William N. Dunn

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William N. Dunn is Professor in the Graduate School of Public and International Affairs at the Univer sity of Pittsburgh, USA.

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In memory of Donald T. Campbell

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PREFACE

My aim in writing the several editions of this book has been to produce a critical synthesis of the field, while at the same time offering students, instructors, and practitioners a body of knowledge and skills that is applicable to real-world problems. This is not a text in the narrow and conventional sense of the term. Ever since the publication of the first edition of Public Policy Analysis more than thirty-five years ago, I have become more and more convinced that the methodology of policy analysis rests or should rest on epistemological foundations that differ from those of the disciplines of which policy analysis is composed. For this reason, I continue to define policy analysis as an applied social science discipline that employs multiple methods of inquiry to solve practical problems.

What this means is that the methodology of policy analysis cannot be reduced to the theories and analytical routines of microeconomics, because solutions for practical problems demand much more than the analysis of rational choice, expected utility, and opportunity costs. By the same token, the methodology of policy analysis cannot be reduced to the study of politics, because solutions for practical problems require more than the analysis of power, rule, and authority or who gets what, when, and how. Much more is involved. Finally, because a principal aim of policy analysis is to improve policies, the methodology of policy analysis cannot be reduced to an academic spectator sport in which knowledge is prized for its own sake.

In this 6th edition, I have tried to employ a simplified style of writing, choose cases based on real-world analytical practices, and create visual displays that make complex ideas understandable. Case materials now include issues in foreign policy and international security as well as domestic issues of environmental justice, urban economics, transportation, health, and traffic safety. Advanced graphics for mapping and evaluating policy arguments are included in order to cultivate critical thinking skills in areas ranging from expert forecasting and statistical analysis to theories of environmental justice. The book provides students with marketable skills in communicating policy analysis by writing policy memos, position papers, and other products of structured analytical writing.

Finally, new review questions and demonstration exercises emphasize active rather than passive learning.

Special instructional devices and learning strategies are again employed throughout the book:

- **Advance organizers**. The book uses advance organizers, especially visual displays, to introduce students to the rationale and application of methods. The advance organizer for the book as a whole is the functional model of policy analysis presented in the first chapter.

- **Learning objectives**. At the beginning of each chapter is a statement of the learning objectives that students should be able to attain by reading the chapter and completing its study questions and demonstration exercises. These objectives are stated in terms of the acquisition of knowledge and skills to do or perform something—that is, behaviorally anchored learning objectives that involve recognizing, defining, understanding, explaining, predicting, evaluating, and applying. By stating learning objectives in this way, the emphasis is on active rather than passive learning, on application rather than memorization.
- **Review questions**. Knowledge and skills must be reinforced. For this reason, review questions are provided at the end of each chapter. The review questions address higher-order knowledge and skills (e.g., explaining or applying) as well as lower-order knowledge and skills (e.g., calculating or estimating). Review questions may be used by students for self-study and by instructors who are developing written assignments, examinations, and tests.
- **Demonstration exercises**. Knowledge and skills are not acquired or retained without frequent opportunities for application to real-world problems. For this reason, each chapter contains opportunities to demonstrate the application of knowledge and skills to practical problems. The attempt is to draw students away from “blackboard policy analysis” into the real world of messy problems.
- **Cases**. Cases in policy analysis are the focus of the demonstration exercises. Cases span a number of issue areas including foreign policy and counter-terrorism, transportation policy, occupational health and safety, and urban policy. Some cases are primarily conceptual; most are methodological in nature.
- **Bibliographies**. In addition to literature cited in footnotes, each chapter is accompanied by a bibliography keyed to the subject matter of that chapter. I have attempted to include literature that is representative of many of the most important recent and classical developments in public policy analysis.
- **Guidelines for written and oral communication**. Students who master methods almost always face difficulties when they are faced with translating and communicating the results of analysis. For this reason, there is an emphasis on writing issue papers, policy memoranda, and position papers, and planning oral briefings. Appendices present step-by-step guidelines and checklists.

- **Argument maps**. Analysis is about making and understanding policy arguments. This edition uses argument maps created with Rationale, an innovative argument mapping program available at www.reasoninglab.com. Elsewhere I have expressed my gratitude to Professor Tim van Gelder, one of the originators of the program, for his help.
- **Website**. A special website (www.routledge.com/9781138743847) supports users of this book by providing slides keyed to each chapter and data sets related to cases covered in the chapters. Many of the slides can serve as teaching notes.
- **Argument Mapping Software**. Users of this book may wish to purchase argument mapping software (**Rationale 2**) by going to www.reasoninglab.com. Educational discounts are available.

ACKNOWLEDGEMENTS

I would not have begun this ambitious multidisciplinary project without the encouragement of the late Paul F. Lazarsfeld, who many years ago challenged me to investigate what he called the "policy sciences movement." Lazarsfeld, one of a handful of premier applied social scientists of the twentieth century, was skeptical about the breadth of the enterprise, as it had been sketched by Harold Lasswell, Daniel Lerner, and others. Its aims seemed to him unwisely all-encompassing and grand, a criticism also held by Charles Lindblom and a number of other policy specialists. Lazarsfeld, it should be said, did not self-identify as a sociologist, but as an applied social scientist with multidisciplinary commitments. For this reason, he was University Professor of Social Science (not Sociology) at the University of Pittsburgh.

Some ten years later, we made an ultimately unsuccessful attempt to fill Lazarsfeld's vacant chair with another premier applied social scientist, Donald T. Campbell, who had virtually revolutionized the methodology of the applied social sciences in the twentieth century. Campbell, like Lazarsfeld, did not self-identify primarily with his original discipline, which was social psychology, but viewed himself as a multidisciplinary applied social scientist specializing in program and policy evaluation, as well as the philosophy and sociology of science. Had he joined us, Campbell would have been a University Professor of Social Science (not Psychology) at the University of Pittsburgh. Campbell's mentorship at a critical stage in my professional life some thirty years ago had a profound effect on the way I think about the strengths and limitations of policy analysis, program evaluation, and the applied social sciences. His imprint can be seen throughout this book.

At about the same time, I was asked to join a team of faculty who were developing curricular materials on policy analysis for practitioners in local governments. Under the leadership of Blue Wooldridge of the National Technical Information Service, now with Virginia Commonwealth University, the group had wisely contracted specialists in learning theory and curriculum development, including Doris Gow and Jyotsna Vasudev, who were brought into the project. I learned from them the important pedagogical lesson that abstract subjects such as policy analysis can be more effectively taught by focusing on behaviorally defined learning objectives and what universities now teach under the rubric of distance learning. I am grateful to them for making me see that much of the literature we assign in courses is not easily or successfully tied to learning outcomes, which means that we often cannot say why we want students to read the materials we assign. This was an

embarrassing revelation.

I have been fortunate to meet and work with colleagues who changed my mind about many things, including the important role that the philosophy and sociology of science play in the applied social sciences. These colleagues include Ian I. Mitroff, Burkart Holzner, and my former student and now professor, Bahman Fozouni, who introduced me to yet other colleagues in the Center for History and Philosophy of Science at the

University of Pittsburgh. I learned much about the pragmatic importance of policy analysis and the applied social sciences from Gerald Zaltman, Robert F. Rich, Thomas D. Cook, and the late Carol H. Weiss, all of whom were and are committed to investigating and deliber ately changing the conditions under which the social sciences may be used to solve practical problems. B. Guy Peters also taught me much about the need to link policy analysis with the field of governance and, particularly, policy design.

