POLICY ANALYSIS: A THEORETIC FRAMEWORK AND SOME BASIC CONCEPTS

Yehezkel Dror

July 1969

P-4156

A GENERAL SYSTEMS APPROACH TO USES OF BEHAVIORAL SCIENCES FOR BETTER POLICYMAKING

Yehezkel Dror*

The RAND Corporation, Santa Monica, California
and
The Hebrew University of Jerusalem (on leave)

INTRODUCTION

This paper is devoted to an examination of the uses of behavioral sciences for better policymaking. It is prescriptive in orientation, trying to utilize a general systems theory framework of the relations between public policymaking and behavioral sciences in order to identify changes required for improved utilization of behavioral sciences for better policymaking. ("Improved" and "better" in the instrumental-normative sense of increasing expected net outputs of whatever goals are stipulated after goal analysis.)

---

*Any views expressed in this paper are those of the author. They should not be interpreted as reflecting the views of The RAND Corporation or the official opinion or policy of any of its governmental or private research sponsors. Papers are reproduced by The RAND Corporation as a courtesy to members of its staff.

This paper was prepared for presentation at the Sesquicentennial Anniversary Symposium of the University of Virginia on "Global Systems Dynamics," Charlottesville, June 17-19, 1969.

The paper proceeds from a short characterization of contemporary behavioral sciences' relevance to policy-making to a simple general systems model of relations between behavioral sciences and policymaking, leading to a set of redesign specifications for improved use of behavioral sciences for better policymaking. This paper is exploratory in nature and tentative in content, being aimed at presenting an approach to the problems of utilizing behavioral sciences for better policymaking, rather than providing a definite treatment. In particular, this paper proposes that general systems theory can provide an essential framework for transforming parts of behavioral sciences into a main component of policy sciences.

CONTEMPORARY BEHAVIORAL SCIENCES AND POLICYMAKING

Since the early history of mankind, policymakers have been looking to pre-science for aid in the arduous tasks of trying to control the future by choices in the face of uncertainty. Consultation by seers, astrologers, and magicians represent early efforts to utilize experts in pre-science as aids in policymaking. We lack reliable information to evaluate the impacts of such pre-science advisors on policymaking.[1] Often, thanks to the native intelligence of some such pre-science advisors, they may have been quite helpful -- at least by reducing subjective uncertainty and aiding policymakers in crystallizing their own intents and recruiting support. On the other hand, they may often have encouraged recklessness and repressed more intelligent considerations. Certainly, we hope that modern science can do better to aid growing desires for social self-direction.[2]

---

[1]There are available some histories of the uses of pre-science as a decisionmaking aid, e.g., F. N. David, Games, Goals, and Gambling (N.Y.: Hafner, 1962), and Richard Lewinsohn, Science, Prophecy and Prediction (N.Y.: Harper, 1961). But no systematic studies of the history of high-level policymaking systems in which pre-science was only one, and probably a minor, component, are available. Such studies just do not seem to fit the foci of interests of contemporary historic and social science research.

[2]On this trend, see Amitai Etzioni, The Active Society: A Theory of Societal and Political Processes (N.Y.: The Free Press, 1968).

But I am afraid that a frank examination of the utility of modern behavioral sciences for better policy-making gives little ground to regard them at present as much superior to pre-science in this respect. Certainly, methods are, by definition, more "scientific," knowledge more comprehensive and reliable, and concepts much more sophisticated. But as an aid to policymaking the possible help that can be received from contemporary psychology, sociology, anthropology and political sciences, that is, from contemporary behavioral sciences,[3] is most limited. Some contributions to better understanding of social issues are available. But the widespread combination of conceptual sophistication with some factual knowledge and weak comprehensive theories on one hand with fuzzy thinking on the other hand, does not help provide many contributions to complex problem treatment.[4] Behavioral

---

[3]Following widespread practice, I am not including economics among the behavioral sciences. In orientations, methodology, methods and tools, economics is quite different from the behavioral sciences and it is those differences which explain its successful use in highly developed societies for some policymaking. In many of its characteristics, economic theory is in essence a theory of efficient resources allocation, belonging more to decision theory and indeed policy sciences than to behavioral sciences.

