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ADVOCACY IN TECHNOLOGY ASSESSMENT

Ernest M. Jones
November 1970



Staff Discussion Paper 263

PROGRAM OF POLICY STUDIES IN SCIENCE AND TECHNOLOGY

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I. INTRODUCTION

Increasing concern about such national and international problems as population, poverty, and pollution, and recognition that science and technology are both major causes and possible solutions of such problems have called into question the capacity of legal process to exercise its traditional control functions.¹ Especially intense, the Congress' concern has centered upon better flows of intelligence and better structural mechanisms for assessment of technological applications.² Both the problem of supplying Congress with intelligence needed for policy making respecting technological applications, and the problem of designing adequate mechanisms for Congressional assessments of technological applications are embraced by the concept, Technology Assessment Function (TAF).

1

Consider the pessimism in Banfield and Wilson, City Politics (1963), p. 344.

2

Louis H. Mayo, The Technology Assessment Function, Part I, Internal Reference Document 25 (Washington, D.C.: Program of Policy Studies in Science and Technology, The George Washington University, July 1968), pp. 1-5; Lear, "Predicting the Consequences of Technology," Saturday Review, March 28, 1970, p. 44; Lear, "Technology's Assessors," Saturday Review, April 25, 1970, p. 52; U.S. Congress, House, Committee on Science and Astronautics, Technology Assessment, statement of Emilio Q. Daddario, Chairman, Subcommittee on Science, Research, and Development of the Committee on Science and Astronautics, House of Representatives, 90th Cong., 1st Sess., 1967 (Washington, D.C.: Government Printing Office), Committee Print; U.S. Congress, Senate, Committee on Government Operations, Establish a Select Senate Committee on Technology and the Human Environment, Hearings before the Subcommittee on Intergovernmental Relations of the Committee on

The burden of this paper is to explore the contribution of advocacy to the Technology Assessment Function of legal process, particularly of Congress. For this purpose additional background of TAF and more precise conceptions of advocacy are needed.

The TAF should be distinguished from technology assessment and from technology. While for this paper a precise definition of technology is not needed, to avoid constriction to the common image of hardware, Dean Harvey Brooks' suggestion that "technology consists of codified and reproducible ways of doing things derived from rational principles"³ should be borne in mind. In the practice of technology assessment, of

Government Operations, Senate, on S. Res. 78, 91st Cong., 1st Sess., March 4, 5, 6, April 24, and May 7, 1969; U.S. Congress, House, Committee on Science and Astronautics, Technical Information for Congress, Report to the Subcommittee on Science, Research, and Development of the Committee on Science and Astronautics, House of Representatives, 91st Cong., 1st Sess., prepared by the Science Policy Research Division, Legislative Reference Service, Library of Congress (Washington, D.C.: Government Printing Office) April 25, 1969 (hereinafter cited as Technical Information for Congress); National Academy of Sciences, Technology: Processes of Assessment and Choice, Report to the Committee on Science and Astronautics, House of Representatives (Washington, D.C.) July, 1969 (hereinafter cited as Technology: Processes of Assessment and Choice); National Academy of Engineering, A Study of Technology Assessment, Report of the Committee on Public Engineering Policy to the Committee on Science and Astronautics, House of Representatives (Washington, D.C.) July, 1969 (hereinafter cited as A Study of Technology Assessment); U.S. Congress, House, Committee on Foreign Affairs, "Toward a New Diplomacy in a Scientific Age," Science, Technology and American Diplomacy, Report to the Subcommittee on National Security Policy and Scientific Developments of the Committee on Foreign Affairs, House of Representatives, 91st Cong., 1st Sess., prepared by the Science Policy Research and Foreign Affairs Divisions, Legislative Reference Service, Library of Congress (Washington, D.C.: Government Printing Office) April, 1970 (hereinafter cited as Toward a New Diplomacy in a Scientific Age).

3

Brooks, "National Science Policy and Technology Transfer," Proceedings of a Conference on Technology Transfer and Innovation, National Science Foundation, NSF 67-5, May 15-17, 1966, pp. 53-54.

course, technology is defined by the choice of the applications to be assessed, and this choice necessarily reflects the purpose for which an assessment is being made.⁴

Technology assessment is a process of inquiry directed toward identifying the effects (past, present, and future) of the application of a particular technology, evaluating the effects thus identified, developing alternatives for changing effects, and appraising the benefits and costs of each alternative.⁵ It includes the step of defining the technology and the applications of the technology whose effects are assessed. It also includes appraisals of the impacts of assessment systems. Technology assessment may take the form of policy research. Technology assessment taking this form is the particular focus of this paper.

The Technology Assessment Function (TAF), as conceived by Mayo, "refers to technology assessment activities -- in some instances to the

4

On the problem of defining technology, see Mayo, The Technology Assessment Function, Part I, supra, note 2, pp. 6-10.

5

On definitions of technology assessment, see Technology Assessment, Statement of Emilio Q. Daddario, supra, note 2, pp. 12-14; and Mayo, The Technology Assessment Function, Part I, supra, note 2, pp. 10-21. As conceived by Daddario, page 14, technology assessment includes the following seven sequence steps: (1) place the technology within the total societal framework; (2) identify all impacts of a program; (3) establish cause and effect relationships where possible; (4) determine alternative methods to implement the program; (5) identify alternative programs to achieve the same goal and point out the impacts; (6) measure and compare sums of good and bad impacts; and (7) present findings from the analysis.

totality of activity involved with technology assessment."⁶ TAF is broader than technology assessment, although the latter is a part thereof. When technology assessment takes the form of policy research TAF is in the service of intelligence or appraisal or both functions of legal process, depending on whether prospective or past or both prospective and past applications of a technology are under consideration.⁷ While Congressional concern with TAF appears to be focused upon improving its intelligence function respecting applications of technology,⁸ the findings and recommendations of appraisals constitute welcomed feed-back intelligence.

Advocacy is conceived as a multi-dimensional concept. Perhaps its most easily recognized, generally understood, and pervasive dimension is the presentation to legal process of claims/demands that authorita-

6

Mayo, The Technology Assessment Function, Part I, supra, note 2, p. 22. Mayo has also developed the following subsidiary concepts of TAF: mechanism, process, sub-system, system, and structure. At pp. 22-23.

7

The reference here to intelligence and appraisal functions of the legal process is to the conceptions found in McDougal, Lasswell, and Reisman, "The World Constitutive Process of Authoritative Decision," 19 J. of Leg. Ed. 403, 421, 436 (1967).

8

"Our goal is a legislative capability for policy determination in applied science and technology which will be anticipatory and adaptive rather than reactionary and symptomatic." Technology Assessment, statement of Emilio Q. Daddario, supra, note 2, p. 15.

tive decisions be made, or accepted,⁹ allocating values in designated ways.¹⁰ This dimension, stressing practice or technique, conceives of advocacy as a strategy for influencing decisional outcomes of legal process. Viewed in terms of its objective of affecting the exercise of discretionary power, therefore, the strategy of advocacy is purposive, non-neutral, and value (power)-oriented behavior. But, while advocacy is power-oriented, the outcomes it seeks may involve the allocation of any and all types of values. Finally, the base values (effective means) manipulated in strategies of advocacy may consist of any and all types of values.¹¹

Another conception of advocacy is of a mode of inquiry designed into a decisional system. Adjudicatory systems and constitutional requirements of checks and balancing are obvious examples.¹²

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I include "or accepted" in recognition that a claimant might seek to obtain acceptance (legitimation) of a decision already made. Advocacy in behalf of legitimation is not limited to advocacy by citizens to legal process, but includes advocacy by legal process to citizens (as, for example, appellate court opinions advocate the legitimacy of their decisional outcomes).

10

Compare: "A demand may be defined as an expression of opinion that an authoritative allocation with regard to a particular subject matter should or should not be made by those responsible for doing so," in Easton, A Systems Analysis of Political Life (1965), p.38, with Lasswell and Kaplan, Power and Society (1950) pp. 16-19.

11

The concept of advocacy presented here is not restricted to conflict situations as in Schelling, The Strategy of Conflict (1963) p. 5; nor is it restricted to the use and threats of force.

12

Other examples are the Cabinet, conference committees of Congress, the Republican (or Democratic) Policy Committee, Joint Chiefs

As a mode of inquiry advocacy may be designed into a decisional system to assist any of its basic functions. More commonly, however, advocacy is intended primarily to assist the intelligence function of decisional systems.

While this paper will draw mainly upon conceptions of advocacy as strategies of claimants and as modes of inquiry, there are other dimensions. A basic decisional function of legal process, the recommendation-promotion function, is a functional conception of advocacy.¹³ It may also be conceived as a set of multi-lateral coordinating controls, as contrasted with hierarchical, pyramidal, and unilateral modes of coordinating community life.¹⁴ Viewed in terms of basic goals of a democratic society it is conceived as a means of sharing power. It also may be conceived as the expression of an ideology.¹⁵

The order of presentation of this paper will be, first, to develop some of the salient features of the contexts in which TAF and advocacy occur in legal process; second, to develop conceptions of adequate assessment; and, third, to explore the potential contributions of advocacy to TAF in legal process. In developing contexts, I will adopt

of Staff, National Security Council, Congressional party caucuses, and political parties. See Lindblom, Bargaining: The Hidden Hand in Government, Am. 1434-Rc, Rand Corporation, 22 Feb. 1955.

13

See the definition of promotion in McDougal, Lasswell and Reisman, supra, note 7, p. 421.

14

See Lindblom, supra, note 12, pp. 2, 6-7, 28-29.

15

See Griffiths, "Ideology in Criminal Procedure or A Third 'Model' of the Criminal Process," 79 Yale L. J. 359 (1970).

the perspective of a scholarly observer. In developing criteria of adequate assessment and in suggesting potential roles of advocacy in TAF, however, I am trying to contribute to the public order system of a body politic explicitly aspiring toward human dignity. In these latter capacities therefore I shall not try to be neutral but shall openly promote the goals of a democratic society as I see them.

II. CONTEXTS: CONDITIONS OF TAF AND ADVOCACY

Applications of technology usually become pertinent to legal process in one of three ways. First, applications may be a causal agent accounting partly or entirely for a problem brought to legal process for functions of legal process as, for example, introduction of computers and information systems into a decisional entity of legal process may modify its intelligence function and reallocate decisional power. Third, legal process may use technology to assist performance of one or more of its functions. For example, the use of scientific devices to detect crime would aid invocation functions, and the use of technological tests, such as blood tests, as evidence in trials would aid application functions.

As the above very general classification suggests assessments of technological applications are made in a variety of contexts of legal process under varying conditions that determine in some degree their quality. The Department of Agriculture may undertake an assessment of the application of a pesticide to growing crops. A committee of the Congress may undertake an assessment of the outcome of the Department of Agriculture's assessment. Or the committee may assess the assessment system utilized by the Department to assess pesticide applications. Assessment of the Department's assessment system may go beyond evaluating the quality of its outcomes and include separate assessments of each internal operation and each external relationship of the system. The committee of the Congress may attempt a total impact or total problem assessment including an effort to synthesize the outcomes of all other assessments of pesticide applications to growing

crops. Further, an assessing entity may be the ultimate decision maker, or an assisting arm of the ultimate decision maker (as is true of committees of the Congress), or more or less structurally independent of the Congress). Finally, an assessing entity may be located in any of the major structures of legal process (executive, administrative, legislative, or judicial), and an assessment may be aimed at facilitating performance of any and all of the basic decisional functions of legal process (i.e., intelligence, recommendation, prescription, invocation, application, appraisal, and termination).¹⁶

Since it pervades legal process TAF necessarily occurs in an impressive variety of contexts. Pervasiveness and contextual variety are also characteristic of advocacy in legal process, whether advocacy is conceived as the strategies of claimants or as modes of inquiry. To demonstrate the characteristics and highlight the most salient features of context and conditions of advocacy in legal process discussion will focus upon the following questions:

- 1) Who participates in advocacy in TAF in legal process?
- 2) What are the significant perspectives of the participants; that is, who do they represent and with who are they identified; what value-demands do they present, and with what expectations are such claims presented?
- 3) Where and under what circumstances does advocacy respecting TAF occur in legal process; that is, in what forums, arenas, or situations, formal and informal, structured and programmed in varying degrees, does advocacy in TAF occur in legal process?

4) What base values (effective means) for the achievement of goals are at the disposal of participants in advocacy respecting TAF in legal process?