Faculty and students in the Graduate School of Public and International Affairs (GSPIA), University of Pittsburgh, have helped me improve my thinking, writing, and teaching. They include Alex Weilenmann, Louise Comfort, Dipak Gupta, Steve Coulthart, Tom Pavlak, John Mendeloff, Ilia Murtazashvili, Jennifer Murtazashvili, Hector Correa, Michael Sabath, Soumana Sako, Sam Overman, Tony Cahill, Mary Jo Dukes, Sofian Effendi, Kevin Kearns, S. Laurel Weldon, Dave Miller, Ralph Bangs, Jan Jernigan, Neda Milevska, Phil Murphy, Keun Namkoong, Andrea Hegedus, and Phil Williams.

In the past thirty-five years, this book has been used in training, certificate, and degree programs in universities, think tanks, and governments in this country and abroad. Transla tions into Arabic, Chinese, Indonesian, Korean, Macedonian, Romanian, Russian, Ukrain ian, and Spanish are completed or under way. The book has been used in training programs and projects in countries of the European Union, Southeastern Europe, the Middle East, North Africa, and Latin America. The revisions incorporated in this edition reflect some of what I have learned from the participants and organizers of these programs.

I am also grateful to students and faculty at the Graduate Center for Public Policy and Management in Skopje, Macedonia, an innovative but now inactive institution with some of the best students I have ever taught. I also want to thank reviewers of this and previous editions. In addition to anonymous reviewers, they include David Nice of Washington State University, David Houston of the University of Tennessee at Knoxville, Louise Comfort of the University of Pittsburgh. Sheila Kelly, Lien Rung-Kao, Sujatha Raman, Eric Sevigny, Kate Freed, Bojana Aceva-Andonova, Erin McGrath, Alla Golovina Khadka, and Jessica Reyes assisted in preparing materials for this and previous editions. I am also grateful for the editorial assistance of Integra Software Services Pvt Ltd, in Pondicherry, India, and the editors at Pearson. For this sixth edition I owe special thanks to Misha Kydd, Yvette M. Chin, Sophie Watson, and the publisher at Routledge, Laura D.H. Stearns.

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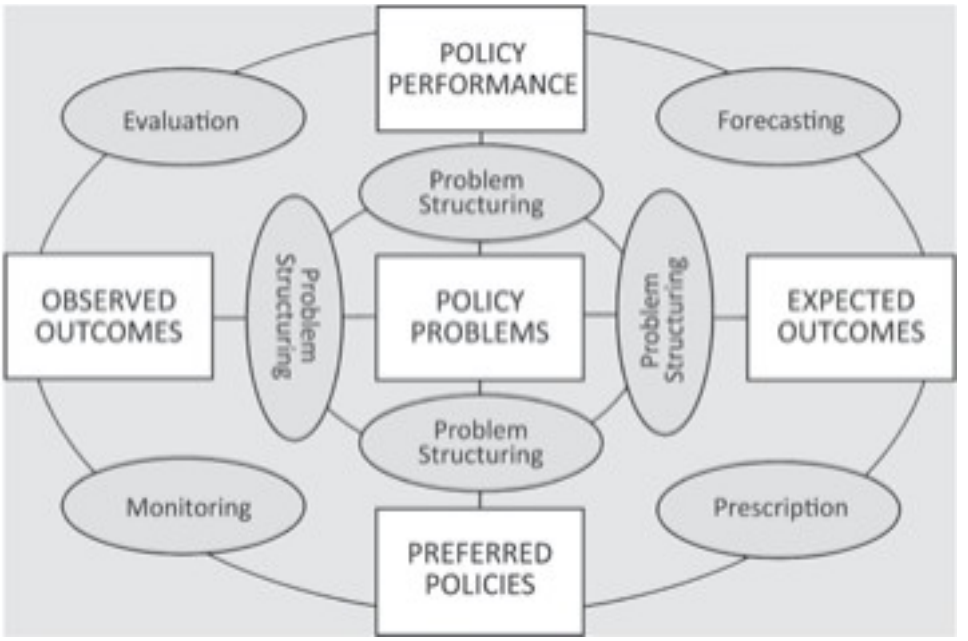
Methodology of

Policy Analysis



The Process of Policy Analysis

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LEARNING OBJECTIVES

By studying this chapter, you should be able to:

- Define and illustrate phases of policy analysis
- Distinguish four strategies of policy analysis
- Contrast reconstructed logic and logic-in-use
- Distinguish prospective and retrospective policy analysis
- Distinguish problem structuring and problem solving
- Describe the structure of a policy argument and its elements
- Understand the role of argument mapping in critical thinking
- Interpret scorecards, spreadsheets, influence diagrams, decision trees, and argument maps

INTRODUCTION

Policy analysis is a process of multidisciplinary inquiry aiming at the creation, critical assessment, and communication of policy-relevant knowledge. As a problem-solving disci pline, it draws on social science methods, theories, and substantive findings to solve practi cal problems.[1]

METHODOLOGY OF POLICY INQUIRY

The ***methodology*** of policy inquiry refers to the critical investigation of potential solu tions to practical problems. Abraham Kaplan, one of the founders of the policy sciences, observed that the aim of methodology is to help understand and question, not only the products of policy inquiry, but the processes employed to create these products. The methodology of policy inquiry contributes to the reflective understanding of theories, methods, and practices of specialized fields such as benefit–cost analysis in economics, implementation analysis in political science, and program budgeting in public adminis tration. These and other specialized fields hold an important place in the process of policy inquiry because they help provide its multidisciplinary foundations.

The methodology of policy inquiry is not the same as methods such as regression analy sis, ethnographic interviewing, or benefit-cost analysis, because methodology is concerned with the philosophical assumptions that justify the use of these methods. Nor is the meth odology of policy inquiry equivalent to one or another philosophy of science, for example, logical positivism, hermeneutics, or pragmatism.[2] On the contrary, the methodology of policy inquiry is productively eclectic; its practitioners are free to choose among a range of scientific methods, qualitative as well as quantitative, and philosophies of science, so long as these yield reliable knowledge.[3] In this context, policy analysis includes art and craft, which

[1]For a sample of alternative definitions see Harold D. Lasswell, ***A Pre-view of Policy Sciences*** (New York: American Elsevier Publishing, 1971); Yehezkel Dror, ***Ventures in Policy Sciences: Concepts and Applications*** (New York: American Elsevier Publishing, 1971); Edward S. Quade, ***Analysis for Public Decisions***, 3rd rev. ed., ed. Grace M. Carter (New York: North Holland Publishing, 1989); David L. Weimer and Aidan R. Vining, ***Policy Analysis: Concepts and Practice***, 2nd ed. (Englewood Cliffs, NJ: Prentice Hall, Inc., 1992).