[4]Let me illustrate, though not prove, my point by mentioning three of the better collections of papers

sciences do provide some relevant facts and, more important, may help sensitize policymakers to some dimensions of complex problems, but they also increase subjective uncertainty and feed multiplicity of opinions. The latter, however preferable intellectually, again do little to help existing policymaking systems in better directing social change.

There is a growing literature on the problems of applying behavioral sciences to public policy, including Congressional Committee reports,[5] public and semi-public

---

trying to apply behavioral sciences to policy problems, which bring out their inadequacy as policy knowledge: Arthur B. Shostak, Sociology in Action (Homewood, Ill.: Dorsey, 1966); P. Lazarsfeld, W. Sewell and H. Wilensky, eds., The Uses of Sociology (N.Y.: Basic Books, 1967); Quincy Wright, William M. Evan and Morton Deutsch, eds., Preventing World War III: Some Proposals (N.Y.: Simon and Schuster, 1962).

A comparison of the papers based on behavioral sciences with those based on economics or strategic analysis in Kermit Gordon, ed., Agenda for the Nation (Washington, D. C.: The Brookings Institution, 1968) also supports, I think, my claims on the weaknesses of behavioral science in policy-relevance.

[5]Two very extensive collections of hearings and studies are the four volumes on The Use of Social Research in Federal Domestic Programs, a Staff Study for the Research and Technical Programs Subcommittee of the Committee on Government Operations, House of Representatives, April 1967 (Washington, D.C.: U.S. Government Printing Office, 1967); and the three volumes of hearings before the Subcommittee on Government Research of the Committee on Government Operations, United States Senate, on S. 836, A Bill to Provide for the Establishment of the National Foundation for the Social Sciences, February and June 1967 (Washington, D. C.: U.S. Government Printing Office, 1967).

committee reports[6] and many articles.[7] But one does not find in them a broad framework for redesigning behavioral sciences to make them more useful for better policymaking. The available material is rich in ideas and insights and stimulating in many respects. But no signs of the needed breakthrough can be discerned in it.

Accepting the risks of overgeneralization, unfairness to particular studies and a somewhat dogmatic appearance, let me point out in over-sharp language some of my

---

[6] E.g., National Academy of Sciences, Advisory Committee on Government Programs in the Behavioral Sciences, National Research Council, The Behavioral Sciences and the Federal Government (Washington, D. C.: National Academy of Sciences, 1968); and Special Commission on the Social Sciences of the National Sciences Board, Increasing the Nation's Use of the Social Sciences (forthcoming).

Similar interests in other countries are illustrated by the Report of the Committee on Social Studies (Chairman Lord Heyworth, England, Cmnd. 2660, HMSO, 1965) and The Social Sciences and the Policies of Government (Paris, OECD, 1966). Some problems of bringing social sciences into government are also discussed in a, for England, revolutionary report, namely Committee on the Civil Service (Chairman: Lord Fulton), (England, Cmnd. 3638, HMSO, 1968), especially Vol. 1 (Report of the Committee) and Vol. 11 (Report of a Management Consultancy Group).

[7] Part III of the staff study on The Use of Social Research in Federal Domestic Programs includes a collection of relevant articles. Another representative collection is Elisabeth T. Crawford and Albert D. Biderman, eds., Social Scientists and International Affairs (N.Y.: John Wiley, 1969). Very relevant is also Irving L. Horowitz, ed., The Rise and Fall of Project Camelot: Studies in the Relationship between Social Science and Practical Politics (Cambridge, Mass.: MIT Press, 1967).

impressions on the inadequacies of contemporary approaches to the uses of social sciences for policymaking:

a. There is fargoing mix-up between reliable factual knowledge, axiomatic assumptions, provisional theories, conceptual taxonomies, doubtful hypotheses and various types of value judgements -- on substantial goals, on willingness to take risks and on evaluation of time.