5) In what manner are such base values (effective means) employed by advocates to influence decisional outcomes?

6) What impacts upon the value allocations and decisional functions of legal process result from advocacy respecting TAF?

7) What are the effects upon society of assessment processes and outcomes influenced by advocacy?

1. Participants

Because few aspects of life go untouched by technology virtually everyone at sometime presents claims to legal process respecting actual or potential technological applications. The number of advocates of a claim varies with the nature of the claim (in particular, the inclusiveness of the values at stake). As the number of potential advocates increases representative rather than personal advocacy may be required. Moreover, the existence of an organized group with competent spokesmen may determine whether claims are in fact presented. For this reason the poor, the disadvantaged, small businessmen, and small farmers often lack an advocate. The problem of numbers is also related to the problem of identifying potential claimants. Unless they can be identified there may be no effective way of notifying claimants that action is being considered which may affect their values.

Participants in advocacy respecting technological applications include officials charged with decisional responsibility. Officials are

not and cannot be neutral respecting the responsibilities entrusted them.¹⁷ Their decisions must be responsive not only to the claims of other participants but to legal process and to society. Officials often advocate to one another. Senators advocate to Senators and to the Senate as a whole; Representatives advocate to Representatives and to the House of Representatives as a whole. The Senate and House of Representatives advocate to each other. The Congress advocates to the President, executive and administrative bodies, and to the courts.¹⁸ Judges of appellate courts advocate positions to one another and to the court as a whole.¹⁹ Judicial opinions are strategies of advocacy aimed at enlisting support for decisional outcomes from the public in general and particularly from critical evaluators of the court's work. More generally, a major function of the constitutive order is to provide basic rules for participation in legal process (i.e., rules

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"... the legal system in all its elaborate byways is immersed in policy and politics, which, taken together, constitute the social process. All who people the institutions of legislation, execution, enforcement, judicial settlement and interpretation are involved in a process of bargaining among individuals and interest groups. All to some degree can bend the austere logic of the legal code to maintain certain values of yield to new claims by insurgent interest groups." Nieburg, "Violence Law, and the Informal Polity," 13 J. of Conflict Res. 192, 199 (1969).

18

"... the agencies advocate programs; the Bureau of the Budget protects the President's interest by limiting the advocated programs; the House Appropriations Committee guards public funds by further restricting the advocated programs; and finally, the Senate Appropriations Committee serves as a responsible appeals court for unsatisfied claimants." A. Wildavsky, The Politics of the Budgetary Process (1964), P. 160. It should be noted that the quoted passage tends to equate advocacy with adjudication and judicial procedures.

19

Murphy, Elements of Judicial Strategy (1964).

respecting recruitment, terms of office, succession, etc.), thus determining who is permitted to advocate.

Participation in advocacy respecting technological applications often is conditioned by the ability to gain access to a decisional arena. Since such arenas have "gate-keeping" functions²⁰ and since advocacy constitutes an input into a forum, claimants commonly must meet various tests of entry defined by such doctrines as "jurisdiction", "standing", "ripeness", "exhaustion of remedies", "sovereign immunity", "primary jurisdiction", "final order", "rule-making", "adjudication", etc.²¹ The actual and potential contribution of advocacy obviously is dependent in some degree upon these and other structural mechanisms defining access to decisional forums.

The nature of the problem to be dealt with in a decisional arena partly determines the participants presenting claims to it. Prospective impacts of decisions differ according to the number, extent, and duration of the values and institutions to be affected. Such factors, in turn, condition motivations to undertake advocacy and partly determine the nature of legal process' need thereof. From a purely rational standpoint the nature of the problem to be dealt with defines the inputs of intelligence required to resolve it and the participants whose advocacy might supply such inputs. Technical problems, for example, may require the advocacy of technicians. From

20

Easton, A Systems Analysis of Political Life (1965), pp. 85-99; Lezar, "Economics and Administrative Process," Duke L.J. 518, 520-22 (1964).

21

On tests of entry focused upon problems allowed to enter judicial

another point of view the nature of a decisional problem may require measures to enlist sufficient support for an outcome to assure its social acceptability and political feasibility. Affording opportunity for participation in advocacy may contribute to both of these ends.

2. Perspectives

Claims-demands are presented in the name of an advocate's ego-identity or in the name of a larger self with which his ego is identified. Hence, it is possible to assess advocacy in terms of the degree to which it is inclusive (embracing wide identities) or exclusive (embracing narrow identities), and according to the degree to which it asserts common as distinguished from special interests.

Demands are conditioned by an advocate's expectations about the past, present, and future. Presentation of a claim implies, for example, the expectation that advocacy has or may have some influence upon decisional outcomes. Contrari-wise, advocates may forego resort to a decisional arena because of expectations respecting it.²² Of course a claim expected to be denied may nevertheless be presented to a decisional arena as necessary step for gaining access to another arena in which a favorable outcome is expected. The style dimension of advocacy is obviously dependent upon the level of crisis within

arenas, see Wells and Grossman, "The Concept of Judicial Policy-Making: A Critique" 15 J. of Pub. L. 286, 302 (1966). See also Note: "The Role of the Courts in Technology Assessment," 55 Corn. L. Rev. 861, 863-65 (1970).

22

For example, a tribunal may not be respected. See Katz, The Relevance of International Adjudication (1968) pp. 32-34.

which it occurs.²³ The expectations of advocates are as diverse as the demands and identifications with which they are connected.

As previously noted advocacy in legal process is power-oriented in seeking to influence decisional outcomes; yet the outcomes it seeks may involve the allocation of any and all types of values.²⁴ Demands that decision makers be replaced or that a decision making structure be reorganized, for example, are demands for authoritative allocations of power, and demands that legal process make certain information available are demands for enlightenment. The intensity with which demands are held and asserted can be of great importance, not only as an indication of the degree of frustration experienced by claimants but also for the fruitfulness of advocacy as a process of inquiry. Even the claims presented to legal process respecting technological applications by a single claimant are not necessarily consistent. Moreover, ours is a pluralistic society and doctrines, folklore norms, and myths commonly invoked by advocates tend to appear as pairs of polarized opposites.²⁵ The consequence that arenas of advocacy must cope with conflicting, intensely held and asserted demands, and with incommensurable values, requires that special care be taken to avoid the distortions of analysis which advocacy can introduce.

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"The most sensitive crisis involves physical combat, and includes battles, uprisings and riots. Many of the occasions on which policy is enunciated are exceedingly tense, as when verdicts are announced or sentence passed. . . ." Lasswell, Leites, and Associates, Language of Politics, (1949) p. 22.

24

Supra, Text p. 37.

25

That dichotomous formulations may create illusory problems see Dror

3. Situations

Claims respecting technological applications are presented in a concrete context of conditions, including time and place. Such situations (which I will sometimes call forums or arenas) vary greatly in legal process. A protest by a homeowner to a zoning board against a request by a polluting industry to be allowed to locate nearby, a letter to a mayor demanding enforcement of traffic ordinances, and assertion to a legislator that severance taxes should be imposed on extracted minerals are each situations in which advocacy about technological applications occurs.

Arenas display considerable differences in structure depending on whether found in legislative, administrative, executive, or judicial processes, and upon the level of such processes at which located. Even adjudicatory arenas, although typically specialized to the application of prescriptions, vary greatly in structure from process to process and among levels within a process. Decisional arenas also reflect the specialized functions to which they are adapted. Thus the structures and procedures of arenas differ according to whether they are specialized to intelligence, recommending, prescribing, invoking, applying, terminating, or appraisal functions of legal process. Such differences inevitably condition the role of advocacy. The degree to which a forum is programmed (in the sense that its outcomes are controlled by pre-arranged variables), and thus the extent to which discretion is delegated

to decision makers have an obvious impact on advocacy. As discretion is reduced by increased programming the need of advocacy is reduced (except with respect to design and programming); while as discretion is increased by reduced programming the need of advocacy is increased.

As a long-range trend situations for advocacy respecting technological applications rapidly have grown in number, type, and complexity. Consider, for example, the proliferation of administrative agencies with regulatory tasks respecting technological applications. Moreover, another long-range trend has seen arenas for advocacy undergo drastic restructuring, commonly because of the volume but also because of the novelty of demands arising out of technological applications. The clogging of court calendars with claims arising from automobile accidents and the development orientation given to the law of torts are obvious examples.

Situations are related to who participates as advocates. Quite often ease of access to forums is defined by characteristics of the situation such as time, place, and credentials required of advocates. Presumably improved access to arenas leads to wider participation in advocacy respecting technological applications. Presumably, too, arrangements of situations may make important contributions toward safeguarding processes of persuasion and decision from disruptive side-effects of advocacy, while permitting advocacy to make its optimum contribution to the intellectual tasks essential to policy making and implementation.²⁶

4. Base Values

Since advocacy respecting technological applications consists of strategies for influencing decision making, and since strategies necessarily employ means to achieve their ends, the base values available for advocates to manipulate condition the contribution advocacy can make. Although of obvious importance²⁷ wealth resources are not the only nor, indeed, always the most important values for advocate manipulation.

Power is an important base for advocacy. Contests between the Congress and the President involve opponents with vast power. Given enough power and ruthlessness in its exercise advocacy gives way to decision by fiat. Some modicum of power, for example, assistance of an organization competent to undertake advocacy, may determine whether it is undertaken at all.

The effectiveness of advocacy may be dependent upon the advocate's knowledge and understanding. Access to a flow of needed intelligence commonly is essential for effective advocacy. As a minimum the advocate must know the time and place to present his claims; and it is usually critical that he also knows the procedural requirements, the nature of the problem, and probable contentions of other advocates.

cesses of decision making and to aggregative functions of legal process, see Dror, Public Policy-Making Reexamined (1968).

27

Bonfield, "Representation for the Poor in Federal Rule Making," 67 Mich. L. Rev. 511 (1969).

The effectiveness of advocacy is also partly determined by the skill or competency of advocates. In some arenas only professionals certified as having a minimum degree of skill and enlightenment are allowed to present claims. Often, however, even representative (in behalf of others) advocacy is not restricted on the basis of competency. And in many, if not most, arenas anyone may advocate his own cause. In general, more highly structured and formalized arenas presuppose higher levels of skill in advocates. Styles of advocacy show distinctive differences from arena to arena. While skill in advocacy embraces the use of words having desired emotive content, rhetorical cadence, figures of speech, appealing tones, gestures, and deportment, it also extends to each component of "purely" rational problem solving. For example, skill in portraying and gaining acceptance of an image of the problem to be resolved is a most effective means of advocacy.

The respect that an advocate commands, and the respect that he accords to his opponents and to decision makers may condition his effectiveness. Similarly, his fidelity to standards of right and wrong, and his skill in invoking such standards in support of his claims may be of critical importance. While the importance of affection as a means of advocacy may appear to be minimal in more formalized arenas, it is quite visible in less formalized situations. Even the highly stereotyped styles of behavior of formal arenas may fail to mask the fact that peer group and collegial relationships among advocates and decision makers commonly are colored by affectionate regard. Finally, the physical and psychic

well-being of an advocate is an essential. Fear of one's life if an unpopular claim is voiced may suppress its presentation.

The critical importance for effective advocacy of the base values at the disposal of advocates indicates that the design of any decisional system that includes advocacy as a mode of inquiry should assure the provision of adequate base values for advocacy.

5. Strategies

Since advocacy involves the manipulation of base values in support of demands, it is limited by the base values at its disposal. Moreover, certain strategies of advocacy, such as bribes and force, may be banned in particular arenas.

Strategies of advocacy vary along several dimensions. They are not necessarily limited to efforts to persuade to voluntary outcomes, but include also efforts to achieve compulsory and involuntary outcomes. If a decision maker's discretion is limited, advocacy may include manipulating base values so as to convince him that there is no reasonable or even possible alternative other than that desired by the advocate. The location of a particular strategy on a persuasion-coercion continuum is, of course, a factual question controlled in part by the problem-context and by the effects of that strategy upon its targets.

Strategies also differ in style, and in accordance with the nature of the decisional problem, the nature of the decision maker, and the decisional situation. Styles of advocacy in highly structured, formalized

arenas, such as the United States Supreme Court, may be quite ritualized.²⁸ To the extent that an arena is specialized to the use subsumption (deductions from doctrinal principles) models of decision making strategies must be tailored to this form of reasoning. Decisional problems respecting technological applications usually require technological expertise and put a premium upon strategies maximizing the persuasiveness of expert witnesses. Finally, decision makers engaged in prescribing functions need strategies of advocacy addressed to each of the components of the policy choices with which they are confronted.