[2]Logical positivism (or logical empiricism) was abandoned by most philosophers of science more than 50 years ago, although its epistemological pillars—the correspondence theory of truth, the empirical criterion of meaning, and value-free science—are still venerated by many social scientists. For alternatives to logical positivism in economics and political science see Daniel Bromley, ***Sufficient Reason: Volitional Pragmatism and the Meaning of Economic Institutions*** (Princeton, NJ: Princeton University Press, 2006); Henry E. Brady and David Collier, eds. ***Rethinking Social Inquiry: Diverse Tools, Shared Standards*** (Lanham, MD: Rowman Littlefield, 2004); Deirdre N. McCloskey, ***The Rhetoric of Economics***, 2nd ed. (Madison: University of Wisconsin Press, 1998); Thomas Ziliak and Deirdre N. McCloskey, ***The Cult of Statistical Significance: How the Standard Error Costs Us Jobs, Justice, and Lives*** (Ann Arbor: University of Michigan Press, 2008).

[3]Larry Laudan has argued persuasively that the demarcation between science and nonscience, including science, art, and craft, is a pseudo-problem. It is not necessary to ask whether knowledge is "scientific," only whether it is reliable. "The Demise of the Demarcation Problem," in R. S. Cohen and L. Laudan, ***Physics, Philosophy and Psychoanalysis: Essays in Honor of Adolf Grünbaum.*** Boston Studies in the Philosophy of Science, vol. 76 (Dordrecht: D. Reidel, 1983), pp. 111–127. Aaron Wildavsky and others seem to juxtapose art and craft to characterize policy analysis. See Aaron Wildavsky, ***Speaking Truth to Power: The Art and Craft of Policy Analysis*** (Boston, MA: Little Brown, 1979); and Iris Geva-May and Aaron Wildavsky, ***An Operational Approach to Policy***

may be regarded as scientific to the extent that they succeed in producing knowledge that is ***reliable*** because it can be trusted. Ordinary commonsense knowing and well-winnowed practical wisdom, both products of evolutionary learning across generations of problem solvers, often produce conclusions that are at least as reliable, and sometimes more so, than those produced by specialized social science methods.[4]

The rationale for policy analysis is pragmatic. For this reason, policy analysis is unmistakably different from social science disciplines that prize knowledge for its own sake. The policy-relevance of these disciplines depends, not only on their status as sci ences, but on the extent to which they are successful in illuminating and alleviating practical problems. Practical problems, however, do not arrive in separate disciplinary packages addressed, as it were, to social science departments. In today's world, multidis ciplinary policy analysis seems to provide the best fit with the manifold complexity of public policymaking.

MULTIDISCIPLINARY POLICY ANALYSIS

Policy analysis is partly ***descriptive.*** It relies on traditional social science disciplines to describe and explain the causes and consequences of policies. But it is also ***normative,*** a term that refers to value judgments about what ought to be, in contrast to descriptive state ments about what is.[5] To investigate problems of efficiency and fairness, policy analysis draws on normative economics and decision analysis, as well as ethics and other branches of social and political philosophy, all of which are about what ***ought*** to be. This normative commitment stems from the fact that analyzing policies demands

that we choose among desired consequences (ends) and preferred courses of action (means). The choice of ends and means requires continuing tradeoffs among competing values of efficiency, equity, security, liberty, democracy, and enlightenment.[6] The importance of normative reasoning in policy analysis was well stated by a former undersecretary in the Department of Housing

Analysis: The Craft, Prescriptions for Better Analysis (Boston, MA: Kluwer, 1997). The term ***policy sciences*** is Harold Lasswell's. See the short methodological history of the policy sciences in Ronald Brunner, "The Policy Movement as a Policy Problem," in ***Advances in Policy Studies since 1950,*** vol. 10, ***Policy Studies Review Annual,*** ed. W. N. Dunn and R. M. Kelly (New Brunswick, NJ: Transaction Books, 1992), pp. 155–197, and contributions to Michael Moran, Martin Rein, and Robert E. Goodin, eds., ***The Oxford Handbook of Public Policy*** (Oxford: Oxford University Press, 2006).

[4]On the contrasts between scientific and professional knowledge, on one hand, and ordinary commonsense knowing, on the other, see Charles E. Lindblom and David K. Cohen, ***Usable Knowledge: Social Science and Social Problem Solving*** (New Haven, CT: Yale University Press, 1979). On the overall soundness of evolved practical knowledge—but the periodic need for supplemental scientific testing—see Donald T. Campbell, "Evolutionary Epistemology," in ***Methodology and Epistemology for Social Science: Selected Papers***, ed. E. S. Overman (Chicago, IL: University of Chicago Press, 1989).

[5]A classic statement of the difference between positive and normative knowledge in economics is Milton Friedman, ***Essays in Positive Economics*** (Chicago, IL: University of Chicago Press, 1953). This same positive normative distinction is present throughout the social sciences. This same positive-normative distinction is the basis for Dennis C. Muller's ***Public Choice III*** (Cambridge: Cambridge University Press, 2012), a widely respected treatise on positive and normative economic theory and research.

[6]See Deborah Stone, Policy Paradox: ***The Art of Political Decision Making***, rev. ed. (New York: W. W. Norton, 2001), and Harold D. Lasswell, ***A Preview of Policy Sciences*** (New York: Elsevier, 1971).

and Urban Development: "Our problem is not to do what is right. Our problem is to know what is right."[7]

Policy-Relevant Knowledge

Policy analysis is designed to provide ***policy-relevant knowledge*** about five types of questions:

- ***Policy problems.*** What is the problem for which a potential solution is sought? Is global warming a man-made consequence of vehicle emissions, or a consequence of periodic fluctuations in the temperature of the atmosphere? What alternatives are available to mitigate global warming? What are the potential outcomes of these alternatives and what is their value or utility?
- ***Expected policy outcomes.*** What are the expected outcomes of policies designed to reduce future harmful emissions? Because periodic natural fluctuations are difficult if not impossible to control, what is the likelihood that emissions can be reduced by raising the price of gasoline and diesel fuel or requiring that aircraft use biofuels?
- ***Preferred policies.*** Which policies should be chosen, considering not only their expected outcomes in reducing harmful emissions, but the value of reduced emissions in terms of monetary costs and benefits? Should environmental justice be valued along with economic efficiency?

- **Observed policy outcomes.** What policy outcomes are observed, as distinguished from the outcomes expected before the adoption of a preferred policy? Did a preferred policy actually result in reduced emissions, or did decreases in world petroleum production and consequent increases in gasoline prices and reduced driving also reduce emissions?
- **Policy performance.** To what extent has policy performance been achieved, as defined by valued policy outcomes signaling the reduction of global warming through emissions controls? To what extent has the policy achieved other measures of policy performance, for example the reduction of costs of carbon emissions and global warming to future generations?

Answers to these questions yield these five types of policy-relevant knowledge, which are shown as rectangles in Figure 1.1.[8]

Policy problems are representations of problem situations, which are diffuse sets of worries, inchoate signs of stress, or surprises for which there is no apparent solution. Knowledge of what problem to solve requires knowledge about the antecedent conditions of a problem situation (e.g., school dropouts as an antecedent of unemployment), as well as knowledge about values (e.g., safe schools or a living wage) whose achievement may lead to the definition of the problem and its potential solutions. Knowledge about policy

[7]Robert C. Wood, quoting President Lyndon B. Johnson in his "Foreword" to ***The Study of Policy Formation***, ed. Raymond A. Bauer and Kenneth J. Gergen (New York: Free Press, 1968), p. v.