b. No effort is made to approach fusion with -- or at least build bridges to -- instrumental-normative decision theory. Especially striking is the lack of attention to ongoing progress in applied decision theory, such as in systems analysis[8] and in planning-programming-budgeting

---

[8]Care must be taken not to mix up "systems analysis" and "general systems theory." Both share a desire to look at phenomena in terms of broad interrelated sets, called "systems." Otherwise, despite the similarities in names, there is amazingly little common ground between systems analysis and general systems theory, though there is much potential scope for mutual stimulation and perhaps even some integration.

The best recent presentations of systems analysis are: E. S. Quade and W. I. Boucher, eds., Systems Analysis and Policy Planning: Application in Defense (N.Y.: American Elsevier, 1968); C. West Churchman, The Systems Approach (New York: Delacorte Press, 1968); and Van Court Hare, Jr., Systems Analysis: A Diagnostic Approach (N.Y.: Harcourt, Bruce & World, Inc., 1967).

Some of the problems of applying systems analysis to broad policy issues are discussed in: C. West Churchman, Challenge to Reason (New York: McGraw-Hill, 1968); and Robert Boguslaw The New Utopians: A Study of System Design and Social Change (Englewood Cliffs, N.H.: Prentice-Hall, 1965).

(PPB[9]). The problems of tying in behavioral sciences to such highly important policy-improvement endeavors are nearly completely ignored.

c. Discourse on the contributions of behavioral sciences to policymaking proceeds without serious efforts to understand the characteristics of policymaking and tends to oscillate between naivete and cynicism. While there is important work going on in respect to the study of policymaking reality,[10] this work tends to be ignored by most of the discussions on behavioral sciences' contributions to policymaking.

d. The systems needs of better utilizing behavioral sciences in policymaking are nearly completely ignored.

---

[9]An already classic presentation of PPB is David Novick, ed., Program Budgeting: Program Analysis and the Federal Budget (Boston, Mass.: Harvard University Press, 1965). A good collection of relevant papers and material is Fremont J. Lyden, and Ernest G. Miller, eds., Planning Programming Budgeting: A Systems Approach to Management (Chicago: Markham, 1967).

[10]Recent work on the policymaking system is represented by the following books: Raymond A. Bauer, and Kenneth Gergen, eds., The Study of Policy Formation (New York: The Free Press, 1968); Charles E. Lindblom, The Policy-Making Process (Englewood Cliffs, N.J.: Prentice Hall, 1968); Joyce M. Mitchell and William C. Mitchell, Political Analysis and Public Policy (Chicago, Ill.: Rand McNally, 1969); Austin Ranney, ed., Political Science and Public Policy (Chicago: Markham, 1968); and Francis E. Rourke, Bureaucracy, Politics and Public Policy (Boston, Little, Brown, 1969).

This includes such obvious needs as adjusting graduate training in behavioral sciences so as to prepare behavioral sciences professionals for policy-related roles. Also neglected are the problems of organizational location of behavioral science advisors, required interaction arrangements between them and senior policymakers, problems of training of senior policymakers to enable them to utilize behavioral sciences, the novel roles of Rand-type policy research organizations[11] and so on.

e. The special characteristics and requirements of policy-oriented research receive insufficient attention. Some of the involved value-problems are recognized, though I think badly treated. But the special problems of time-scarcity, search for leverage points, need for social invention, recognition of political feasiblity constraints, need for experimentation, and so on, only begin to be perceived.[12]

---

[11] As a foreigner, may I be permitted to express my amazement that one of the unique United States inventions in government, which may have fargoing implications for the future, namely the non-profit advisory corporation, both in The Brookings Institution form and the Rand form, is usually ignored in books on American Government.