Strategies are not limited to the manipulation of symbols, but include reinforcement of verbal claims through manipulation of resources.²⁹ Even if outlawed manipulation of non-verbal resources may occur in some degree. Strategies also may be classified according to the principal base value manipulated (as diplomatic, ideological, military, or economic), according to effects upon targets, according to targets, and according to the emotive-intelligence content of its symbols. Each of these classifications may of course contribute to the understanding of the role of advocacy respecting technological applications.

6. Outcomes

Outcomes of legal process are decisions to allocate values in particular ways. All such outcomes are in themselves advocacy of the allocations they

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Respecting some functions of ritualism in advocacy see Neiburg, supra, note 17, pp. 205-206.

29

For reinforced strategies of advocacy available to a justice of the Supreme Court see Murphy, Elements of Judicial Strategy (1964).

provide for. The impact of strategies of advocacy upon outcomes, on the other hand, is a factual matter reliably answered, if it can be, only by properly designed and executed empirical inquiry.

Outcomes are more or less specialized to decisional functions of legal process. Rather than expressing these functions in the traditional, organic categories of executive, legislative, administrative, and judicial the seven more discriminating categories of outcome formulated by McDougal, Lasswell, and Reisman³⁰ will be used. The task is to relate the role of advocacy, both as presentation of claims and as mode of inquiry, to outcome functions of intelligence, promotion, prescription, invocation, application, termination, and appraisal as they bear upon technological applications.

(a) Intelligence

Assuming that intelligence is defined as "the gathering, evaluation, and dissemination of information relevant to decision-making, prediction based on the intelligence derived and, in some cases, the planning for future contingencies"³¹ does advocacy play a role in this function? I submit that it does, probably always, regardless of the decisional arena being served. This is an obvious conclusion respecting adjudicatory arenas, it is submitted that advocacy is a part of the intelligence function serving such forums.

In the first place the intelligence function of legal process, regardless of the arena involved, is a servant of power. No matter how

³⁰
Supra note 7, pp. 415-437

³¹
McDougal, Lasswell, and Reisman, supra, note 7, p. 417.

divorced from deliberate factual distortion and from recommendations of particular policies, intelligence functions exist to serve the needs of legal process for a rational basis for policy making and implementation. Consequently the information it gathers, processes, and disseminates is not mere data; it is data conceived as relevant for policy making and implementation. Policy making implies some conception of a problem, identification of the values at stake, models of trends and conditioning variables, alternative solutions, and predictions of their consequences for value gains and losses. Since these components of policy making transcend scientific notions of objectivity and require a merger in decision of both factual-scientific and normative standpoints³² discretion and thus advocacy are necessarily involved.

Consider, for example, the concept of a problem for policy making. Such a problem is not merely something objectively given. Apart from someone engaged in the act of perceiving and evaluating events as problematic a problem would not exist. In problem perception existing conditions, preferred future conditions with which existing conditions reflect the image or mental set of the perceiver.³³ Necessarily, therefore, problem perception is selective, formulations of problems reflect the value orientation of formulators, and advocacy plays a role.

32

Technical Information For Congress, p. 12.

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" . . . without falsifying a single fact, entirely contradictory descriptions can and often are given of persons, situations, social orders, etc., by selecting (often subconsciously) only the features which support preconceived notions." Rapaport, Fights, Games and Debates, (1960) p. 258. See also Boulding, The Image (1956).

Similarly, identification of values at stake in resolving a problem requires the use of value criteria. While an analyst may use a set of criteria authoritatively prescribed for him, he must interpret and apply that set. Process of interpretation and application of authoritative language almost always involve in some degree the discretion and personal values of the interpreter and applier, hence advocacy by him.

While the task of fashioning models of trends and conditioning variables implies the standpoint of a detached, scholar-scientist observer, it is approached through the observer's discipline. Different disciplines use different approaches and fashion different models. Within the same discipline the views of experts may be sharply contradictory. Finally, the models required for policy making in legal process often outrun scientific and scholarly knowledge, forcing decision makers to rely on common sense assumptions and extrarational guesstimates. Discretion and advocacy inevitably enter an analysis under such circumstances.

Identification and invention of policy alternatives calls for an effort to be creative. If the search is for the alternative with maximum net gain the analyst offering an alternative advocates that it merits consideration under this criterion. If the search is for a satisfactory alternative, analytical effort is directed toward criteria of satisfaction, laying claim to and hence advocating such values. Finally, the predictive component of policy making often transcends scientifically valid predictive techniques. In consequence discretion and advocacy necessarily enter.

A second reason why advocacy is characteristic of an intelligence function is that that function in legal process often is not separated and insulated from the promotion function. In such cases intelligence becomes quasi-promotional, which is to say advocative in nature.

A final reason why advocacy characterizes intelligence functions of legal process may be developed by considering the case of "pure" research as a source of intelligence. Even if such research is undertaken under circumstances allowing the inquirer maximum independence in design and execution, and even if these tasks are performed in precise compliance with the most rigorous tenets of scientific method, it is submitted that advocacy necessarily enters the process. Research is purposive, value-oriented behavior. As such it lays claim to certain values. The tenets of scientific method reflect a partisan belief and preference for a research strategy and set of controls.³⁴ True the strategy and set of controls aims at assuring certain qualities in research outcomes. But this is to say that the strategy and controls are aimed at achieving not only the value, enlightenment, but preferred qualities of that value. In this sense, therefore, the pure researcher is partisan toward his product, its quality, and his methodology. This

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The tenets of scientific method constitute a set of normative standards, deviation from which may be followed by sanctions applied by colleagues and peers. Moreover, scholar-scientists compete vigorously for recognition (and Nobel prizes). See Watson and Crick, The Double Helix (1968).

conclusion is believed to apply even if a researcher confines his inquiry to description and search for explanatory variables, deliberately refraining from addressing normative issues.

(b) Promotion

Defined as going "beyond passive recommending to active advocacy of policy alternatives to authoritative decision-makers" promotion and advocacy are one and the same.³⁵ Formulation of promotion as a function reflects the dependence of legal process upon advocacy both as strategies of claimants and as part of a design for inquiry.

(c) Prescription

"Prescription refers to the projection of policy for value shaping and sharing accompanied by coordinate expectations of authority and control."³⁶ As previously noted each of the policy components of a prescription is pervaded with discretion and permeated with advocacy. Furthermore, communication of the authority of a prescription and of control intentions to sustain it clearly involves a demand for conformity thereto. From this point of view, legislative enactments,

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"A personality system can be said to perform an inner promotional activity when intensity of demand is added to expectations. The participants in a decisional process promote when they project their intensified demands to authoritative prescribers. Hence, promotion is a pressure operation aimed at getting authoritative and controlling results. Its objective is to transform promoter's demands into group prescriptions." McDougal, Lasswell, and Reisman, supra note 7, p. 421.

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McDougal, Lasswell, and Reisman, supra note 7, p. 423.

opinions of adjudicatory bodies, in fact, all official communication of policy constitutes advocacy in behalf thereof.

(d) Invocation

The invoking function involves "the provisional characterization of facts as deviating from prescribed policy and the provisional assertion of control to prevent or abate the deviation or to seize control of individuals or values necessary for subsequent application."³⁷ Since invocation involves the presentation of claims, all participants in invocation are advocates of the claims they assert. Participation in invoking functions is not limited to officials of legal process. Private citizens participate by signing warrants for arrest, by placing matters on agendas of prescribing arenas, and by filing complaints with adjudicatory arenas.

(e) Application

Defined as the "transformation and concrete implementation of prescription into controlling event"³⁸ application is ubiquitous in nature and thus characteristic of all arenas. It is therefore not limited to adjudicatory arenas or to adversarial procedures. All use of statements of prescription to justify decisional outcomes is not only application but advocacy of the outcomes and value allocations which outcomes effectuate.

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McDougal, Lasswell, and Reisman, supra note 7, p. 427.

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McDougal, Lasswell, and Reisman, supra note 7, p. 429.

(f) Termination

The termination function is concerned "with the abrogation of extant prescription and provisions for claims arising from disruption of an expected and demanded arrangement."³⁹ Examples are the repeal of statutes, cancellation of contracts, and denunciation of treaties. Since, with the exception of the concern for amelioration, the process of termination parallels that of the process of prescription, although with a focus upon putting an end to rather than upon creating, much of what was said above⁴⁰ about the role of advocacy in prescription functions also applies to termination functions. The prospect of terminating a statute, for example, raises questions about each component of the policy judgment embodied therein and thus creates an occasion and need for advocacy. Furthermore a policy of amelioration is in part advocacy in support of terminations.

(g) Appraisal

The appraisal function looks toward "assessing the degree of success of authoritative policies in realizing perceived . . . goals and imposing responsibility and sanctions for discrepancies between them."⁴¹ The function includes reporting findings and making recommendations.

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McDougal, Lasswell, and Reisman, supra note 7, p. 432.

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Supra, text pp. 16-19

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McDougal, Lasswell, and Reisman, supra note 7, p. 436.

Recommendations (promotion) are, as we have seen, advocacy. Since technology assessment functions in legal process often are concerned with past or present applications of technology - in which case TAF is an appraisal function - the role of advocacy in appraisal functions is of particular concern in this paper.

Appraisals of past or present technological applications can never be completely devoid of advocacy. The effects of a technological application must be traced or shown to be causally related to that application before they can be assessed. Tracing effects in a highly interdependent society seldom can be performed with the disciplined controls of scientific method. Often a scientific method of performing the tracing operation does not exist. Moreover, even if a scientific method of tracing is available elements of discretion - hence advocacy - inevitably enter its use. That a "consensus" exists among scientists respecting the impact of applications of a technology does not establish, necessarily, that advocacy did not enter into the formation of the consensus. On the contrary, it may indicate only that the participating scientists agree with the judgment of a reporting researcher-advocate and thus advocate its scientific soundness.

Moreover, advocacy enters other steps of an appraisal. When traced effects are evaluated they are compared to criteria of appraisal. Criteria of appraisal are embodiments of policy preferences, and, as such imply conceptions of the desirable. Conceptions of the desirable are a type of advocacy; and criteria of appraisal derived from such conceptions are presented in advocacy of their suitability as standards of appraisal. Finally, standards of appraisal must be interpreted and

applied to traced effects. Interpretations and applications of policy criteria are rarely, if ever, so devoid of judgment that advocacy does not enter.

7. Effects

There is little systematic knowledge about the influence of assessment processes and outcomes, shaped in part by advocacy, upon society. This is of course a facet or a more general lack of systematic knowledge about the impact of legal process upon society.⁴² The point is, however, that the lack of systematic knowledge about the impact of assessment practices and outcomes of legal process upon society stimulates advocacy respecting such effects. Moreover, since effects are projected and evaluated with value-standards, and since the use of such criteria implies their appropriateness for such purposes, advocacy enters the projection and evaluation of effects. Finally, since decision makers constantly strive to cause effects engendering support of themselves and of their decisional outcomes, and since effects may either engender or detract from support, the management of effects tends to become a form of advocacy.

In sum, advocacy is pervasive of legal process and of TAF in legal process. In fact advocacy appears almost inevitable.⁴³ I shall contend

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Respecting the state of research on the impact of judicial decisions, see The Impact of Supreme Court Decisions (Becker, ed. 1969); "Law and Social Change," 13 Am. Beh. Sci. 485 (Symposium, 1970); and all issues of the Law and Society Review.

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Advocacy is inevitable, according to Bauer, because since we lack a method for determining a "best" policy our "only two alternatives are . . . delegation to or usurpation . . . by small groups of persons,

that it is also highly desirable, with the qualification that measures sometimes are needed to guard against undesirable side-effects of advocacy. Before exploring the contributions of advocacy to TAF, however, criteria of adequate technology assessment need to be developed.

III. TOWARDS CRITERIA OF ADEQUATE ASSESSMENT

The pervasiveness and contextual variety of assessments by legal process of technology defies efforts to formulate a single, generally applicable and suitable set of criteria of adequate assessment. These characteristics also caution that adequate criteria need to be related to the principal features of the contexts in which assessment occurs. Accordingly the discussion which follows will be organized around the seven contextual questions previously presented.⁴⁴

1. Participants

The principal questions which criteria of adequate assessment must answer respecting this contextual feature are 1) who should be participants; and 2) upon what conditions should participation be extended? Respecting the first question, the pluralism of American society and its

or . . . negotiation among interested parties." Since delegation and usurpation succeed merely in postponing the time when negotiation occurs, advocacy is "at the heart of the policy process." Bauer, "The Study of Policy Formation: An Introduction," in The Study of Policy Formation, (Bauer and Gergen, eds. 1968) pp. 1, 13. To the Science Policy Research Division of the Library of Congress political "truth" is a consensus established through advocacy. Technical Information For Congress, p. 5.