[8]A similar framework, designed for the discipline of sociology, was suggested by Walter Wallace, ***The Logic of Science in Sociology*** (Chicago, IL: Aldine Books, 1971). Wallace's framework addresses research methodology in sociology, while Figure 1.1 addresses the multidisciplinary research methodology of policy analysis.

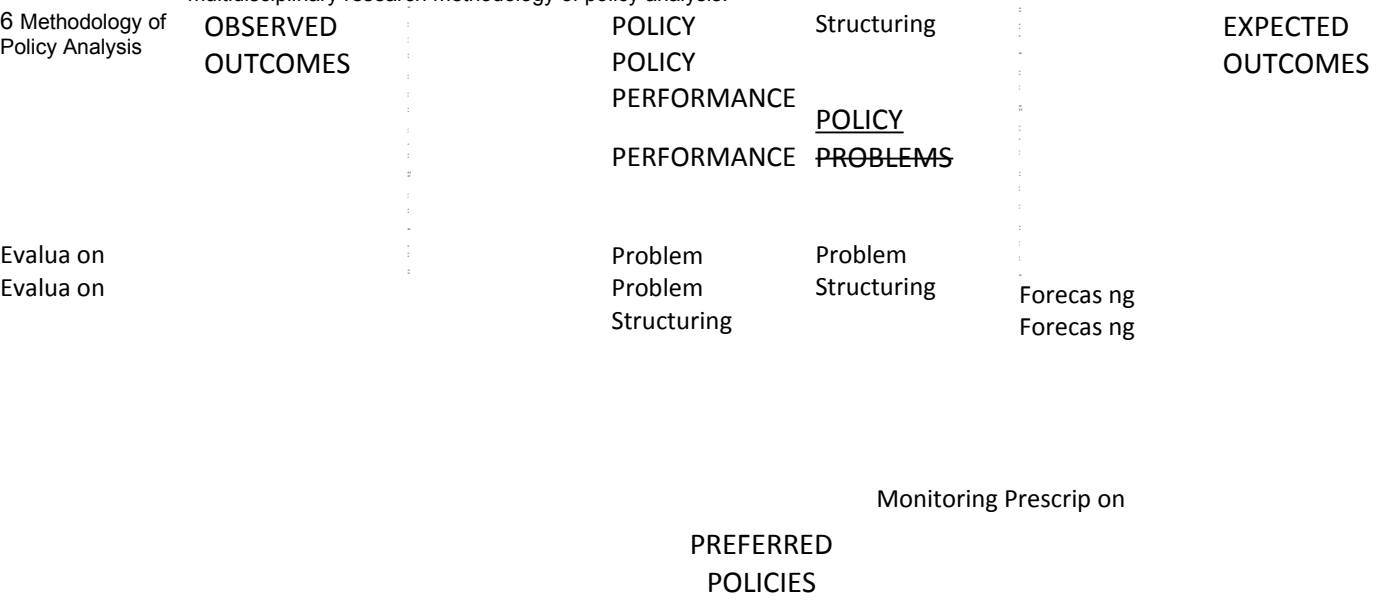

FIGURE 1.1
Multidisciplinary Policy Analysis

problems also includes at least two potential solutions to the problem and, if available, the probabilities that each alternative is likely to achieve a solution. Knowledge about policy problems plays a critical role in policy analysis, because the way a problem is defined shapes the identification of available solutions.

Inadequate or faulty knowledge may result in serious or even fatal errors: defining the wrong problem.[9]

Expected policy outcomes are likely consequences of adopting one or more policy alternatives designed to solve a problem. Knowledge about the circumstances that gave rise to a problem is important for producing knowledge about expected policy outcomes. Such knowledge is often insufficient, however, because the past does not repeat itself, and the values that shape behavior may change in future. For this reason, knowledge about expected policy outcomes is not "given" by the existing situation. To produce such knowl
edge may require creativity, insight, and the use of tacit knowledge.[10]

[9]Defining the wrong problem is a Type III error, as contrasted with Type I and Type II errors committed when the level of statistical significance (***alpha***) is set too high or too low in testing the null hypothesis. Early statements of this contrast are Howard Raiffa, ***Decision Analysis*** (Reading, MA: Addison-Wesley, 1968), p. 264, and Ian I. Mitroff and Thomas R. Featheringham, "On Systematic Problem Solving and the Error of the Third Kind," ***Behavioral Sciences*** 19, 6 (1974): 383–393.

[10]Books that address creativity, insight, and tacit knowledge are Yehezkel Dror, ***Ventures in Policy Sciences: Concepts and Applications*** (New York: American Elsevier Publishing, 1971); Sir Geoffrey Vickers, ***The Art of Judgment: A Study of Policy Making*** (New York: Basic Books, 1965); and C. West Churchman, ***The Design of***

A ***preferred policy*** is a potential solution to a problem. To select a preferred policy, it is necessary to have knowledge about expected policy outcomes as well as knowledge about the value or utility of the expected outcomes. Another way to say this is that factual as well as value premises are required for a policy prescription. The fact that one policy is more effective or efficient than another does not alone justify the choice of a preferred policy. Factual premises must be joined with value premises involving equality, efficiency, security, democracy, enlightenment, or some other value.

An ***observed policy outcome*** is a present or past consequence of implementing a pre ferred policy. It is sometimes unclear whether an outcome is actually an effect of a policy. Some effects are not ***policy*** outcomes, because many outcomes are the result of other, extra policy factors. It is important to recognize that the consequences of action cannot be fully stated or known in advance, which means that many consequences are neither anticipated nor intended. Fortunately, knowledge about observed policy outcomes can be produced after policies have been implemented.

Policy performance is the degree to which an observed policy outcome contributes to the solution of a problem. In practice, policy performance is never perfect. Problems are rarely "solved"; most often problems are resolved, reformulated, and even "unsolved."[11] To know whether a problem has been solved, requires knowledge about observed policy out
comes, as well as knowledge about the extent to which these outcomes contribute to the valued opportunities for improvement that gave rise to a problem.

Knowledge Transformations

The five types of policy-relevant knowledge are interdependent. The solid lines connecting each pair of components in Figure 1.1 represent ***knowledge transformations,*** where one type of knowledge is changed into another, so that the creation of knowledge at any point depends on knowledge

produced in an adjacent (and most often previous) phase. Knowledge about policy performance, for example, depends on the transformation of prior knowledge about observed policy outcomes. The reason for this dependence is that any assessment of how well a policy achieves its objectives assumes that we already have reliable knowledge about the outcomes of that policy. Note, however, that types of knowledge are connected with solid lines rather than arrows to show that knowledge can be transformed backward and forward in an iterative fashion. The process of transformation is rarely linear.

Knowledge about policy problems is a special case. Knowledge about policy problems contains other types of knowledge. Some types of knowledge may be included—for example, knowledge about preferred policies—and others excluded. What is included or excluded in the formulation of a problem affects which policies are eventually prescribed, which values are chosen as criteria of policy performance, and which expected outcomes

Inquiring Systems; Basic Concepts of Systems and Organization (New York: Basic Books, 1971). The concept of tacit knowledge is attributed to Michael Polanyi, ***Personal Knowledge*** (Chicago, IL: University of Chicago Press, 1958).

