. Rumsfeld, 537 F.2d 864, 6 Envir. L. Rep. 20597 (6th Cir. 1976).

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16. See Pietro Nwola, "Passage of the Natural Gas Policy Act of 1978," paper presented at the 1979 American Political Science Association Convention.
17. Allison, Essence of Decision, p. 89.
18. On the notion of compatibility see, E. MN. Rogers, Communication of Innovations.
19. Morton H. Halperin, Bureaucratic Politics and Foreign Policy (Washington, D.C.: The Brookings Institution, 1974), pp. 26-27.
20. Allison, Essence of Decision, pp. 144-147.
21. See for example Richard F. Elmore, "Backward Mapping: Implementation Research and Policy Decisions," Political Science Quarterly, Winter 1979-80, which comes down squarely in favor of backward mapping.
22. James Q. Wilson, "The Politics of Regulation," as reprinted in Robert L. Rabin, Perspectives on the Administrative Process (Boston: Little, Brown and Company, 1979), p. 92.
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24. Wilson, p. 94.
25. Wilson pp. 94-95.
26. Wilson, pp. 95-98.
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28. Morton H. Halperin, Bureaucratic Politics and Foreign Policy (Washington, D.C.: The Brookings Institution, 1974), pp. 101-104.
29. These questions are adapted from Graham T. Allison and Frederic A. Morris, "Armaments and Arms Control: Exploring the Determinants of Military Weapons," in Franklin A. Long and George W. Rathjeus eds., Arms, Defense Policy and Arms Control (New York: Norton, 1976) pp. 106-107.

30. For CIA's estimates, see "CIA Sees Global Oil Output Peaking," Oil & Gas Journal (April 28, 1980):50; skepticism about the estimates has been expressed to the authors by a State Department official.
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39. 98 S. Ct. 1197 (1978).
40. The labels are Bardach's.
41. Allison and Halperin, p. 54; Bardach, p. 181; Berman, p. 169.
42. Bardach, p. 139.
43. Elmore is a firm advocate of relying on "capacity", rather than control.
44. See Bardach, 140.
45. Halperin, pp. 39-40.
46. Halperin, p. 51.
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54. Berstein, p. 115.
55. Bernstein, pp. 116-117.
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57. Bernstein, p. 106.
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59. Fuel Use Act.
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81. Breyer, p. 565.
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83. See James Q. Wilson, "The Rise of the Bureaucratic State," as reprinted in Rabin, pp. 27-28; Charles Reich, "The New Property," as reprinted in Rabin, pp. 36-37, 55-56.
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4. Flesch, p. 235.
5. Richard F. Elmore, "Mapping Backward: Using Implementation Analysis to Structure Policy Decisions," paper presented at the annual meeting of the American Political Science Association, Washington, D.C., September 1979.
6. Paul Tillich, Dynamics of Faith. (New York: Harper & Row, 1957).
7. Graham T. Allison, "Implementation Analysis: 'The Missing Chapter' in Conventional Analysis. A Teaching Exercise," in Benefit-Cost and Policy Analysis, edited by Richard Zeckhauser, et al. (Chicago: Aldine Publishing Co., 1974).
8. see Chapter 3, Section 1, 3.2.2.
9. See, for example, B.W. Cone et al. An Analysis of Federal Incentives Used to Stimulate Energy Production. PNL-2410 Rev. II Prepared for the Department of Energy, Battelle Pacific Northwest Laboratory, Richland, WA, February 1980, pp. 40-49.
10. Harold Seidman, Politics, Position, and Power. (New York, Oxford University Press, 1970,) pp. 295-235.
11. As Pressman and Wildavsky put it, "If policy analysts carry bumper stickers, they should read, "Be Simple! Be Direct!" Jeffrey L. Pressman and Aaron Wildavsky, Implementation (Berkeley: University of California Press, 1973), p. 150.
12. Richard F. Elmore, "Policy Paper: The Youth Employment Delivery System," Paper prepared for the Vice President's Task Force on Youth Employment, August, 1979, and Richard F. Elmore, "Complexity and Control: What Legislators and