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See Text, supra, pp. 6-7

commitment to democratic ways of life justify a presumption that all persons presently affected and all persons likely to be affected by a technological application or by the outcome of an assessment of that application, including members of unborn generations, are entitled to be participants. In short, an open forum approach to assessment would be a general criterion. As stated the criterion is intended to include the provision of reasonable access to participation, and participation includes each of the phases of an assessment.

A variety of circumstances may require, however, that the open forum criterion be qualified by limitations upon participation. For example, the number of potential participants may be so large as to require that participation be restricted to a smaller number of representatives. Representation is of course the only way that unborn generations can influence on assessment. Since advocacy first presented after issues have crystalized and interests have consolidated is often futile, the timing of participation is of critical importance. Appropriate timing is assured under the open forum criterion because participation is extended to each phase of assessment.

The nature of questions to be resolved in an assessment may indicate that the participation of some people would contribute little or nothing to their resolution. For example, the average layman could contribute little to the resolution of a question concerning the state of the art in detection of radioactivity. It does not follow, of course, that the same laymen should not participate in other issues of that assessment. Participation might be restricted to issues which may be enlightened thereby.

The jurisdiction and basic decisional functions emphasized by particular forums may restrict the number of participants and extent of participation. All adjudicatory arenas, because specialized to application functions and because using adversary models of procedure, engage in highly restrictive "gate-keeping" respecting both participants and problems. Openness in participation is limited accordingly.

2. Perspectives

Criteria for participation in assessments by legal process should not overlook the significance of the perspectives of participants. The inclusiveness of identifications of participants is so critical that special measures often are needed to assure its presence. For example, the measures may be needed to assure participation by ecologists known to represent future generations as well as living mankind, and known to have more comprehensive viewpoints. Moreover, measures may be needed to assure that common and not merely special interests are presented. It cannot be assumed, for example, that the officials conducting an assessment are spokesmen for all social values. On the contrary, the legal responsibilities of such officials may require them to act as spokesmen for special interests.

Finally, it is important that participants expect that their participation may influence, significantly, the outcome of an assessment. Without such an expectation contributions may cease or deteriorate.⁴⁵

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". . . officials tend to remain advocates only if their responsibilities are important enough for them to have a significant effect on major policies in their areas of specialization. Advocacy requires great expenditures of time and energy in the effort to win support. Al-

For the same reasons it is also important that participants expect that assessment will be made with integrity, and that the ground rules of participation will be honored.

3. Situations

The diversity of the settings of assessment makes the task of formulating criteria of adequacy most difficult. In general, however, legal criteria governing an assessment setting would also be appropriate criteria of adequacy of assessment. For example, constitutional law doctrines governing a committee of the Congress engaged in an assessment would constitute appropriate criteria of the adequacy of its assessment. Not all legal criteria governing an assessment setting, however, would be appropriate criteria of adequacy. For example, legal criteria may permit a high secretive proceedings. This would of course violate some criteria of adequacy which I have proposed for participants and for perspectives. Criteria of adequate assessment setting should of course support the criteria of adequacy of other phases of assessment. The design of an assessment setting, for example, might contribute toward the provision of reasonable access to participants.

The adequacy of assessment settings may also be evaluated in terms of such standards as timeliness of notice of proceedings, sufficiency of notice of proceedings, communicative efficacy of notice of proceedings,

though an official naturally inclined to be an advocate will make such expenditures in any given position for a while, he will not keep on doing so indefinitely unless he believes they will do some good." Downs, Inside Bureaucracy (1967) p. 108.

scope of issues permitted to be raised, adequacy of decisional standards to be applied, nature of participation permitted, and the degree of support of the setting by basic decisional functions. Respecting the last criterion (support of the setting by basic decisional functions), because of limitations dictated by adversary procedures the intelligence functions supporting adjudicatory arenas are often less than adequate.⁴⁶

4. Base Values

Technology assessments involve a process of inquiry. The efficacy of any process of inquiry is conditioned by the availability and suitability of its means of inquiry. Many persons affected or potentially affected by technological applications or by the outcomes of assessments of technological applications lack knowledge thereof, or lack the skill required for persuasive presentation of their claims, or lack the organizational support needed to make their claims influential, or lack the financial resources to engage skilled representation, etc.⁴⁷ The actual impact of participation upon assessment outcomes is believed to be conditioned by all the values (power, wealth, skill, enlightenment, respect, rectitude, affection, and well-being) which participants deploy in strategies of advocacy. If this belief is sound criteria of adequacy

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For an excellent analysis of the limitations of policy making in adjudicatory arenas, see Wells and Grossman, supra, note 21.

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See Bonfield, supra note 27; Nonet, Administrative Justice: Advocacy and Change in Government Agencies (1969) pp. 66-97; Friedman, "The Limits of Advocacy: Occupational Hazards in Juvenile Court," 116 U. of Pa. L. Rev. 1156 (1968).

of assessment should include standards of adequacy of each base value available as an effective means for participants. This prescription also applies to the base values available as effective means for participation by assessment officials. For example, the lack of power of judicial officials to make an assessment until a case allowing this to be done is brought to them points up an inadequacy of judicial assessment. Criteria of adequacy of base values might also include a standard of proportion. That is, an assessment might be deemed inadequate because a disparity between the effective means available to participants is judged to have skewed its outcome.

5. Strategies

Since strategies of persuasion are preferred over strategies of coercion, a general overriding criterion of the adequacy of assessment is the degree to which strategies of persuasion rather than of coercion influenced its outcome. Coercive strategies include subtle ways of overpowering the minds of other participants and decision makers, as well as the use of force and violence.⁴⁸ For example, masking claims under scientific, religious, supranatural and metaphysical rubrics, concealing elements of personal preference and judgment, and undercutting rational thinking with overpowering authority are coercive stra-

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Wilensky cites Altshuler, The City Planning Process: A Political Analysis (1965), for the following: ". . . the apparent clarity of technical standards of the engineers (traffic service and cost) and their sense of rectitude overwhelmed less-focused and less-coordinated interests and beliefs." Wilensky, Organizational Intelligence, (1967) p. 164 at footnote 60.

tegies. Moreover, because customarily used to maintain distance, height, remoteness, superiority, or command styles of advocacy using "effect-contrasting" techniques⁴⁹ may be quite coercive. This is the characteristic style of depotism.⁵⁰ The setting of an assessment also be considered in applying the persuasion-coercion criterion. Highly austere and authoritative forums - such as judicial forums - may be quite coercive to many participants.

A corollary of the persuasion-coercion criterion is the criterion of minimal rationality. Strategies should contribute to rational decision making by officials of legal process. While participants may, and should, advance their own claims, rational analysis is promoted when rival claims and analysis leads assessment officials to search for inclusive, balanced outcomes stressing common rather than special interests. Moreover, strategies should develop in a clear and orderly way each of the components of a policy decision.⁵¹ Finally, strategies should not exaggerate, underplay, or otherwise distort rational formulations of each component of policy making.

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Effect-contrasting styles, uses, symbols, and signs that contrast with the effect sought by the communicator, as "when a holy man blesses the kneeling multitude." Lasswell, Leites, and Associates, Language of Politics (1949) p. 21.

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Lasswell, Leites, and Associates, supra, note 49, p. 27.

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See Mayo and Jones, Legal-Policy Decision Processes: Alternative Thinking and the Predictive Function 33 Geo. Wash. L. Rev. 318, 349-51 (1964). See also Downs, supra, note 45, pp. 175-76.

Assessment outcomes may be intended as inputs to another and ultimate decision making arena. As an input outcomes may be intended to assist any or all of that arena's basic decisional functions: intelligence, recommendation, prescription, invocation, application, termination, and appraisal. Hence, criteria appropriate for evaluating the ultimate decision maker's performance of these functions might be made to serve as criteria of strategies by asking whether they contributed to or detracted from the ultimate decision maker's conformity with its performance criteria.

6. Outcomes

What characteristics of a completed process of assessment are reliable indicia of the adequacy of the outcome? Assessment outcomes constitute intelligence when directed toward future applications of technology; appraisals when directed toward past or existing applications of technology or when directed toward existing assessment systems; and in any case include, expressly or impliedly, findings and recommendations for policy making and implementation. Consequently, criteria of adequacy of outcome may consist of criteria of adequacy of the intelligence, appraisals, and recommendations constituted by outcomes.

Consider, first, outcomes constituting intelligence. Assessments may produce outcomes of intelligence to assist resolution of a particular problem of policy, or to assist a decisional entity's performance of its intelligence function in general. On the first assumption, criteria of adequate intelligence for resolving particular policy problems could also serve as criteria of adequacy of assessment outcome. The adequacy of intelligence for resolving particular problems of policy is, of course,

a function of the nature of the problem, the nature of the decision maker, the nature of the decisional forum, and other features of the decisional context. Nevertheless, all decision making logically implies a set of components of choice. Elsewhere Mayo and I have presented a theory of these components which we called the Basic Decisional Model.⁵² The components of BDM might serve as appropriate criteria of the adequacy of intelligence for resolution of particular problems of policy.

On the assumption that the intelligence produced by an assessment outcome is to assist a decisional entity's performance of its intelligence function in general, criteria of adequate performance of the intelligence function by that entity could also serve as criteria of adequacy of assessment outcome. As suggested by McDougal, Lasswell, and Reisman such criteria might be: dependability, comprehensiveness, contextuality, availability, economy, and openness of participation.⁵³

Turning now to assessments constituting appraisals, assessment-appraisals may be aimed at assisting a decisional entity's appraisal of the impact of a particular policy, or at assisting a decisional entity's performance of its appraisal function in general. On the first assumption,

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Mayo and Jones, supra, note 51, pp. 349-51.

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McDougal, Lasswell, and Reisman, supra, note 7, p. 417. Wilensky proposes the following criteria of the intelligence function: clear, timely, reliable; valid; adequate, and wide-ranging. Wilensky, supra note 48, at viii-ix.

if an appraisal is to assist a decisional entity's appraisal of the impact of a particular policy, it must perform, adequately, certain tasks. It must define what is to be appraised. It must also trace (establish cause and effect or probability relations) and describe the consequences of the policy. Since it is impracticable and impossible to trace and describe all consequences a conception of relevant consequences must be formulated in terms sufficiently operational to serve as a guide in tracing and describing effects. An appraisal must also posit or accept a set of standards for evaluating quality (value gains and losses) of effects traced and described.⁵⁴ Finally, if an appraisal is to assist a decisional entity's evaluation of the impact of a particular policy, reports of its "findings" (includes definition of the problem, tracing procedures and data and conclusions derived therefrom, conception of relevant consequences, description of effects, standards of quality, and applications of such standards) must be included.

The adequacy with which each of the foregoing steps are performed might serve as criteria of adequacy of assessment-appraisals of the impact of particular policies. If an assessment-appraisal also includes recommendations, since they would become part of the intelligence available to the decisional entity being assisted, they should conform to the criteria of adequate intelligence previously stated for resolving particular problems of policy.

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For a suggested set of standards for evaluating the effects of a Congressional Policy see Technical Information For Congress, supra note 2, p. 4.

Outcomes of appraisals of existing assessment systems must be evaluated by different standards. Since an assessment system is a decisional system criteria for its appraisal must be reliable indicia of the quality both of internal operations (including outcomes) and external relationships. Criteria of internal operations of assessment systems is deferred for later presentation in this paper. The analysis presently being presented, focusing on significant contextual factors, constitutes an effort to develop appropriate criteria for evaluating the external relations of assessment systems.