[12] Somewhat to balance my criticism, let me mention two recent books moving in the right direction: Herman D. Stein, ed., Social Theory and Social Invention (Cleveland: The Press of Case Western Reserve University, 1968) and George Fairweather, Methods for Experimental Social Innovation (N.Y.: John Wiley, 1968).

f. Idiographic and nomothetic studies and -- to be more extreme -- collections of many facts and comprehensive theory constructions,[13] are still going on without too much interrelation, even though the need for theories of the middle range, to use Robert K. Merton's concept,[14] was recognized long ago. Similarly, behavioral

---

[13]This problem is well illustrated by one of the more interesting contemporary efforts to relate behavioral sciences knowledge to policy problems, namely the attempts to develop significant sets of social indicators. The lack of relation between proposed sets of facts and any significant theory is clearly reflected (and recognized) in the basic books on social indicators, namely Raymond Bauer, ed., Social Indicators (Cambridge, Mass.: MIT Press, 1966), and Elenor Bernert Sheldon and Wilbert E. Moore, eds., Indicators of Social Change: Concepts and Measurements (N.Y.: Russell Sage Foundation, 1968). The difficulties to construct a significant social state of the nations without relevant theories are, I think, the main reasons for the unavoidable weakness of the recent attempt to prepare such a draft document, namely U.S. Department of Health, Education, and Welfare, Toward A Social Report (Washington, D. C.: U.S. Government Printing Office, 1969).

Here, also, a general systems approach may be of much help, as illustrated by the work of Bertram M. Gross, see his The State of the Nation: Social Systems Accounting (London: Tavistock Publications, 1966. Earlier version in Bauer, op. cit.).

[14]In Robert K. Merton, Social Theory and Social Structure (Glencoe, Ill.: Free Press, 1949; revised edition, 1968).

An outstanding examination of relevant problems of theory building in behavioral sciences is Robert Dubin, Theory Building (N.Y.: The Free Press, 1969). But more attention is needed to the special needs and problems of policy-relevant theories.

sciences tend to be a-historic, thus ignoring a dimension essential for understanding problems and treating them.[15]

I do not mean to imply that no progress in policy-relevant directions goes on.[16] But that progress is incremental at best, while I think that much more than that is needed. Also, there are some disturbing indications that parts of the more innovative parts of modern behavioral sciences are moving in a direction reducing their relevance to policymaking.[17]

---

[15] For a stimulating discussion of social sciences in these terms, see Johan Galtung, "The Social Sciences: An Essay on Polarization and Integration," in Klaus Knorr and James N. Rosenau, eds., Contending Approaches to International Politics (Princeton, N.J.: Princeton University Press, 1969), pp. 243-289.

[16] One of the best signs of progress in that direction is the periodical Trans-Action.

[17] This, for instance, is true in respect to some of the newer approaches to international relations, as clearly recognized by one of their pioneers, Morton A. Kaplan, e.g., see Morton A. Kaplan, ed., New Approaches to International Relations (N.Y.: St. Martin's Press, 1968), pp. vi-vii.

Kaplan himself approaches international relations with a general systems model; see his System and Process in International Politics (N.Y.: John Wiley, 1957), and his paper "The Systems Approach to International Politics," in New Approaches to International Relations, ibid., pp. 381-404. This illustrates quite different uses of general systems models: by Kaplan to explain; by me to prescribe. Quite different versions of general systems models may be needed for such different purposes, posing a number of problems not yet dealt with by general systems theory and research.

Many reasons for this state of affairs in the behavioral sciences can be identified, such as:[18] the complexity of subject matter; tendencies to imitate methods of the physical sciences; personal alienation of behavioral scientists from policymaking; misplaced seeking for certainty; propensities to prefer incremental change; the fallacy of contradiction between "pure" vs. "applied" knowledge; rigidity of university organization; lack of resources; external restraints on subject matter, research methods and permitted findings; and the "youth" of behavioral sciences. But my impression is, that something more fundamental is at fault; that the main internal structure and inner logic of the behavioral sciences, as now constituted, prevent relevance to policymaking. What is needed, therefore, is a scientific revolution in the sense of radical innovation in basic concepts, methods and paradigms.[19]

---

[18] These barriers are explored at greater length in Yehezkel Dror, Public Policymaking Reexamined (San Francisco: Chandler Publishing Company, 1968), pp. 225-235.