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13. See Eugene Bardach, The Implementation Game (Cambridge, MA: The MIT Press, 1977), pp. 129-132.
14. Ernest R. May, "Lessons" of the Past: The Use and Misuse of History in American Foreign Policy. (New York, Oxford University Press, 1973).
15. Jacques Barzun and Henry F. Graff, The Modern Researcher, Third Edition. (New York: Harcourt, Brace, Jovanovich, 1977).
16. This section comes, with little revision from a previous version written by Randall F. Smith.
17. Leadership in Administration (New York: Harper and Row, 1957) views "leadership" as defining "the ends of group existence," designing an "enterprise distinctively adapted to those ends," and energy "that the design becomes a living reality." See pp. 36-37. Also see Alfred D. Chandler Strategy and Structure (Cambridge, Mass.: MIT Press, 1962). Chandler, on the basis of historical investigations of big business, views reorganization in terms of the "trials of the harassed executive faced with novel and complex problems" (p.4). In response to these problems the executive determines "basic long term goals and objectives" and establishes a "structure" to implement his goals (p. 13). In his study of federal reorganizations, Federal Organization and Administrative Management (University, Alabama: University of Alabama Press, 1971), Herbert Emmrich has a similar viewpoint. He views reorganization in terms of the chief executive adjusting the bureaucracy to changing conditions (p. 102). Maintaining that reorganization "needs to be appreciated as far more than a species of 'streamlining' . . .," he argues that it is a unique executive function of formulating "sound national policies . . . and when approved . . . (seeing) that their administration is appropriately assigned and vigorously implemented" (p. 8).
18. James W. Davis in An Introduction to Public Administration (New York: The Free Press, 1974) holds that the following actors must agree before a reorganization proposal is adopted: the president, the Office of Management and Budget, the top management in the affected organizations, and other executive branch agencies, the relevant Senate and House committees, and the relevant interest groups (p. 303). David belongs to what can be called the "politics of

reorganization school." This school holds that reorganizations "are likely to have both multiple causes and multiple effects." Of a similar persuasion are Dimock, Dimock and Koeing, who in their book Public Administration (New York: Rinehart & Co., 1958) contend that reorganization is an "implement in the struggle for power" (p. 271). It requires joint legislative/executive actions, the concurrent of existing administrative units and private interests, and the suggestions of commissioned study groups.

19. The following are various studies of how new organizations were formed to deal with a problem: the classic study is Herbert A. Simon, "Birth of an Organization: The Economic Cooperation Administration," originally printed in Public Administration Review and subsequently published as Chapter 16 of Administrative Behavior, 3rd ed; (New York: Free Press, 1976); other studies are George D. Greenberg, "Reorganization Reconsidered: The U.S. Public Health Service 1960-1973 in Public Policy 23 (Fall, 1975), pp. 482-520; Raymond J. Waldmann, "The Domestic Council: Innovation in Presidential Government" in Public Administration Review 36 (May/June, 1976), pp. 260-9; John Snyder, "The Reorganization of the Bureau of Internal Revenue: Public Administration Review. Harvey C. Mansfield, "Federal Executive Reorganization: Thirty Years of Experience," Public Administration Review 29 (July/Aug., 1969), pp. 332-345; and "William D. Ruckelhaus and the Environmental Protection Agency" in Joseph Bower and Charles Christenson (ed.) Public Management (Homewood, Ill.: Irvin, 1978), pp. 100-118.
20. For a discussion of some of the effects of these forms, see Alfred A. Marcus, Promise and Performance: Choosing and Implementing and Environmental Policy (Westport, Conn.: Greenwood Press, 1980).
21. Randall F. Smith, "Siting Nuclear Waste Repositories," Ph.D. dissertation in progress, John F. Kennedy School of Government, Harvard University, 1980.
22. Charles Lindblom. "The Science of 'Muddling Through,'" Public Administration Review 19 (Spring 1959):79-88.
23. Weaver, "Regulation, Social Policy, and Class Conflict," The Public Interest 50 (Winter 1978):45-63.
24. For a more detailed discussion of how to do that analysis, see Chapter 4 in this report on "institutional constraints" and see Allison, "Implementation Analysis, 'The Missing Chapter' in Conventional Analysis. A Teaching Exercise," in Benefit-Cost and Policy Analysis, edited by Richard