Assessment-appraisals may be intended to assist a decisional entity's performance of its appraisal function in general. If so, criteria of adequate performance by that entity of its appraisal function could also serve as appropriate criteria of adequacy of assessment outcome. Such criteria might be the following; rigorous collection of scientific information; continuousness (non-spasmodic); impartiality; contextual in method; catharsis consequences; openness of participation; and communication of outcome recommendations "to all politically relevant strata of the population."⁵⁵

Finally, assessment outcomes commonly include recommendations for policy making and implementation. If such recommendations are intended to assist a decisional entity's performance of its recommendation function in general, criteria of adequate performance of that function by the decisional entity could also serve as appropriate criteria of assessment-

recommendations. Such criteria might be the following: the encouragement of integrated policy (stressing common not special interests); openness of channels of promotion to all participants; and use of strategies of persuasion rather than strategies of coercion.⁵⁶

7. Effects

What effects upon society do we wish assessment processes and outcomes to have? For convenience in exposition this question will be discussed in terms of impacts upon (a) social institutions; (b) the values of the citizenry; (c) the physical, including the ecological, environment;⁵⁷ (d) basic decisional functions and basic structures of legal process; and (e) assessment systems and their participants.⁵⁸

Note that the question under discussion assumes that both assessment processes and assessment outcomes may be causes of effects. Criteria of system performance (assessment process) are one thing; criteria for particular outcomes are another thing. Thus, because we have two different sets of stimuli (causes) we are searching for two different sets of criteria of effects desired of such causes.

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McDougal, Lasswell, and Reisman, supra, note 7, p. 421.

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For a suggested classification of environmental consequences of technological applications see Technology: Processes of Assessment and Choice, supra, note 2, p. 131-32. For a four-fold breakdown of the overriding goal of improving the compatibility between man and his environment see Technical Information For Congress, supra, note 2, p. 11.

58

A suggested classification of the effects of technological applications appears in Technology: Processes of Assessment and Choice, supra, note 2, pp. 135-38.

(a) Social Institutions

That assessment processes and the outcomes of particular assessments may have effects, desired and undesired, upon social institutions such as the family, the school, the church, health-care, and social status is clear. Because each such institution is an organized way of producing values, they are themselves valuable. Moreover, each such institution is sufficiently different to require a separate set of criteria for evaluating impacts upon them, and sufficiently complex to require an interdisciplinary approach to the problem of formulating criteria of impacts upon them. Finally, because social institutions tend to be specialized to the production of particular values (although characteristically producing all types of values), criteria of impact upon social institutions should be related to and consistent with criteria of impact upon values.

Beyond these quite general observations what might be said about criteria of impact upon social institutions? First, existing policies regarding each social institution potentially are a source of criteria of impact for assessment purposes. As an example, homestead exemption and other prescriptions seeking to assure at least a minimum economic base for the family suggest that one criterion of impact should be the effects upon this economic base. Not all existing prescriptions for the family (or other social institutions) should be accepted as criteria of impact for assessment purposes, of course, because some prescriptions are inconsistent with other criteria of adequate assessment proposed in this paper.

Second, specialists in the study of particular social institutions (sociologists specializing in the family, for example) and the specialized literature produced by such studies might be consulted for suggestions about criteria of impact. Finally, attention should be given to current public debates about roles of particular social institutions. To use the family again as an example, current discussions about birth control and the size of families suggest some criteria of impact upon that institution.

(b) Values of the Citizenry

Citizens lay claim to an impressive variety of values, in varying degrees of intensity, in different contexts, and through different instrumentalities. These circumstances make it difficult to formulate criteria of impact upon values. A method for simplifying and summarizing this complexity is needed which highlights the most important values and permits a contextual and comprehensive focus. Moreover, since people relate to values both as producers (value-shapers) and as consumers (value-sharers) this distinction might be maintained. In some instances it may also be useful to establish minimum and maximum levels of shaping and sharing values. Finally, attention should be given to the circumstance that disciplined inquiry tends to be more or less specialized toward certain values (for example, the economist toward wealth and the political scientist toward power).

On the foregoing reasons, perhaps as useful as any to be found are the following value categories proposed by Lasswell and McDougal: power; wealth, skill, enlightenment, well-being, respect, rectitude, and affection.

These categories also have an additional advantage for our purposes in that much policy respecting them already exists and is thus potentially a source of criteria of impact for assessment purposes. Again, as in the case of social institutions, specialists in the study of particular values, the specialized literature produced by such studies, and current public debates about desirable levels of shaping and sharing particular values can suggest criteria of impact upon values.

To illustrate these general comments with respect to the value, wealth, a guaranteed annual minimum income recently has been proposed (minimum sharing), and full employment (minimum shaping) has been accepted as national policy for more than two decades. Income tax laws and prohibitions against monopoly illustrate policies about maximum sharing and shaping wealth.

(c) The Physical Environment

The complexity of the relationships of man and his physical and ecological environments demands some degree of scientific understanding as a requisite for stating criteria of impact upon environments. Although helpful very general criteria, such as enhancing the compatibility between man and his environment and avoiding irreversible changes in the environment,⁵⁹ must be supplemented by more specific and operational statements. In preparing such statements, while scientific understanding is a necessary condition it is not sufficient; because desirable and undesirable impacts

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Technical Information For Congress, supra, note 2, p. 11; Technology: Processes of Assessment and Choice, supra, note 2, p. 32.

upon physical and ecological environments are determined by man's values and by his social institutions. Hence, the specification of criteria is here as in all cases a policy function, i.e. the prescribing function.

(d) Basic Decisional Functions and Structures of Legal Process

Two levels of criteria are needed for the consequences of assessment processes and outcomes upon basic decisional functions and structures of legal process. First, criteria are needed for assessing the adequacy of performance of function and structures; in other words, viewing each function and each structure as part of a process and a system, how should they work? Second, lower level, more specific criteria are needed for particular problems processed by a decisional function. To illustrate the need of two levels of criteria consider the intelligence function. As a process-system it should be characterized by dependability,⁶⁰ comprehensiveness, contextuality, availability, economy, and openness of participation.⁶¹ As it processes a particular problem, however, an intelligence function should also conform to criteria of adequate resolution of that problem. Intelligence to assist the Congress in deciding whether to enact a law, for example, should conform to

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The dependability criterion is subdivided into five criteria in Technical Information For Congress, supra, note 2, pp. 514-15.

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Respecting these criteria, compare McDougla, Lasswell, and Reisman, supra, note 7, p. 417, with Technical Information For Congress, supra, note 2, p. 513.

criteria of adequate resolution of that problem.⁶² Criteria of the adequacy of continuing performance of the basic functions of intelligence, promotion, prescription, invocation, application, termination, and appraisal already exist.⁶³ While lower level criteria of adequate resolution of particular problems processed by appraisal,⁶⁴ intelligence, promotion, and

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Respecting criteria for particular problems of prescription, see Technical Information For Congress, supra, note 2, pp. 2-4 and 474-75; Jones, supra, note 51, pp. 349-51.

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Criteria for the intelligence function are stated, supra, text, at footnotes 53, 60, and 61. Criteria for the appraisal function are stated supra, text, at footnotes 54 and 55. Criteria for the promotion function are stated, supra, text, at footnote 56. Criteria for prescription functions are: promptness in initiation, comprehensiveness, and contextuality in exploration, conformity of prescriptive formulations to the basic goal values of the community, and effectiveness in promulgative communications to the target audience. McDougal, Lasswell, and Reisman, supra, note 7, p. 424. Criteria for invocation functions are: a balance between promptness and efficiency, on the one hand, and adequate safeguards against irremediable value deprivations on the other, contextual analysis, rationality in provisional characterization, restricted use of coercion, dispersal of authority and control, limitation upon access, and requirement that application must follow. McDougal, Lasswell, and Reisman, supra, note 7, at 427. Criteria for application functions are: promptness in initiation, comprehensive contextuality in exploration, choice in decision which is both realistic as to fact and in conformity to inclusive community policies, effectiveness and cost-consciousness in enforcement, and comprehensiveness in policy analysis and projected effect in review. McDougal, Lasswell, and Reisman, supra, note 7, at 430. Criteria for termination functions are: ease, promptness, and availability in initiation, comprehensiveness and dependability in exploration, cancellation in accordance with community goal values, and effectiveness in amelioration. McDougal, Lasswell, and Reisman, supra, note 7, at 433.

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Lower level criteria of appraisal problems are stated in the text, p. 30.

prescription functions have been proposed,⁶⁵ criteria are needed for problems processed through invocation, application, and termination functions.

(e) Assessment Systems

The reference here is to the assessment system being assessed and not to the system doing the assessing. What consequences of assessment processes and outcomes upon assessment systems being assessed are desirable or undesirable? An assessment system must relate to its environment so as to obtain the values necessary for its creation and maintenance. While the desired relations include economic resources for paying salaries, making grants, conducting research, etc., other values are also essential. Power is often necessary to obtain information, to review assessments of other systems, to cope with competitors, and to present recommendations to "front-line" or ultimate decision makers.⁶⁶ Personnel with requisite skills and enlightenment are needed, although they may be secured in part through contracting-out if power and funds for doing so exist.⁶⁷

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Technical Information For Congress, supra, note 2 pp. 2-4 and 474-75; and Mayo and Jones, supra, note 51, pp. 349-50.

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Concerning the need for "linkages" between assessment systems and legislative and executive institutions, see Technology: Processes of Assessment and Choice, supra, note 2, pp. 82-83.

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Concerning the expertise needed by assessment entities see Technology: Processes of Assessment and Choice, supra, note 2, p. 76.

Respect from all sectors of the community for the competency, detachment, impartiality, and open-mindedness of assessment systems is needed.⁶⁸ Although commonly taken for granted the participants and personnel of assessment systems must be assured of well-being and protected against physical and psychological assaults. Assessment systems also must be able to enlist normative standards in supporting efforts to enhance their reputations for competency, detachment, impartiality, and open-mindedness, and to serve as spokesmen for common and inclusive interests of the community.

In sum, since the availability of an adequate supply of base values is essential for the creation and maintenance of assessment systems, an important criterion of the effects of assessment processes and outcomes is their impact upon the base values of the systems being assessed. Included among such base values are the benefits of criticisms of assessment systems by competent, pluralistic, and out-side evaluators.

Another criterion relates to the effects of assessment processes, especially outcomes, upon participants in the assessment system being assessed. Since it will rarely be true that all participants will feel equally indulged, and since some may experience feelings of extreme deprivation, it is important that the shock of deprivation be conditioned in some way. The style of presentation of findings and recommendations can contribute to this end. So can acknowledgement of claims denied if empathetic appreciation thereof is also sufficiently conveyed.

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Concerning the importance of the confidence and cooperation of the business community see Technology: Processes of Assessment and Choice, supra, note 2, pp. 76-77.

Above all, findings and recommendations should reflect those qualities of competency, detachment, impartiality, and open-mindedness essential for maintaining the confidence of all participants.

It is also important that assessment processes and outcomes help maintain the confidence of assessment systems being assessed. Assessment processes and outcomes should also promote conformity by assessment systems being assessed with the criteria proposed in this paper for participants, perspectives, situations, base values, strategies, outcomes, and effects. Often, for example, a system under assessment will be found to act upon a limited perspective and apply a narrow set of criteria of assessment. In such cases assessment processes and outcomes should contribute to wider perspectives and more inclusive assessment criteria of the entity under evaluation. A persuasive case can be made for greater national coordination and control over assessment entities.⁶⁹ Where this policy is sound assessment processes and outcomes should promote national coordination and control.

Finally, assessment processes and outcomes should help the systems being assessed to avoid or minimize adverse impacts of their assessments. Assessments can exceed the limited attention span of decision makers and produce information overloads. By focusing attention on some technological applications, but not on others, assessments can help cause discriminatory burdens to be cast upon the technologies assessed. By alerting special interest groups too soon negative assessment strategies may be

⁶⁹ Technology: Processes of Assessment and Choice, supra, note 2, p. 77.

mustered in successful opposition to desirable technological applications. In some instances assessment may inhibit desirable technological innovation. Assessments are particularly subject to the risk that the difficulties of coping with unwanted side effects of technological applications will be magnified, while possibilities that solutions will later be discovered are ignored or minimized. Assessment systems may also be "captured" by a special interest group.⁷⁰ Avoidance and minimization of risks such as these is clearly desirable.

8. Criteria of Internal Operations

Another approach to the problem of adequate criteria of assessment focuses upon the internal operations of assessment entities.⁷¹ Operations are conceived as sufficiently discrete to be subsumed under categories and a flow chart is prepared of steps or sequences of categories of operations. By way of illustration a modified version of a flow chart of the technology assessment function of the Congress will be used. See Figure 1 below.⁷² While as originally conceived this flow chart made use of

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Concerning risks of assessment, see Technology: Processes of Assessment and Choice, supra, note 2, pp. 84-89.