[11]Russell L. Ackoff, "Beyond Problem Solving," ***General Systems*** 19 (1974): 237–239.

warrant or do not warrant attention. At the risk of being repetitious, it is worth stressing that a fatal error of policy analysis is a Type III error—defining the wrong problem.[12]

Policy-Analytic Methods

The five types of policy-relevant knowledge are produced and transformed by using policy-analytic methods, which are the vehicles driving the production and transformation of knowledge. Methods involve judgments of different kinds[13]: judgments to accept or reject an explanation, to affirm or dispute the rightness or wrongness of a preferred policy, to prescribe or not prescribe a preferred policy, to accept or reject a prediction about an expected outcome, to formulate a problem in one way rather than another.

In policy analysis, these methods have special names:

- ***Problem structuring.*** Problem-structuring methods are employed to produce knowledge about what problem to solve. Problem-structuring methods include the influence diagram and decision tree presented in Case 1.2 of this chapter ("Using Influence Diagrams and Decision Trees to Structure Problems of Energy and Highway Safety Policy"). Other examples of problem-structuring methods include argument mapping (Case 1.3, "Mapping International Security and Energy Crises"). Chapter 3 of this book covers problem-structuring methods more extensively.
- ***Forecasting.*** Forecasting methods are used to produce knowledge about expected policy outcomes. Although many kinds of forecasting methods are covered in Chapter 4, an example of a simple forecasting tool is the scorecard described in Case 1.1 (The Goeller Scorecard and Technological Change). Scorecards, which are based on the judgments of experts, are useful in identifying expected outcomes of science and technology policies.
- ***Prescription.*** Methods of prescription are employed to create knowledge about preferred policies. An example of a prescriptive method is the spreadsheet (in Case 1.2, "Using Influence Diagrams and Decision

Trees"). The spreadsheet goes beyond the identification of expected policy outcomes by expressing consequences in terms of monetary benefits and costs. Benefit–cost analysis and other methods of prescription are presented in Chapter 5.

- **Monitoring.** Methods of monitoring are employed to produce knowledge about observed policy outcomes. The scorecard (Case 1.1) is a simple method for monitoring observed policy outcomes as well as forecasting expected policy outcomes. Chapter 6 covers methods of monitoring in detail.

- **Evaluation.** Evaluation methods are used to produce knowledge about the value or utility of observed policy outcomes and their contributions to policy performance.

[12]Type I and Type II errors are also known as false positives and false negatives. Other sources on Type III errors include A. W. Kimball, "Errors of the Third Kind in Statistical Consulting," *Journal of the American Statistical Association* 52 (1957): 133–142; Howard Raiffa, *Decision Analysis* (Reading, MA: Addison-Wesley, 1968); and Ian I. Mitroff, *The Subjective Side of Science* (New York: Elsevier, 1974).

[13]John O'Shaughnessy, *Inquiry and Decision* (London: George Allen & Unwin, 1972).

Although evaluation methods are covered more fully in Chapter 7, the spreadsheet in Case 1.2 may be used for evaluation as well as prescription.

The first method, problem structuring, is about the other methods. For this reason, it is a **metamethod** (method of methods). In the course of structuring a problem, analysts typi cally experience a "troubled, perplexed, trying situation, where the difficulty is, as it were, spread throughout the entire situation, infecting it as a whole."[14] **Problem situations** are not problems, because problems are representations or models of problem situations. Hence, problems are not "out there" in the world but stem from the interaction of the thoughts of many persons and the external environments in which they work or live. It is important to understand that analysts with different perspectives see the same problem situation in dif
ferent ways. Imagine a graph showing increased national defense expenditures in trillions of dollars. The problem situation, represented by the graph, may be seen by one stakeholder as evidence of increasing national security (more of the budget is allocated to defense) and by another as an indication of declining resources for social services (less of the budget can be allocated to social services). Problem structuring, a process of testing different for
mulations of a problem situation, governs the production and transformation of knowl edge produced by other methods. Problem structuring, which is important for achieving approximate solutions to ill-structured or "wicked" problems,[15] is the central guidance sys tem of policy analysis.

Policy-analytic methods are interdependent. It is not possible to use one method with out using others. Thus, although it is possible to monitor past policies without forecasting their future consequences, it is usually not possible to forecast policies without first moni toring them.[16] Similarly, analysts can monitor policy outcomes without evaluating them, but it is not possible to evaluate an outcome without first monitoring the existence and magnitude of an outcome. Finally, to select a preferred policy typically requires that ana lysts have already monitored, evaluated, and forecasted outcomes.[17] This is another way of saying that policy prescription is based on factual as well as value premises.

Figure 1.1 supplies a framework for integrating methods from different disciplines and professions. The five policy-analytic methods are used across political science, sociology, economics, operations research, public administration, program evaluation, and ethics.

[14]John Dewey, ***How We Think*** (Boston, MA: D. C. Heath and Company, 1933), p. 108. The original statement of the difference between a problem and a problem situation is attributable to philosophical pragmatists including Charles Sanders Peirce and John Dewey.
[15]The original statement about "wicked" problems, a term coined by C. West Churchman in 1967, is Horst W. Rittel, "On the Planning Crisis: Systems Analysis of the First and Second Generations," pp. 390–396. Berkeley, CA: Institute of Urban and Regional Development. A more recent statement is Sandra S. Batie, "Wicked problems and applied economics." ***American Journal of Agricultural Economics,*** 90, 5 (2008): 1176–1191. [16]An exception is predictions made on the basis of expert judgment or on abductive (retroductive) reasoning. The explanation of a policy is not necessary for predicting its future consequences. Strictly speaking, a prediction is a causal inference, whereas a projection, extrapolation, or "rational forecast" is not. On abductive reasoning in economics see Daniel W. Bromley, ***Volitional Pragmatism and the Meaning of Economic Institutions*** (Princeton, NJ: Princeton University Press, 2006).
[17]Causation may be assumed but not understood. Recipes claim only that a desired result is a consequence of action. Joseph L. Bower, "Descriptive Decision Theory from the 'Administrative' Viewpoint," in ***The Study of Policy Formation,*** ed. Raymond A. Bauer and Kenneth J. Gergen (New York: Free Press, 1968), p. 10.

Some methods are used solely or primarily in some disciplines, and not others. Program evaluation, for example, employs monitoring to investigate whether a policy is causally relevant to an observed policy outcome. Although program evaluation has made extensive use of interrupted time-series analysis, regression-discontinuity analysis, causal modeling, and other techniques associated with the design and analysis of field experiments,[18] imple mentation research within political science has not. Instead, implementation researchers have relied mainly on techniques of case study analysis.[19] Another example comes from forecasting. Although forecasting is central to both economics and systems analysis, eco nomics has drawn almost exclusively on econometric techniques. Systems analysis has made greater use of qualitative forecasting techniques for synthesizing expert judgment, for example, Delphi technique and other qualitative techniques of synthesizing expert judgments.[20]

FORMS OF POLICY ANALYSIS

Relationships among types of knowledge and methods provide a basis for contrasting dif ferent forms of policy analysis (Figure 1.2).