[19] For this concept of a scientific revolution, see T. S. Kuhn, The Structure of Scientific Revolutions Chicago: University of Chicago Press, 1962).

A SYSTEMS VIEW OF BEHAVIORAL SCIENCES AND POLICYMAKING

I am not quite sure whether general systems theory already deserves being called a scientific revolution, in the full sense of that term. But I regard general systems theory at least as a quantum jump in our frameworks of appreciation,[20] and one that may be particularly useful for improving the uses of behavioral sciences for better policymaking, as I hope to show.

Using a very simple version of systems theory, I regard public policy as an output of the public policymaking system[21] and an input into various "target systems," such as health, education, transportation, public order and the international system. There are strong interactions between the public policymaking system and the various target systems at which its policy outputs are directed. Thus, many values, resources and stimuli are being supplied by the latter to the first, and the first tries to influence the operations of the latter.

---

[20] See Sir Geoffrey Vickers, The Art of Judgment: A Theory of Policymaking (N.Y.: Basic Books, 1965), Chapter 4.

[21] For convenience, I will focus my comments on public policy; but the analysis and prescriptions apply, in principle, also to corporate and other non-public types of policymaking.

Similarly, "behavioral sciences" are a system, the components of which include, for instance, personnel, structures, information storages, rules of behavior and patterns of adjustive dynamics. This system interacts intensely with other systems, especially the "scientific establishment," various social sub-systems and also the public policymaking system.

In the future it may, for our purposes, become useful to regard the public policymaking system and the various "target systems" as components of the social system, or the even broader socio-ecological system, and to analyze the relations between these sub-systems in terms of compartment theory, with transport processes going on in a mammillary structure (i.e., a central compartment interacting with a number of peripheral ones). Similarly, the direct and indirect (through interweaving sub-systems) relations between the behavioral sciences system and the public policymaking system may in the future be analyzable in terms of transport processes in a catenary structure (i.e., a chain of interacting compartments).[22]

---

[22]For compartment theory see A. Rescigno, "Synthesis for Multicompartment Biological Models," Biochem. Biophys. Acta., Vol. 37 (196), pp. 463-468, and A. Rescigno and G. Serge, Drug and Tracer Kinetics (Waltham, Mass.: Blaisdell, 1966).

But available knowledge as yet is far too underdeveloped to permit worthwhile use of such advanced models in respect to social phenomena. Rather, we must as yet rely on a much simpler general systems model, which permits us the following characterizations:[23]

All three, the public policymaking system, the target systems, and the behavioral science system are dynamic, open, non-steady-state, include a large variety of different and changing multi-role components interconnected in different degrees and through a multiplicity of channels, are closely interwoven and overlapping with one another and with other social macro-systems (e.g., the productive system, the demographic-ecological system, the technological and knowledge system and the cultural system), and behave in ways which defy detailed modelling.

---

[23]For the purposes of my analysis, and policy sciences in general, general systems theory is best presented in the following texts and collections: Kenneth F. Berrien, General and Social Systems (New Brunswick, N.J.: Rutgers University Press, 1968); Ludwig von Bertalanffy, General Systems Theory: Foundations, Development, Application (N.Y.: George Braziller, 1968); Walter Buckley, ed., Modern Systems Research for the Behavioral Scientists (Chicago: Aldine, 1968); Walter Buckley, Sociology and Modern Systems Theory (Englewood Cliffs, N.J.: Prentice Hall, 1967); E. J. Miller and A. K. Rice, Systems of Organization: The Control of Task and Sentient Boundaries (London: Tavistock Publications, 1967); and J. A. Miller, "Living Systems: Basic Concepts," Behavioral Science, Vol. 10 (1965), pp. 193-237, 380-411.