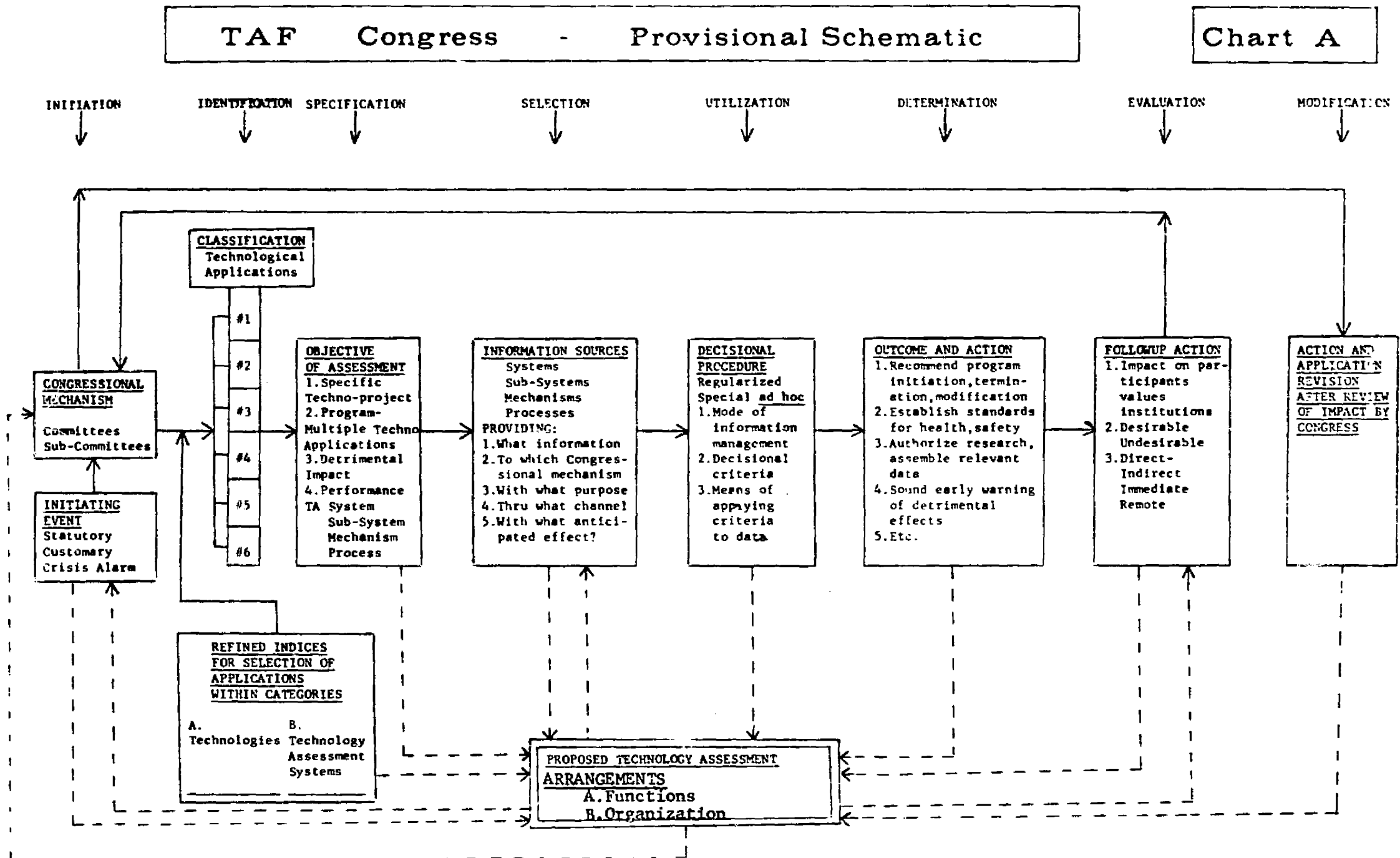
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Respecting criteria of internal operations, see Vickers, The Art of Judgment, (1965), pp. 157-169

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The flow chart is found in statement of Louis H. Mayo in Hearings before the Subcommittee on Intergovernmental Relations of the Committee on Government Operations, U.S. Senate, on S. Res. 78, 91st Cong., 1st Sess., March 4, 5, 6, April 24, and May 7, 1969, at p. 120. The technology assessment capability of the Congress is also discussed in Technology: Processes of Assessment and Choice, pp. 100-110; Technical Information For Congress; and A Study of Technology Assessment, pp. 9-21, all supra, note 2.

FIGURE 1



Question: How can the proposed Technology Assessment Arrangements improve the performance of each of these phases or operations in the Technology Assessment in terms of time, cost and reliability?

eight categories (initiation, identification, specification, selection, utilization, determination, evaluation, and modification), it is sufficient for present purposes to reduce these to six: problem perception, problem formulation, selection, utilization, determination, and evaluation. Proceeding seriatim criteria will be suggested for the adequacy of each operation.

(a) Problem Perception

The occasion for an assessment may be triggered by a statutory or customary obligation of the Congress, or of one of its committees, or by a social crisis or other stimuli. The important idea of the category is that somehow the Congress comes to perceive that a technology assessment problem exists and merits attention. If the Congressional assessment mechanism adopts a passive stance toward problem perception, waiting for stimuli to come to it (except where a legal or customary duty requires it to search for problems), important problems of assessment (at least until they have reached crisis proportions) and a representative sample of problems of assessment are not likely to be perceived by the Congress. To minimize these risks affirmative scanning or search strategies are required. In other words, the operation of problem perception can be evaluated in terms of its completeness, representativeness and timeliness.

Presumably not all problems of assessment perceived by the Congressional assessment mechanism would be permitted to appear on the Congressional agenda for decision making. Hence some screening of perceived problems is required. The adequacy of the screening operation might be tested by the following criteria: the urgency of the problem; the lack

of assessment efforts respecting the problem by other assessment entities; the existence or lack of existence of another assessment forum; the appropriateness of the Congress as an assessment forum (for example, if it cannot process the problem it ought not appear on its agenda); the relationship of the problem to other concerns of the Congress; and the nature of the problem (for example, problems of assessing existing technology assessment systems might receive, initially at least, higher agenda priority than problems of assessing past or future technological applications).⁷³

(b) Problem Formulation

Since a problem is a disparity between existing and preferred conditions, problem formulation requires a statement of existing conditions (including trends in such conditions), a statement of preferred conditions, a statement of criteria for determining preferred conditions, and an estimate of the gap between existing and preferred conditions.⁷⁴

Criteria of adequacy of statements of existing conditions are: the methodological soundness of fact collecting strategies; the accuracy of

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For other formulations of agenda-criteria, see supra, note 2, Technical Information For Congress, p. 474; Technology: Processes of Assessment and Choice, p. 93; A Study of Technology Assessment, p. 5, 9, 10.

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Mayo urges that adequate formulation of a social problem includes delineation of the social subsystem encompassing the social interactions and effects to be assessed. Since by definition a system (or subsystem) has some capacity for coping with threats to its equilibrium or stability it is not enough merely to trace impacts of outcomes to a social system. The critical issue is: did the impact have sufficient "critical mass" to produce permanent changes in the system, or did the system absorb and neutralize the impact.

the data; the comprehensiveness of the data; and the contextuality (including the degree to which relationships with other institutions, programs, and policy goals are reflected) of the data. It may sometimes be helpful to include a classification of the particular technological application to be assessed.⁷⁵

Criteria for evaluating statements of preferred conditions (goals) may come from numerous sources, including the constitution, statutes, administrative regulations, case-law precedents, and conceptions of policy goals derived from democratic ideology. Since problem formulation ideally requires operational statements of preferred conditions such statements also can be evaluated in terms of possibility of achievement, degree of satisfaction of conceived needs, and, if preferred conditions are also instrumental goals, how ultimate goals will be affected.

Criteria for evaluating criteria for determining preferred conditions would include the criteria set forth above for evaluating statements of preferred conditions. In addition such criteria might also include the extent to which criteria for determining preferred conditions functioned as such (for example, are the criteria sufficiently operational to determine preferred conditions?). Criteria for evaluating estimates of the gap between existing and preferred conditions are the suitability of the methodology and the soundness of its application.

If the problem formulated by the Congressional assessment mechanism refers not to existing or prospective technological applications but to

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See the six-fold classification in statement of Louis H. Mayo, supra, note 72, pp. 114-115; and the ten-fold classification system suggested in Technical Information For Congress, supra, note 2, pp. 480-482.

the adequacy of an existing assessment system, meta-criteria (criteria of criteria) are required. The notion of adequate assessment presented in this paper proposes a set of meta-criteria.

(c) Selection

Selection refers to the operation of choosing "information sources." Perhaps a more descriptive reference is "intelligence sources," since more than mere data or information is required. For example, the political feasibility of a solution of an assessment problem might depend upon the Congress permitting interest groups to contribute inputs of intelligence. Selection involves a definition of the intelligence needed, determinations of where it can be found and how it can be obtained, its dependability, comprehensiveness, contextuality, economy, and probable contribution to the resolution of the problem. Criteria of adequate selection would therefore test the adequacy of the definition of the intelligence needed, of identification of its location and availability, of methods of obtaining it, and of its characteristics of dependability, comprehensiveness, contextuality, economy, and probable contribution to problem resolution.

(d) Utilization

This operation refers to the decisional procedure used by the assessment mechanism, and, unless they are prescribed, includes choices of the procedures used. Choice of procedures and application of procedures chosen may well be governed by different albeit interdependent criteria. Since choice and application of procedures are instrumental steps for reaching decisional outcomes, criteria governing them should be causally related to the qualities (criteria) sought of decisional outcomes. In other words,

decisions choosing a decisional procedure, and decisions applying chosen procedures might be tested by asking whether the procedure as a whole or some aspect of its application helps or hinders realization of specified qualities of outcomes. Decisions choosing a decisional procedure and applying chosen procedures should also be governed by the nature of the problem formulated (for example, whether assessment of a technological application, or an assessment of a technology assessment system), and by the intelligence sources to be used (it may be preferable, for example, that statistical data from unimpeachable sources be presented in documentary form). The number of participants as intelligence sources may also influence choice and application of a decisional procedure.

(e) Determination

This operation refers to the process of arriving at decisional outcomes and to the outcomes themselves. The process of decision can be evaluated by the criteria of BDM⁷⁶ or by the following criteria proposed in Technical Information for Congress:⁷⁷ what alternative solutions have been advanced; what are the probable costs and undesirable side effects of each alternative; what are the probable values and useful side effects of each alternative; what are the economic and technical considerations relative to each alternative; are the various alternatives feasible technically, economically, politically; are all apparent alternatives politically or technically unacceptable, thus requiring that additional alternatives

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See text p. 38 and note 51, supra.

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Supra, note 2, p. 475. See also pp. 2-4

should be searched for; what are the implications of each alternative for the short and long term; what contradictions are contained in the information as received; what bias and indications of unreliability prejudice the information; what are the relative weights of the technical conclusions and the information about political values pertaining to the various alternatives after bias and unreliability have been screened out; and what are the relative costs and benefits of adopting the preferred alternative or of not taking action.⁷⁸

Outcomes are the end products of a process of assessment. But these end products may also constitute inputs to intelligence, promotion, prescription, invocation, application, appraisal, or termination functions of the Congress. When this is true criteria applicable to the Congress' performance of these functions would also be appropriate criteria of outcomes of a process of assessment.

(f) Evaluation

Since it refers to post-assessment appraisals of the impact of ~~determination-outcomes~~, this operation is an appraisal function and should be evaluated by criteria applicable to the Congress' performance of this function.⁷⁹

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For additional criteria see Downs, supra, note 45, pp. 175-176.

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Criteria of appraisal are presented in the text, supra, pp. 30-31.

IV. POTENTIAL CONTRIBUTIONS OF ADVOCACY

Evaluations of advocacy commonly postulate the context of an adjudicatory arena governed by an adversarial decisional model, assume that all advocates are lawyers, and focus upon the strategies of advocates. Consequently, advocacy in non-adjudicatory areans, the role of non-lawyers as advocates, and advocacy as a mode of inquiry supporting intelligence and other decisional functions remain implicit and obscure. Perhaps such failures of evaluation are partly attributable to the commitment of some disciplines (especially "pure" ones), professions and occupations (for example, operations researchers, systems analysts, and management scientists), and schools of thought (in the most extreme form, scientism) to inflexible notions of "truth," "objectivity," and "neutrality." Explicit recognition of advocacy as characteristic of all arenas, of advocacy by non-lawyer participants, and of its role as a mode of inquiry would raise questions about claims to scientific validity, objectivity, and neutrality. And the practice of labeling policy problems as "technical" or "scientific" or "legal" might itself be recognized as a strategy of advocacy aimed at enhancing the power and prestige of technicians, scientists, and legalists.