Prospective and Retrospective Analysis

Prospective policy analysis involves the production and transformation of knowledge before prescriptions are made. Prospective, or ***ex ante*** analysis, shown as the right half of Figure 1.2, typifies the operating styles of economists, systems analysts, operations researchers, and deci sion analysts. The prospective form of analysis is what Williams means by policy ***analysis.*** Policy analysis is a means of analyzing knowledge "to draw from it policy alternatives and preferences stated in comparable, predicted quantitative and qualitative terms . . . it does not include the ***gathering*** of knowledge."[21] Policy ***research,*** by contrast, refers to studies that use social science methods to describe or explain phenomena. However, prospective analysis is often attended by gaps between the choice of preferred solutions and efforts to implement them. The reason for these gaps is that only a small amount of work required to achieve a desired set of objectives is carried out ***before*** policies are implemented. "It is not that we have too many good analytic solutions to problems," writes Graham Allison. "It is, rather, that we have more good solutions than we have appropriate actions."[22] ***Retrospective***

policy analysis, a potential solution, is displayed as the left half of Figure 1.2. This form of **ex post** analy sis involves the production and transformation of knowledge **after** policies have been

[18]See, e.g., William R. Shadish, Thomas D. Cook, and Donald T. Campbell, **Experimental and Quasi-Experimental Designs for Generalized Causal Inference** (Belmont, CA: Wadsworth, Cengage Learning, 2002).

[19]Paul A. Sabatier and Hank C. Jenkins-Smith, "The Advocacy Coalition Framework: An Assessment," in **Theories of the Policy Process,** ed. P. A. Sabatier (Boulder, CO: Westview Press, 1999), pp. 117–166. [20]See Chapter 5.

[21]Walter Williams, **Social Policy Research and Analysis: The Experience in the Federal Social Agencies** (New York: American Elsevier, 1971), p. 8.

[22]Graham T. Allison, **Essence of Decision: Explaining the Cuban Missile Crisis** (Boston, MA: Little, Brown, 1971), pp. 267–268.

RETROSPECTIVE (*ex post*)
What happened and what
difference did it make?

PROSPECTIVE (*ex ante*)
What will happen and
what should be done?

Evalua on

Forecas ng

Problem
The Process of Policy Analysis 11

NORMATIVE QUADRANT DESCRIPTIVE QUADRANT Structuring

DESCRIPTIVE QUADRANT NORMATIVE QUADRANT
Problem
Structuring

Monitoring Prescrip on

FIGURE 1.2
Forms of Policy Analysis

implemented. Retrospective analysis characterizes the operating styles of several groups of analysts:

- **Discipline-oriented analysts.** This group, comprised mainly of political scientists, economists, and sociologists, seeks to develop and test discipline-based theories about the causes and consequences of policies. This group is not concerned with the identification of "policy" variables that are subject to manipulation and those that are not.[23] For example, the analysis of the effects of party competition on government

expenditures provides little or no knowledge about specific policy goals and how to attain them, because party competition is not a variable that policymakers can manipulate to change government expenditures.

- **Problem-oriented analysts.** This group, again composed mainly of political scientists, economists, and sociologists, also seeks to describe the causes and consequences of policies. However, problem-oriented analysts are less concerned, if at all, with the development and testing of theories that are important to social science disciplines. Rather they are concerned with identifying variables that may explain a problem. Problem-oriented analysts are not concerned with specific objectives, because the orientation of problem-oriented analysts is general, not specific. For example, the analysis of quantitative data on the effects of ethnicity and poverty on achievement test scores helps explain the causes of inadequate test performance, but does not provide knowledge about specific policies that can be manipulated to solve the problem.
- **Applications-oriented analysts.** A third group includes groups of applied political scientists, applied economists, applied sociologists, and applied psychologists, as well as members of professions such as public administration, social work, and evaluation research. This group also seeks to describe the causes and consequences of policies and pays little attention to the development and testing of theories. However, this group, in contrast to the previously described groups, is dedicated to the identification of manipulable policy variables that can potentially achieve specific objectives that can be monitored and evaluated to evaluate the success of policies.[24] For example, applications-oriented analysts may address early childhood reading readiness programs that can be used to achieve higher scores on standardized tests.

The operating styles of the three groups reflect their characteristic strengths and weak nesses. Discipline-oriented and problem-oriented analysts seldom produce knowledge that is directly useful to policymakers. Even when problem-oriented analysts investigate prob lems such as educational opportunity, energy conservation, and crime control, the result is ***macronegative*** knowledge, that is, knowledge that describes the basic (or "root") causes of policies with the aim of showing why policies do ***not*** work. By contrast, ***micropositive*** knowledge shows what policies ***do work*** under specified conditions.[25] In this context, it is practically important to know that a specific form of gun control reduces the commission of crimes or that intensive police patrolling is a deterrent to robberies. But it is of little practi cal value to know that the crime rate is higher in urban than rural areas, or that there is an association between crime and poverty.

Even when applications-oriented analysts provide micropositive knowledge, how ever, they may find it difficult to communicate with practitioners of ***ex ante*** policy analy sis, because applications-oriented analysts focus on observed (retrospective) outcomes rather than expected (prospective) ones. In agency settings, ***ex ante*** analysts, whose job it is to find optimally efficient future solutions, generally lack knowledge about policy outcomes observed through retrospective analysis. Practitioners of ***ex ante*** analysis also may fail to specify in sufficient detail the kinds of policy-relevant knowledge that will be most useful for monitoring, evaluating, and implementing their recommendations. For

[23] James S. Coleman, "Problems of Conceptualization and Measurement in Studying Policy Impacts," in ***Public Policy Evaluation***, ed. Kenneth M. Dolbeare (Beverly Hills and London: Sage Publications, 1975), p. 25.

this reason, as Alice Rivlin has noted, "the intended outcomes of a policy are so vague that "almost any evaluation of it may be regarded as irrelevant because it missed the 'problem' toward which the policy was directed."[26] Moreover, legislators often formulate problems

[24]An important transition in economics is the movement towards applications-oriented economics in the form of "natural experiments." A concise history of this transition is Joshua D. Angrist and Jörn-Steffen Pischke, "The Credibility Revolution in Empirical Economics: How Better Research Design Is Taking the Con out of Econometrics," ***Journal of Economic Perspectives*** 24, 2 (Spring 2010): 3–30.

[25]Williams, ***Social Policy Research and Analysis,*** p. 8.

[26]Ibid. p. 13, and Alice Rivlin, ***Systematic Thinking for Social Action*** (Washington, DC: Brookings, 1971).

in general terms in order to gain acceptance, forestall opposition, and maintain political flexibility.