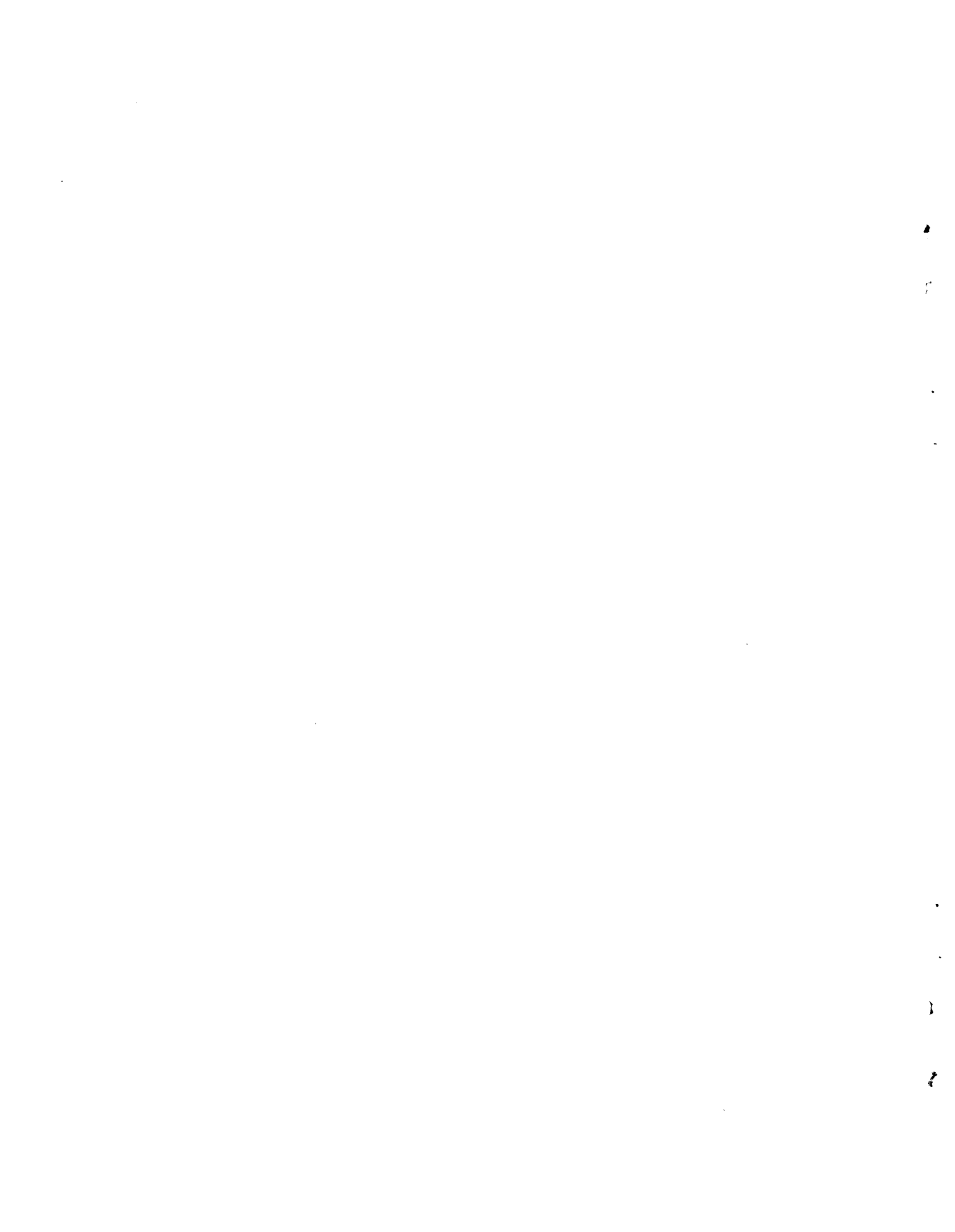
Zeckhauser, et al. (Chicago: Aldine Publishing Co., 1974). Especially p. 371.

25. Allison, "Implementation Analysis, 'The Missing Chapter' in Conventional Analysis. A Teaching Exercise," in Benefit-Cost and Policy Analysis, edited by Richard Zeckhauser, et al. (Chicago: Aldine Publishing Co., 1974).p. 19.