Some failures in evaluation of advocacy may also reflect a general cultural bias (in particular a bias of academics) in favor of hierarchical and pyramidal, unilateral controls as the preferable modes of coordinating community life, and against bargaining-advocacy as a coordinating mechanism.⁸⁰ Finally, since bargaining-advocacy may be "illegal and much (though not all) is extra-legal and is commonly condemned as the product of stupidity,

⁸⁰ See Lindblom, supra, note 12, pp. 2, 6-7, 28-29.

partiality, and avarice. . ." its contributions tend to go unnoticed.⁸¹

How, then, does advocacy fare, as a mode of inquiry as well as strategies of claimants, when evaluated by representative sets of criteria of adequate assessment?

1. Participant Criteria

Openness of participation as a criterion of adequate technology assessment could hardly be achieved without some design for advocacy as a mode of inquiry. Not only does openness look toward affording opportunity for advocacy, but other participant criteria require institutional arrangements that treat the strategies of claimants, collectively, as part of the intelligence function and as a means of enhancing the quality of assessments. Who is permitted to participate, the degree to which participants are representative of the interests at stake, the timing and form of participation, the contributions expected of participants - these criteria presuppose an assessment design which institutionalizes advocacy as a mode of inquiry. Moreover, quality assessments commonly require intelligence which can be supplied only by advocates, as data about past and future circumstances of participants, the value orientations of participants, and the feasibility (political, economic, and technical) of recommended alternatives for dealing with assessment problems.

While participant criteria presuppose a design for advocacy, other modes of inquiry are not ruled out. Officials and other participants may inform themselves by other means and may present their offerings in other styles

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Lindb. m, supra, note 12, p. 3

and forms. The essential point of a design for advocacy, however, is that however participants inform themselves and whatever form and style of presentation is used (including claims to speak as "experts" or in the name of scientific validity), all presentations are open to challenge and attack on any relevant ground. From this point of view advocacy is not comparable to other modes of inquiry, because it transcends other modes. It does so not by denying the contributions, but by providing a method for revealing the strength and shortcomings of other modes, including itself as a mode. Moreover, in practice other modes of inquiry, although aimed primarily toward producing knowledge with certain qualities and employing tests such as colleague consensus and inter-subjectivity, are heavily dependent upon advocacy as an internal quality control mechanism. Advocacy thus builds upon other modes of inquiry by providing the conditions under which they may find most fruitful expression.

2. Perspectives Criteria

Apparently officials cannot be assumed to supply the inclusiveness of identification required for adequate technology assessment.⁸² Nor is it likely that any discipline, body of experts, professional or

⁸²"The fundamental premise . . . is that bureaucratic officials . . . are significantly -- though not solely -- motivated by their own self-interests." Downs, supra, note 45, p. 2. See also Technology: Processes of Assessment and Choice, supra, note 2, pp. 24-28, 57-62.

occupational group,⁸³ or governmental entity will always assert common rather than merely special interests in technology assessments. It also seems unlikely that the expectations of participants required for adequate assessments (expectations, that is, of significant influence upon outcomes, of decisional integrity, and of adherence to basic procedural rules) can be created and maintained without employing advocacy as a mode of inquiry.

That claimants-advocates are partisan toward their own interests does not necessarily mean that public interests are inadequately represented in technology assessments. Assessment officials are not confined to the partisan presentation of a single advocate (including the presentation of their own staff) as an intelligence source, but may consider all the intelligence supplied, by whatever means, to their decisional system. And the cumulative impact of narrowly, partisan presentations sharply and precisely in opposition to one another often may spotlight the public

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"... professional groups, however conscientious, often have unconscious commitments to the technology or technologies with which they are associated and tend, with few exceptions, to make little difference in the basic perspectives from which assessments are currently made." Technology: Processes of Assessment and Choice, p. 25. "The dilemma of intelligence vs. specialization is twofold: specialization is essential to the efficient command of knowledge but antithetical to the penetrating interpretation that bears on high policy; specialization and its concomitant, inter-unit rivalry, frequently block the sharing of accurate information, but if problems of upward communication can be solved, rivalry can result in great gains -- the clarification of clashing alternatives and the presentation of opposing cases. The primary cost of specialization in intelligence is parochialism -- the production of misleading or irrelevant information, a product of the familiar limitations of the expert. The professionally biased producer of intelligence remains too distant from the intelligence user, too ignorant of policy needs, is forced to compete with other producers for the support and guidance of the user The gain from constructive rivalry is another matter; it depends on administrative styles and structures that expedite the free flow of rival perspectives and solutions to the responsible executives and their general advisors." Wilensky, supra, note 48, pp. 49-50. See also pages 162-164, especially note 60 on page 164 of Wilensky.

interests at stake. Much depends, also, on expectations of claimants that assessment decisions will be reached in a mechanical and legalistic way, on the one hand, or will represent a conscientious effort to arrive at a formulation of the public interest as seen from the broadest perspectives, on the other hand. When the latter expectations prevail advocates realize that persuasive presentations must be related to and shown to be consistent with policy needs.

3. Situations Criteria

In some settings constitutional or other legal prescriptions require advocacy as a mode of inquiry in technology assessment. If such requirements do not exist, however, since assessment usually involves numerous interactions among participants, provision must be made for such matters as timeliness and sufficiency of notice of proceedings, the scope of matters to be considered, the decisional standards to be applied, the kinds and degrees of participation to be permitted, and the degree of support of the basic decisional functions of the assessment system. These are matters which make advocacy possible and, because of its long experience in confronting them, advocacy is readily adapted to decisions respecting them.

4. Base Values Criteria

As a strategy of claimants and as a mode of inquiry advocacy's contribution is conditioned by the effective means available for its exercise. While this is also true of other modes of inquiry, advocacy has a unique capacity for expanding and economizing the resources of an assessment system. Base values are expanded because participants bring values of all types into assessments. In particular, advocacy may lend the aid of power to assessment outcomes; enlist the wealth of advocates (for)

investigation, preparation, presentation, and other expenses); supply needed standards of rectitude; contribute skill and enlightenment; reduce alienation and increase social cohesion; and promote the health, safety, and comfort of all persons participating in an assessment. To the extent that advocacy augments it also economizes the use of the base values of assessment systems.

That assessment practices and outcomes are influenced by the base values of advocates is not, however, an unmixed blessing. Advocates rarely are equally endowed with such means. In consequence some advocates may be so richly endowed, as compared to others, that practices and outcomes will be skewed against the public interest. The best possible counterbalance for this possibility, however, may be to increase the influence of opposing advocacy.

5. Strategies Criteria

As is true of other modes of inquiry advocacy can emphasize either coercion or persuasion. Relative stress upon persuasion as against coercion, in short, does not appear to be dependent upon modes of inquiry but upon other variables, particularly the base values and perspectives of participants. For example, as political power of advocates decreases greater reliance tends to be placed upon the persuasive use of research findings;⁸⁴ and

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"Facts-and-figures men who command technical intelligence obviously are given more discretion where the problems are technical. Less obviously, they also carry more weight when the organization is weak in grass-roots political resources. Among Washington lobbyists, for instance, representatives of small organizations with limited political resources -- humanitarian organizations, specialized trade associations -- accent research in their lobbying strategy, in contrast to large-member organizations, such as farm groups, veterans groups, and labor unions, who incline toward grass-roots campaigns and publicity." Wilensky, supra, note 48, p. 19.

coercive strategies are reduced by creating expectations in participants that only strategies of persuasion are likely to be influential.

Advocacy has a major contribution to make to minimum rationality in assessment. Without it inclusive, balanced outcomes adequately reflecting both common and minority interests appear impossible to achieve. Advocacy also can contribute to and often is essential for the orderly development of each component of policy judgments in technology assessment. Since formulations of problems of assessment requires comparisons of present conditions with criteria of the desirable and with projections of future conditions defined by such criteria, and conceptualization and proposal of the social subsystem to be assessed, advocacy necessarily is involved. This is also true of the prescriptive act of specifying goals.

While not so apparent, formulation of causal or probability links between technological applications and social impacts and between assessment systems and social impacts inevitably requires advocacy. Suitable scientific procedures for this component seldom exist. And even when a suitable science is at hand and requisite controls can be used, discretion (hence advocacy) is not necessarily eliminated. The most basic theories of scientific disciplines are sustained (or undermined) by advocacy.⁸⁵ If a consensus

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Kuhn, The Structures of Scientific Revolutions (1962). "In the popular view, science is a more disinterested and, therefore, better institution for uncovering truth. But major advances in scientific theory often come from men insisting on opposing models of physical or social nature. They are often polemical; their debate is sometimes carried on in the spirit of armies at war, as Priestley's holding action against Lavoisier's theory of chemical elements, Marx's invective about German idealism, and Weber's insistence on the role of religious ethics in economic life all illustrate. Three characteristics of science, however, mark it as different from adversary procedure and limit its use in everyday administrative life as well as in the court. First, although individual scientists may be contentious,

exists among scientists respecting a causal or probability relationship, in an assessment, it is supported by advocacy.⁸⁶ Such a consensus will rarely exist in any event.⁸⁷ Claims of scientific validity often amount to no more than a "dialectic of expertise"⁸⁸ Moreover, the objects of an assessment may be advocates with sufficient persuasiveness to co-opt

they are oriented more toward truth than power. The judge or the official must give some weight to political consequences of decisions; the scientist is ideally oblivious of such considerations. Second, differences in science are settled by colleagues; scientific truths rest ultimately on the consensus of the competent. It is thus too technical for many administrative purposes; the capacity to assess scientific truth is well developed only among those immersed in its traditions and techniques. Finally, because scientific propositions take a long time to establish, science is not an ideal procedure for urgent organizational and judicial decisions. In short, although adversary proceedings do not involve critical experimental tests, they resemble science in their systematic regulation of the clash of views, and they have the additional advantage of sensitivity to political interests, greater availability to non-expert officials and judges, and speed." Wilensky, supra, note 48, p. 153

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"The argument is that the existing machinery of scholarly inquiry and the process of mutual criticism tend to produce, over the course of time, a collective produce, known as knowledge, which is relatively free of special bias. No one, obviously, can say that this process even completely achieves its goal." Frankel, "Being in and Being Out," 17 The Public Interest 44, 58 (Fall, 1969).

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"The higher in the hierarchy one goes the less do problems correspond to the specialized structure of knowledge and the less a decision can be programmed. Only at the lower levels of policy deliberation can the specialized expert tackle a specialized problem with a chance of solving it by the premise methods of science. Further, at any level, the role of the expert is self-changing Wilensky, supra, note 48, p. 46.

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"Facts-and-figures men are preoccupied with rational argument and criteria; their technical competence compels opposing parties to be more careful or honest in the use of information to match each other expert for expert, fact for fact." Wilensky, supra, note 48, p.16.

the assessment itself.⁸⁹ Nor are assessment officials always models of impartial detachment.⁹⁰

Advocacy may assist in the invention or discovery of alternatives. Since means-ends relations often are highly problematical, and since the discovery of them often is highly creative and subjective, it is desirable that participants advocate a variety of alternatives. Advocacy can contribute to projections of outcomes. In fact all such projections if made to influence policy making constitute advocacy.⁹¹ Forecasts of consequences of policy alternatives usually outrun consensus-based bodies of scientific knowledge. Under such circumstances competing projections by opposing advocates are to be encouraged. The evaluation

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"... Budget Bureau examines depend for information on the agency they are assigned to investigate; the agency often converts the examiner into an advocate of particular programs by a sensible even flow of information (discounting the risk of disclosing weakness.)" Wilensky, supra, note 48, p.18.

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"... there is a kind of inbred tendency, in governmental reports, to support existing policy. We possess an adversary system of government, and an adversary press, and an international ideological struggle is going on. Under these circumstances, reports tend to have a self-defensive function. They accentuate the positive; they give the official what he needs to defend policies that are under attack." Frankel, supra, note 86, p. 49.