Using this simple model, a few main tentative implications can be derived, of which two seem to be of overriding importance:

a. Every system being a complex set of interacting components, desirable similar changes in any system (or similar "equifinal states") can in principle be achieved through many alternative variations in the components. This means, for our purposes, that different mixes of changes may often be equally useful in achieving desired changes though often some specific changes may be necessary to achieve desired results. This is a very helpful conclusion, because it permits us to pick out of a large repertoire of potentially effective changes those which are more feasible under dynamic internal and external conditions. This view also emphasizes the open-ended (or, to be more exact, "open-sided") nature of any search for improvements: there is, in principle, unlimited scope for adventurous thinking and invention. Therefore, any list of proposals should be regarded as illustrative and not definitive.

b. A less optimistic implication of our systems model is, that changes must reach a critical mass in order to influence the overall operations of the system.

Changes which do not reach the relevant impact thresholds will, at best, be neutralized by countervailing adjustments of other components or, at worst, may in fact result mainly in undesired results.

These general conclusions apply in principle to all directed system changes. Thus, they apply to the problems of preferable policy-mixes in respect to specific desired changes in designated target systems; to overall improvement of the public policymaking system;[24] and to

---

[24] To illustrate, let me mention ten items out of a set of proposals for the improvement of policymaking derived from application of a general systems framework: (1) Establishment of special structures and process-patterns for explicit strategy decisionmaking; (2) establishment of special structures and process-patterns for explicit learning-feedback; (3) establishment of special structures and process-patterns for more consideration of the future in contemporary policymaking; (4) development of policy analysis as a method, a profession and a special role; (5) a sub-set of activities to encourage creativity and invention in respect to policy issues; (6) improvement of one-person-centered high-level decisionmaking; (7) development of politicians; (8) radical changes in the school teaching of "good" citizenship" and current affairs subjects; (9) establishment of special units for explicit and systematic meta-policymaking (that is, policy on how to make policy); (10) establishment of policy sciences as a distinct area of research and study, in part to transform behavioral sciences into a policy-oriented discipline. This last item is the one with which we are mainly concerned in the present paper.

For an elaboration of this set of proposals, see my paper "Some Normative Implications of a System View of Policymaking," in Milton Rubin ed., Proceedings of the 14th Annual Meeting, The Society for General Systems

advancement of the scientific endeavors in respect to specific disciplines and in stipulated directions. In this paper we are interested in changes of those features of the public policymaking system and of the behavioral sciences system and of their modes of intertransport which will improve the utilization of behavioral sciences for better policymaking.

Research (1969, in print). (Earlier version Rand paper P-3991-1, February 1969.) The systematic theoretic basis for these recommendations is presented in my book Public Policymaking Reexamined, op. cit.

BEHAVIORAL SCIENCES AND POLICYMAKING IMPROVEMENT: SOME REDESIGN SPECIFICATIONS

My views on the contemporary weaknesses of behavioral sciences as an aid to policymaking also indicate some of the changes required in order to increase their salience to policymaking. But it is our general systems view of public policymaking, of behavioral sciences, and of the relation between them, which leads to a major conclusion: a broad set of changes in the public policymaking system, and in the behavioral sciences, and in their mutual transport channels and mechanisms are essential for massive improvements in the uses of behavioral sciences for policymaking improvement. What is required is not some incremental change here or there, but fargoing redesign in the two relevant systems and their interchanges.

It is this point of view, orientation, and frame of evaluation which constitute the main contributions of general systems theory to improving the uses of behavioral sciences for better policymaking. And it is this point of view, orientation and frame of evaluation which I want to stress. Despite its simplicity and in retrospect obvious character, the need for systems

redesigns in respect to all three -- the public policy-making system and the behavioral sciences system and their intertransport processes -- is not recognized by contemporary discourse on the uses of behavioral sciences in policymaking. And the need for such systems redesign, broad and intense enough to achieve a critical mass and have significant impacts on the target realities, contradicts the conservative incremental change propensities of both the public policymaking system (including its organization, political, personal and value components), and the behavioral sciences system (again, including its organizational, peer-control, personal and value components). Therefore, the general redesign specification, derived from a general systems approach, concerning the need for broad and intense system changes as essential and -- if successful -- sufficient for significant improvements in the uses of behavioral sciences for better policy-making, does constitute an innovation in respect to contemporary opinions and actions alike.