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2. Richard F. Elmore, "Backward Mapping: Implementation Research and Policy Decisions," Political Science Quarterly 94 (Winter 79-80):5-6.
3. Ralph L. Keeney and Howard Raiffa, Decisions with Multiple Objectives: Preferences and Value Tradeoffs. (New York: John Wiley and Sons, 1976), esp. pp. 41-43.
4. Graham T. Allison, "Implementation Analysis: 'The Missing Chapter' in Conventional Analysis. A Teaching Exercise," in Richard Zeckhauser et. al. eds., Benefit-Cost and Policy Analysis (Chicago: Aldine Pub., 1974) p. 381.
5. Richard R. Nelson, The Moon and the Ghetto (New York: Norton, 1977), especially pp. 50-52.
6. Keeney and Raiffa, Decisions with Multiple Objectives.
7. Allison, Essence of Decision: Explaining the Cuban Missile Crisis. (Boston, MA: Little, Brown, and Co., 1971).
8. Of course, the history of policy analysis has many strands. Systems analysis, developed to address defense issues, is arguably the most important. The classic example of such an analysis is the Rand "basing study". Albert J. Wohlstetter et al., Selection and Use of Strategic Air Bases, Rand R-2666 (Santa Monica, CA: Rand Corp., April 1, 1954, declassified 1962). The classic textbook is Charles J. Hitch and Roland N. McKean, The Economics of Defense in the Nuclear Age (Cambridge, MA: Harvard University Press, 1960.) Other important strands include the development of PPBS, cost-benefit analysis, and decision analysis by such scholars as Arthur Smithies, Otto Eckstein, and Howard Raiffa.
9. See for example, Charles J. Hitch, Decisionmaking for Defense (Berkeley: University of California Press, 1965) and James R. Schlesinger, Defense Planning and Budgeting: The Issue of Centralized Control, P-3813 (Santa Monica, CA: Rand Corp., May 1968).
10. The large literature on organization theory, some of which is cited in Chapter One, makes these points. See especially, Herbert A. Simon, "A Behavioral Model of Rational Choice," Quarterly Journal of Economics 69 (Feb. 1955): 99-118. and John D. Steinbruner, The Cybernetic Theory of Decision (Princeton: Princeton University Press, 1974).

11. Charles Lindblom, "The Science of 'Muddling Through,'" Public Administration Review, 19 (Spring 1959):79-88.
12. Graham T. Allison, Essence of Decision: Explaining the Cuban Missile Crisis (Boston: Little, Brown, 1971), John D. Steinbruner, The Cybernetic Theory of Decision: New Dimensions of Political Analysis. (Princeton, N.J.: Princeton University Press, 1974.) Richard F. Elmore, "Organizational Models of Social Program Implementation," Public Policy, 26 (Spring 1978):185-228, and Richard R. Nelson, The Moon and the Ghetto (New York: Norton, 1977) are also in this tradition.
13. Graham T. Allison, "Implementation Analysis: 'The Missing Chapter' in Conventional Analysis. A Teaching Exercise," in Richard Zeckhauser et al., eds., Benefit-Cost and Policy Analysis (Chicago: Aldine Publishing, 1974.)
14. Allison, "Implementation Analysis," p. 379.
15. Allison, "Implementation Analysis," p. 379.
16. Richard F. Elmore, "Backward Mapping: Implementation Research and Policy Decisions," Political Science Quarterly 94 (Winter 1979-80):601-616.
17. Elmore, "Backward Mapping," p. 603.
18. Elmore, "Backward Mapping," p. 604.
19. Charles L. Schultze, The Public Use of Private Interest (Washington: Brookings Institute, 1977); Richard R. Nelson, The Moon and the Ghetto, (New York: Norton, 1977) Chapter 3, "The Organization and Control of Economic Activity."
20. Allison, Essence of Decision.
21. Steinbruner, The Cybernetic Theory of Decision.
22. Robert F. Coulam, Illusions of Choice: The F-111 and the Problem of Weapons Acquisition Reform (Princeton, NJ: Princeton University Press, 1977).
23. Richard F. Elmore, "Policy Paper: The Youth Employment Delivery System," Paper prepared for the Vice President's Task Force on Youth Employment, August, 1979.
24. Graham T. Allison made this point several times in the courses he taught at the Kennedy School of Government at Harvard University.



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