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"A forecast that a contemplated action will have this or that consequence is an argument for or against its adoption." de Jouvenel, The Art of Conjecture, (1967), p. 147

of projected consequences may also be assisted by advocacy. Since the use of standards of evaluation advocates their suitability for that purpose (including the claims that consequences identified by them as relevant merit evaluation and that consequences not identified by them as relevant do not merit attention), and since competing evaluations expose each other's limitations, advocacy is most useful.

It is true, of course, that when inappropriately channeled advocacy can distort policy judgments. Incompetency in advocates, concealment and exaggeration or minimization of relevant facts, the screening of information through the categories of legal propositions sloughing-off the "irrelevant, incompetent, and immaterial," the presentment of frivolous claims, creation of a "circus atmosphere",⁹² exaggeration or minimization of anticipated social costs and benefits, mutual provocations of participants, delayed decisions, and hasty and ill-advised decisions⁹³ -- each

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"The deficiencies of adversary procedures are obvious. A circus atmosphere may develop as attorneys become preoccupied with press releases rather than legal briefs, with courtroom histrionics rather than reasoned argument ("when you can't win a case, jaw it.") Wilensky, supra, note 48, p. 152. Note that Wilensky is referring to advocacy by lawyers at trial court levels of judicial arenas, apparently before juries. Nevertheless, because he entertains a broader conception of advocacy he can recognize its contributions: "But these limitations, not inevitable, are offset by the overriding advantages of partisan advocacy, including the opportunity to test the credibility of witnesses through cross-examination. In or out of court, the adversary process is the best way to assure that assertions are exposed to systematic scrutiny by men with countervailing interests who are motivated to press hard." p. 152.

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". . . bargaining in the wrong place at the wrong time accounts for some of the worse aspects of American government. (1) It explains why conflicting interests often result not in agreement but in the paralysis of public policy, as is illustrated most dramatically by the filibuster. (2) it also gives disproportionate power to the leaders of strategic minorities. (3) It sometimes leads to the substitution of irrational agreement through

of these may cause rationality to suffer. The need, therefore, is for technology assessment entities to adopt procedures that enable advocacy to make its optimum contribution to policy, yet safeguard the procedures of persuasion and decision from disruptive side-effects. The criterion of minimum rationality is not likely to be approximated without the use of advocacy as a mode of inquiry.⁹⁴

Finally, advocacy can promote the criterion that assessment outcomes should assist the ultimate decision maker's performance of basic decisional functions. Thus, it can test for qualities of dependability, comprehensiveness, and contextuality in intelligence functions; and for the rigor with

log-rolling for agreement upon some common goal. (4) It favors the most highly organized groups." Lindblom, supra, note 12, p. 37. See also Technology: Processes of Assessment and Choice, supra, note 2, pp. 25-27

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Lindblom's evaluation of advocacy (in particular, bargaining, which is one form of advocacy) is interesting. He argues that advocacy-bargaining is superior in many circumstances to any other alternative (in particular, superior to hierarchical control) for ordering social affairs; that it is the most feasible means for accommodating to the needs of social pluralism; that because the bargaining power of an official depends in large part upon the coincidence of the goals he pursues in bargaining and the public interest (defined as "the achievement of widely shared goals"), and because bargaining power is largely determined through alliances with common interests, the public interest is given operational meaning and promoted; that "the common values of no significant group will be neglected in the final reconciliation of values necessary for policy decisions" ("why the courtroom, the partisan attorney, and the pursuit of victory instead of the study, the scholar, and the pursuit of truth? Because, for all the miscarriages of justice in the courts of law, we do not believe the researcher can give every man his due or bring out every fact and value favorable to him." p. 28); that it aids rationality in organizational contexts by supplying feedback about low level decisions to top level policy makers; that it "motivates men to search exhaustively and ceaselessly for common goals" ("... bargainers are highly motivated to look and keep on looking, and to become resourceful in finding hidden common goals. And, of course, the search for common values, even where none are found, clarifies goals and reduces pointless conflict stemming from mistaken self-interests." p. 31); and that it reveals wants and frustrations that would pass unnoticed, thereby permitting adjustments of policy in the light of them. See also Fuller's evaluation of advocacy in 1958 Proceedings of the American Association of Law Schools, pp. 188-191.

which scientific method is applied, the contextuality of the method, and the impartiality of findings and recommendations in appraisal functions. It can encourage integrated policy and reliance upon strategies of persuasion rather than coercion in promotion functions. It can promote the promptness with which prescriptive functions are initiated, the contextuality of its explorations, and its conformity to basic goal values. Respecting invocation functions advocacy can help achieve a proper balance between promptness and efficiency in initiation of the process and in maintenance of proper safeguards against irremediable losses, assure contextuality of analysis, promote rationality in provisional characterization, minimize coercion, and demand immediate initiation of follow-on application functions. Respecting application functions advocacy may assist the promptness of initiation, the comprehensiveness and contextuality of exploration, and the choice of decisions conforming to inclusive community policies and capable of effective and economic enforcement. Finally, respecting termination functions advocacy can promote the responsiveness of prescriptions to changes in social processes, help reduce the cost of social change, encourage needed social change, assure comprehensiveness and contextuality in exploration, encourage cancellation in conformity with community policies, and promote effectiveness in amelioration.

6. Outcomes Criteria

Assessments may be intended to produce (1) intelligence to assist resolution of a particular policy problem; (2) appraisals assisting another decisional entity's appraisal of the impact of a particular policy; (3) appraisals of existing assessment systems; and (4) appraisals of total impact assessments.

Since previous discussion indicated how advocacy might contribute to each component of a rational policy judgment,⁹⁵ (1), above, will not be discussed. With respect to (2), above, assessments producing appraisals to assist an ultimate decision maker's appraisal of the impact of a particular policy should (2) define what is to be appraised; (b) trace (establish cause and effect or probability relations) and describe the consequences of the policy under evaluation; (c) formulate a conception of relevant consequences sufficiently operational to serve as a guide in tracing and describing effects; (d) posit a set of standards for evaluating the quality of effects traced and described; and (3) report its "findings". Advocacy may contribute to each of these standards.

Since definitions of objects of appraisal involve allocations of scarce base values, influence other tasks of an appraisal, and determine what is not to be appraised, rival definitions of objects of appraisal are foreseeable and should be encouraged. We have seen that establishment of cause and effect or probability relations between particular policies and their consequences seldom can be based on a science of consequences, and even when so based, because consensus is essential for scientific validity, advocacy contributes to the establishment of that consensus and thus to the use of that science. Since conceptions of relevant consequences are partly normative in nature and partly intended as instrumental for tracing and describing (and since the instrumental aspect usually out-runs scientific supports), advocacy

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Text, supra, pp. 37-38. The role of advocacy in aiding intelligence functions in general is presented in the text, supra, pp. 21-24.

can, does, and should contribute to them. To posit a set of standards of appraisal is to advocate its appropriateness; alternative sets of standards should be advocated before a set is posited. Finally, reports of "findings" advocate their worth as findings; and, to the extent based on inferences from evidence, advocacy can test the factual support of findings.

Assessments producing appraisals of existing assessment systems, (3), above, should be governed by criteria of appraisal constituting reliable indicia of the quality of the internal operations and external relationships of the object of assessment. Advocacy's contributions to the internal operations of an assessment system will be presented *infra*.⁹⁶ The present analysis, characterizing external relationships and contexts in terms of participants, perspectives, etc. is intended to indicate advocacy's contribution in these respects.

In practice total impact assessments must satisfy criteria for evaluating the outcomes of other assessment systems, for relating outcomes to a conception of total assessment, for a conception of total assessment, and for coordinating the efforts of other assessment systems. Advocacy may help meet these criteria. Its contribution to evaluations of other assessment systems were noted *supra*.⁹⁷ It can aid the formulation of conceptions of total assessment by explicating and critically evaluating their most basic assumptions; and it can assist in relating outcomes of

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See text, *infra*, pp. 74-76.

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See text, *supra*, pp. 45-50.

particular assessment entities to conceptions of total assessment by explicating and critically evaluating the relational frameworks employed to achieve syntheses. Finally, advocacy can enhance the quality of efforts to coordinate the assessments of other systems. For example, prescriptions of appropriate spheres of autonomy between assessing systems and systems assessed are more likely to reflect inclusive community perspectives if all perspectives are advocated.

7. Effects Criteria

The reference here is to desirable impacts upon social institutions, the values of the citizenry; the physical and ecological environment; basic decisional functions and structures of legal process; and assessment systems and their participants. Advocacy has contributions for each of these areas.

Advocacy can help preserve and protect social institutions through forecasts or appraisals of adverse impacts upon them, by insisting that their uniqueness requires special criteria of evaluation, by insisting upon an interdisciplinary approach to evaluation of impacts, and by noting their importance for the production of the values to which they tend to be specialized. Moreover, advocacy is essential for the invocation and application of existing prescriptions applicable to social institutions, and it can be indispensable in critically evaluating current debates about roles of social institutions and the contributions of specialists in the study of particular institutions.

Respecting criteria of impact upon the values of the citizenry advocacy can be indispensable for establishing minimum and maximum shaping and

sharing criteria, in the invocation and application of existing prescriptions, and in critically evaluating current debates about desirable levels of shaping and sharing particular values and the contributions of specialists in the study of particular values.

Formulation, invocation, and application of policy respecting impacts of technological applications and assessment outcomes upon physical and ecological environments involve policy functions which outrun the contributions of scientific methods. How much of the fruits of pest-free agriculture are we willing to forego in order to avoid certain effects of DDT? Such questions raise policy issues in the resolution of which advocacy is both inevitable and essential.

Since impacts upon basic decisional functions and structures of legal process are impacts upon the policy making and implementation process, itself, and since it is inevitable and essential to the process, advocacy has a role.

With respect to impacts upon assessment systems and their participants, advocacy and bargaining are essential strategies for creating and maintaining relationships which assure a continuing flow of base values needed by assessment systems. It can help maintain the confidence of all participants in the competency, detachment, impartiality, and open-mindedness in assessing systems. It can help promote conformity by assessment systems being assessed with criteria proposed in this paper. It can promote national coordination and control over assessments. And, it can help systems being assessed to avoid or minimize adverse impacts of their assessments.

8. Internal Operations Criteria⁹⁸

(a) Problem Perception

Advocacy can assist the completeness, representativeness, and timeliness of problem perception. For example, by serving as a supplement to scanning techniques permitting members of the general public to call assessment problems to the attention of the Congress, advocacy might contribute to completeness, representativeness, and timeliness of problem perception. It can also contribute to agenda-making by aiding the formulation of criteria of inclusion and exclusion and the interpretation and application of such criteria.

(b) Problem Formulation

Statements of existing conditions, statements of preferred conditions, criteria for determining preferred conditions, estimates of the gap between existing and preferred conditions - each of these components of problem formulation can be aid by advocacy. Respecting statements of existing conditions it can test the methodological soundness of data collecting strategies used, the accuracy of the data, and the comprehensiveness and contextuality of the data. In statements of preferred conditions it help establish the authoritativeness of criteria, contribute to estimates of feasibility, note discrepancies between statements of preferred and conceived needs, and question whether preferred conditions, if instrumental goals, will achieve ultimate goals. The formulation of criteria

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See text, supra, pp. 50- 59.

for determining preferred conditions, since it is a prescriptive act, can be assisted by advocacy, as can be interpretation and application of such criteria. The suitability of the methodology and the soundness of its application in estimating gaps between existing and preferred conditions can be tested by advocacy. Finally, it can aid in the formulation of meta-criteria for evaluating existing assessment systems.

(c) Selection

Advocacy can help test the adequacy of the definition of intelligence needed, in some instances aid in determining the location, availability, or methods of obtaining that intelligence, and probe its characteristics of dependability, comprehensiveness, contextuality, economy, and probable contribution to problem resolution.

(d) Utilization

Decisions choosing procedures of assessment and decisions applying procedures chosen can be aided by advocacy. If both types of decision are to be evaluated in terms of their impacts upon assessment outcomes advocacy is a useful means for establishing such impacts.

(e) Determination

If the process of arriving at decisional outcomes and the outcomes themselves are to be evaluated by the criteria of BDM or by the set proposed in Technical Information For Congress,⁹⁹ or by the criteria applicable

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See text, supra, p. 56

to the performance of basic decisional functions of the Congress, advocacy is a most useful tool for such evaluations.

Advocacy, then, is not only here to stay - its potential is so vast and largely untapped that its future is quite speculative. We must work and hope that it will be used to establish a community in which the dignity of man is honored in deed as well as in word.