Contrasts among the operating styles of analysts suggest that discipline-oriented and problem-oriented analysis provides knowledge that is less useful than applications oriented analysis, because retrospective (***ex post***) analysis as a whole is perhaps less effec tive in solving problems than prospective (***ex ante***) analysis. This conclusion, frequently argued by economists, has merit from the point of view that policymakers need advice on what actions to take in future. Nevertheless, retrospective analysis has important benefits. It places primary emphasis on the results of observed outcomes of action—that is, what has actually worked or not—and is not content with speculations about expected policy outcomes. Discipline-oriented and problem-oriented analysis may offer new frameworks for understanding policymaking, challenging conventional wisdom, challenging social and economic myths, and shaping the climate of opinion. Retrospective analysis, while it has affected intellectual priorities and understandings, has performed less well in offering potential solutions for specific problems.[27]

Descriptive and Normative Analysis

Figure 1.2 also captures another important contrast, the distinction between descriptive and normative analysis. Descriptive policy analysis parallels ***descriptive decision theory,*** which refers to a set of logically consistent propositions that describe or explain action.[28] Descrip tive decision theories may be tested against observations obtained through monitoring and forecasting. Descriptive theories and conceptual frameworks tend to originate in political science, sociology, and economics. The main function of these theories and frameworks is to explain, understand, and predict policies by identifying patterns of causality, also known as ***causal mechanisms.*** The function of approaches to monitoring such as field experimen

tation is to establish the approximate validity of causal inferences relating policies to their presumed outcomes.[29] In Figure 1.2, descriptive policy analysis can be visualized as an axis moving from the lower left quadrant (monitoring) to the upper right quadrant (forecasting).

Normative policy analysis parallels ***normative decision theory,*** which refers to a set of logically consistent propositions that evaluate or prescribe action.[30] In Figure 1.2, normative policy analysis can be visualized as an axis running from the lower right quadrant (prescrip tion) to the upper left quadrant (evaluation). Different kinds of knowledge are required to test normative, as distinguished from, descriptive decision theories. Methods of

evaluation and prescription provide knowledge about policy performance and preferred policies, poli cies that have been or will be optimally efficient because benefits outweigh costs, or opti mally equitable because those most in need are made better off. One of the most important

[27]Janet A. Weiss, "Using Social Science for Social Policy," ***Policy Studies Journal*** 4 (Spring 1976): 237. [28]Bower, "Descriptive Decision Theory," p. 104.

[29]See Thomas D. Cook and Donald T. Campbell, ***Quasi-Experimentation: Design and Analysis Issues for Field Settings*** (Boston, MA: Houghton Mifflin, 1979); Shadish, Cook, and Campbell, ***Experimental and Quasi Experimental Designs for Generalized Causal Inference.***

[30]Bower, "Descriptive Decision Theory," pp. 104–105.

features of normative policy analysis is that its propositions rest on values such as efficiency, effectiveness, equity, responsiveness, liberty, enlightenment, and security.[31]

Problem Structuring and Problem Solving

The internal and external cycles of Figure 1.2 provide another important distinction. The inner cycle designates processes of ***problem structuring.*** Procedures of problem structuring are designed to identify elements that go into the definition of a problem, but not to identify solutions. What are the main elements of a problem? Are they political, economic, social, ethical, or all of these? How is the problem structured, that is, organized into a specific con
figuration of elements, for example a linear sequence or as a complex system? Who are the most important stakeholders who affect and are affected by the problem? Have appropriate objectives been identified? Which alternatives are available to achieve the objectives? Are there uncertain events that should be taken into account? Are we solving the "right" prob
lem rather than the "wrong" one?

By contrast, problem-solving methods are located in the outer cycle of Figure 1.2. They are designed to solve rather than structure a problem. Problem solving is primarily techni cal in nature, in contrast to problem structuring, which is primarily conceptual. Methods such as econometric forecasting or benefit–cost analysis are problem-solving methods. For problems to be solved, they must be appropriately structured. For instance, problem solving methods answer questions about the amount of variance in an outcome that may be explained by an independent variable. What is the probability of obtaining variance as large or larger than that obtained? What are the net benefits of different policies? What is their expected utility or payoff?

Integrated and Segmented Analysis

Integrated policy analysis links the two halves of Figure 1.2, the four quadrants, and the inner and outer cycles. Retrospective and prospective forms of analysis are joined in one continuous process. Descriptive and normative forms of analysis are also linked, as are methods designed to structure problems and also solve them. Practically speaking, this means that integrated policy analysis bridges the several main segments of multidiscipli
nary policy analysis, especially economics and political science.

Today, this need is not being properly met by specialized social science

disciplines, which often produce ***segmented policy analysis***. Today, the job of bridging these segmented disciplines is carried out within multidisciplinary professions including public administra tion, planning, management, and policy analysis. The American Society for Public Admin istration (ASPA), the National Association of Schools of Public Affairs and Administration (NASPAA), the American Planning Association (APA), the International Association of Schools and Institutes of Administration (IASIA), the Academy of Management (AM), the Operations Research Society of America (ORSA), and the Association for Public Policy and

[31]The classic treatise on these and other base-values is Harold. D. Lasswell and Abraham Kaplan, ***Power and Society: A Framework for Political Inquiry*** (New Haven, CT: Yale University Press, 1950).

Management (APPAM) are multidisciplinary professions. So far, these professions have been far more open to economics, political science, and other social sciences disciplines than these disciplines have been open to them, notwithstanding a virtual consensus among policy analysts and practitioners that multidisciplinary research is essential for solving real world problems, which do not respect disciplinary boundaries.

The framework for integrated policy analysis with which we began this chapter (Figure 1.1) helps examine the assumptions, strengths, and limitations of methods employed in disciplines that are so specialized that they are difficult to employ for practical problem solving. However, the framework for integrated policy analysis identifies and relates the goals of methods of policy analysis, enabling us to see the specific functions performed by methods of problem structuring, monitoring, evaluation, forecasting, and prescription. The framework identifies different types of policy analysis: prospective (***ex ante***) and retrospec tive (***ex post***), descriptive and normative, and problem structuring and problem solving. The framework explains why we define policy analysis as a problem-solving discipline that links social science theories, methods, and substantive findings to solve practical problems.

THE PRACTICE OF POLICY ANALYSIS

Reconstructed Logic versus Logic-in-Use

The process of integrated policy analysis is a ***logical reconstruction.***[32] The process of actu ally doing policy analysis never conforms exactly to this reconstruction, because all logical reconstructions are abstractions of behaviors and not literal descriptions of them.[33] This lack of conformity is captured by the term ***logic-in-use,*** which refers to the way practicing analysts actually do their work. Notably, that work departs significantly from the methodo logical "best practices" mandated by logical reconstructions.[34] Variation from best practices depends on a number of factors including the personal characteristics of analysts, their professional socialization, and the institutional settings in which they work.

- ***Cognitive styles.*** The personal cognitive styles of analysts predispose them toward different modes of acquiring, interpreting, and using knowledge.[35] Corporations, nonprofit organizations, and public agencies such as the U.S. Department of Corrections and the National Science Foundation use various tools to diagnose differences in cognitive styles to make optimal personnel placements.
- ***Analytic roles.*** In agency settings, most analysts are relatively

insulated from politics. When this occurs, they may be described as "technicians." However, others perform roles that, in addition to technical content, are political. These "politicians"

[32]Also called ***reconstructed logic.***

[33]On reconstructed logic and logic-in-use, see Kaplan, ***The Conduct of Inquiry,*** pp. 3–11.