The required next stage of our endeavors is elaboration of detailed redesign specifications in respect to the two involved systems and their transport modes, with due attention to the distinctions between essential,

helpful and sufficient change specifications, in alternative combinations and with efficiency comparisons. But such an endeavor requires unavailable understanding of the working of the two systems and their intertransport, in addition to much innovative invention of new systems design ideas. Therefore, instead of undertaking this endeavor, I would have to limit myself to pointing out the need for it and the necessity to engage in relevant research, study and creative invention.

Nevertheless, I want to take at least a step in the required direction, by presenting an illustrative set of redesign specification. I do so, to concretize somewhat the idea of required systems redesign and also to follow myself one of the precepts of policy sciences -- to present analysis-based applied proposals without waiting for exhaustive study and complete understanding.

Let me present, therefore, some illustrative redesign specifications relevant to improving the uses of behavioral sciences for better public policymaking, in regard to the public policymaking system, the behavioral sciences systems and the intertransport between them. In respect to these specifications, we must keep in mind (1) the need to realize a number of the proposed specifications

simultaneously or in programmed order, to achieve critical mass and synergetically combined effects; and (2) the need sometimes to realize some of the proposed specifications in sets together with specifications of other improvements in the target systems, again for critical mass achievement and synergism.[25]

a. Some redesign specifications for the public policymaking system.

1. Specific organizational roles of "behavioral science advisors" (some other name, such as "social science advisor," can be used) should be established throughout the public policymaking system. These roles should satisfy the following conditions: (a) dispersal throughout the main components of the social guidance cluster, including executive and legislative; (b) organizational location near the decision centers; (c) in part at least, close integration with analysis and planning units; (d) careful staffing of these roles with specially trained professionals (see specification b 1.).

---

[25]For instance, the here proposed changes in the public policymaking system may have to be combined with other changes in that system, as enumerated in footnote 24 above.

2. Budgeting arrangements should be made to permit multiple-year funding of policy-oriented behavioral sciences research by special policy research organizations, on a contractual basis (as illustrated by the arrangements between the U.S. Air Force and The Rand Corporation).[26]

3. Special programs should be initiated to familiarize junior and senior behavioral scientists with the problems and realities of policymaking. This program should include, for instance: (a) one-year appointments to full-time positions; (b) fellowship and internship arrangements; (c) part-time consultantships.

4. The realities of policy problems as seen by the policy system components should be opened up for study, by providing easier access, with due safeguards to protect privileged and sensitive information (see also specification b 2).

5. Basic understanding of the potential contributions of behavioral sciences to better policymaking should be disseminated through the higher levels of the executive, and also as far as possible in the legislature.

---

[26]These arrangements and their significance are well brought out in Bruce L. R. Smith, The RAND Corporation: Case Study of a Non-Profit Advisory Corporation (Cambridge, Mass.: Harvard University Press, 1966).

This can be done, for instance, by inclusion of new courses and material in the various senior executive training and development programs; and in special workships, in which emphasis is on realistic cases and projects.

b. Some redesign specifications for the behavioral sciences system.

(1) New graduate teaching programs should be established, directed at preparing behavioral science advisors for policy contributing roles and, especially, advisory roles in the public policymaking system. This involves inter alia: (a) a broad, interdisciplinary, problem-oriented approach; (b) strong attention to analytical methods and normative decision theory, in combination with behavioral science knowledge; (c) new teaching methods, with emphasis on cases and projects; (d) internship programs as an integral part of the teaching program; (e) new types of doctorate theses, in the form of applied policy studies.

(2) A new professional concept of "behavioral science policy advisory" should be developed. This involves, in addition to new teaching programs, professional activities such as publication of a periodical and conferences. Special attention must be devoted to the ethical problems

of such a profession, such as how to combine intellectual and scientific honesty with acceptance of organizational demands for protection of privileged and sensitive information and for at least ad hoc acceptance of basic organizational values. Also, the distinction between the basically clinical role of a policy advisor and more "change agents" and "action involved" roles must be emphasized.

(3) Research orientations, methods and subjects must be changed to meet the needs of behavioral science contributions to better policymaking. Thus, for instance, the following changes are needed: (a) broad historic and cross-cultural studies of policy problems (e.g., addiction to narcotics, cigarette smoking, leisure time use); (b) methods for social experimentation and longitudinal evaluative follow-up; (c) time-compressing research methods to meet strict time constraints; (d) main attention to methods for identifying leverage points for directed change, without need to wait for full understanding of the involved target system; (e) encouragement of social invention should be accepted as a main goal of study and research; (f) methods to recognize potentially difficult problems while still latent should be worked out;

(g) high-level policymaking should itself be a main subject for improvement-directed research; (h) intense attention must be given to the need of distinguishing clearly between values, assumptions, hypotheses and validated findings; explicit value sensitivity testing of all recommendations is a must for all policy-oriented behavioral research.

c. Some redesign specifications for the intertransport between the public policymaking system and the behavioral sciences system.

Many of the redesign specifications in respect to the public policymaking system and the behavioral sciences system already relate to the intertransport between items. These include, for instance, the proposals for behavioral sciences advisory roles in the public policymaking system (specification a 1.) and for dissemination of knowledge on uses of behavioral sciences in it (specification a 5.); and the proposals in respect to training of behavioral science advisors as a main change in the behavioral sciences system (specification b 1.).

But additional changes are required, such as the following two:

(1) Presentation of policy-relevant behavioral science material in a language understandable to policymakers

and in easily accessible communication media (e.g., new types of behavioral science texts directed at policymakers).

(2) Reduction of social distance between behavioral scientists and policymakers, for instance by mixed workshops and informal mixed clubs.

CONCLUSION

The various proposed redesign specifications hopefully concretize the broad scope of systems changes needed for better use of behavioral sciences for improved policymaking, as brought out by application of a general systems approach.

My impression is that the required changes in the behavioral sciences system if realized, may possibly undermine the goals of behavioral sciences other than contribution to policymaking, including the main goal of all scientific activity: to add to human knowledge and understanding. Also the required changes in the public policymaking system and in the intertransport modes require more than can be done and should be done by changes within the behavioral sciences system. Therefore we may have to move from systems-redesign to design of a new system, in the form of establishment of a new interdiscipline and profession of policy sciences[27] (of

---

[27]This concept was first proposed and pioneered by Harold D. Lasswell. See his article "The Policy Orientation," in Daniel Lerner and Harold D. Lasswell, eds., The Policy Sciences: Recent Developments in Scope and Method (Stanford: Stanford University Press, 1951), pp. 3ff.

The first university program using that concept has been opened this year, namely the Doctorate Program in

which transformed behavioral sciences would constitute one of the main foundations and components). General systems theory here again enters the picture as it should serve as the basic orientational outlook of policy sciences. But I must leave closer examination of this more fargoing proposal to some other opportunity.[28]

Policy Sciences at the State University of New York at Buffalo. Some other university programs may alsc be moving in that direction, such as the Program in Planning at the University of Puerto Rico, the program in Social Policy Planning at the University of California at Berkeley and the new masters and doctorate program in Public Policy which will start next year at Harvard University.

[28] See Public Policymaking Reexamined, op. cit., pp. 240-245. I am dealing with this idea in detail in two forthcoming papers: "General Systems Theory as a Foundation for Policy Sciences" and "Prologomenon to Policy Sciences."