[34]For a thoughtful analysis of this problem, see Hal. K. Colebatch, Robert Hoppe, and Mirko Noordegraaf, ***Working for Policy*** (Amsterdam: Amsterdam University Press, 2010).

[35]Studies using the Myers-Briggs type indicator (Jungian personality types) suggest different cognitive styles among scientists, managers, and analysts. References provided by the Myers and Briggs Foundation at www. myersbriggs.org. See also Ian I. Mitroff and Ralph H. Kilmann, ***Methodological Approaches to Social Science*** (San Francisco, CA: Jossey-Bass, 1978).

are actively committed to advancing the interests of political leaders or officials to whom they report, usually at higher levels of government. Other activist analysts are "entrepreneurs" who seek greater influence in the policymaking process.[36]

- ***Institutional incentive systems.*** Policy "think tanks" encourage different orientations toward analysis, including the "humanistic-value-critical" and the "scientific."[37] The institutional rewards and punishments provided by think tanks and other professional research organizations affect the validity of conclusions and recommendations.[38]
- ***Institutional time constraints.*** Analysts working in governmental settings are often subject to tight institutional time constraints (24 hours to 3 days is typical). They work with much greater speed, and perhaps greater efficiency, than analysts in academic settings. Understandably, government analysts rarely collect original data and most do not employ complex and time-consuming techniques.[39]
- ***Professional socialization.*** Different disciplines and professions socialize their members into different norms and values. Analyses of published papers suggest that analysts employ formal-quantitative as well as informal-narrative approaches, although sound policy recommendations sometimes require formal-quantitative procedures.[40]
- ***Multidisciplinary teamwork.*** Much analysis conducted in public agencies is carried out by multidisciplinary teams. Some members have primary responsibility for the different types of analysis displayed in the two halves and the quadrants of Figure 1.2. Economists and decision analysts are typically more qualified to perform prospective (***ex ante***) analysis, whereas team members trained in political science, sociology, and program evaluation are usually better at retrospective (***ex post***) analysis. The effectiveness of teams depends on everyone acquiring a basic understanding of analytic methods employed by others.

Methodological Opportunity Costs

Integrated analysis has opportunity costs. Given limited time and resources, it is difficult to conduct systematic economic, political, and organizational analyses simultaneously.

[36]Arnold Meltsner, ***Policy Analysts in the Bureaucracy*** (Berkeley: University of California Press, 1976); Robert A. Heineman, William T. Bluhm, Steven A. Peterson,

and Edward N. Kearney, ***The World of the Policy Analyst*** (Chatham, NJ: Chatham House, 1990).

[37]Pamela Doty, "Values in Policy Research," in ***Values, Ethics, and the Practice of Policy Analysis,*** ed. William N. Dunn (Lexington, MA: D. C. Heath, 1983).

[38]Donald T. Campbell, "Guidelines for Monitoring the Scientific Competence of Preventive Intervention Research Centers: An Exercise in the Sociology of Scientific Validity," ***Knowledge: Creation, Diffusion, Utilization*** 8, 3 (1987): 389–430.

[39]See P. J. Cook and J. W. Vaupel, "What Policy Analysts Do: Three Research Styles," ***Journal of Policy Analysis and Management*** 4, 3 (1985): 427–428. Agencies such as the U.S. Bureau of Labor Statistics and the U.S. Congressional Budget Office are exceptions.

[40]An early but representative overview of approaches is Janet A. Schneider, Nancy J. Stevens, and Louis G. Tornatzky, "Policy Research and Analysis: An Empirical Profile, 1975–1980," ***Policy Sciences*** 15, 2 (1982): 99–114.

Multiple triangulation,[41] or what Cook calls ***critical multiplism,***[42] responds to some of these inadequacies. Another methodological opportunity cost is attempting to follow, without sufficient time and resources, the doctrines and principles of philosophies of science such as logical positivism, constructivism, or pragmatism.[43] For example, positivism today appears as a one-sided methodology and epistemology claiming that statements about the policy must be logically and empirically verifiable, expressed in a formal (ideal) language such as mathematical statistics, and confirmed by means of statements that correspond to some notion of objective reality, rather than a reality constituted by subjective meaningful actions of policy stakeholders. Logical positivism, as Cook argues, was the dominant methodology of policy analysis and program evaluation during the era of President Lyndon Johnson's War on Poverty. The advantage of critical multiplism over logical positivism is that multi plism provides a better approximation of what is true by employing procedures that trian
gulate from a variety of perspectives on what is worth knowing and what is known about policies.[44]

A disadvantage of multiplism lies in its costs. Triangulation among multiple perspec tives, along with the use of multiple methods, measures, and data sources, involves signifi cant opportunity costs[45] (Figure 1.3). When single methods such as econometric modeling are employed to achieve measurement precision and statistical generalizability, analysts forgo opportunities to acquire a deeper understanding of policies that is possible through ethnographic interviews, case studies, and other qualitative methods. A leading econome trician, noting that economists are unique among social scientists because they are trained only to analyze existing data, not to collect it, observes that "empirical work can be greatly enhanced by being sensitive to the context of the problem (the data-generating process) and knowing a lot about one's data."[46] Similar tradeoffs apply to methods of research synthesis, or meta-analysis, which purchase measurement precision and generalized policy causation at the expense of a deeper understanding of contexts of policymaking.[47]

[41]The methodology of triangulation is analogous to practices employed in geodesic surveys, cartography, navigation, and, more recently, satellite tracking. The position or location of an object is found by means of bearings from two or more fixed points or electronic signals a known distance apart.

[42]Cook advanced critical multiplism as an alternative to logical positivism. See Thomas D. Cook, "Postpositivist Critical Multiplism," in ***Social Science and Social Policy,*** ed. R. Lane Shotland and Melvin M. Mark (Beverly Hills, CA: Sage Publications, 1985), pp. 21–62.

[43]A critical assessment of logical positivism is Mary E. Hawkesworth, "Epistemology and Policy Analysis," in ***Advances in Policy Studies since 1950,*** ed. Dunn and

Kelly, pp. 293–328; and Mary E. Hawkesworth, ***Theoretical Issues in Policy Analysis*** (Albany: State University of New York Press, 1988).

[44]Cook, "Postpositivist Critical Multiplism," p. 57.

[45]See David Brinberg and Joseph E. McGrath, ***Validity and the Research Process*** (Beverly Hills, CA: Sage Publications, 1985). For Brinberg and McGrath and other methodological pragmatists, the choice of methods is similar to an optimization problem in decision analysis. See C. West Churchman, ***Prediction and Optimal Decision: Philosophical Issues of a Science of Values*** (Englewood Cliffs, NJ: Prentice Hall, 1961), and Russell Ackoff, ***Scientific Method: Optimizing Applied Research Decisions*** (New York: John Wiley, 1962).

[46]Peter Kennedy, ***A Guide to Econometrics,*** 4th ed. (Cambridge, MA: MIT Press, 1998), pp. 83–84. [47]See Lawrence Rudner, Gene V. Glass, David L. Evartt, and Patrick J. Emery (2002), ***A User's Guide to the Meta-Analysis of Research Studies,*** ERIC Clearinghouse on Assessment and Evaluation, University of Maryland, College Park, MD. http://echo.edres.org.

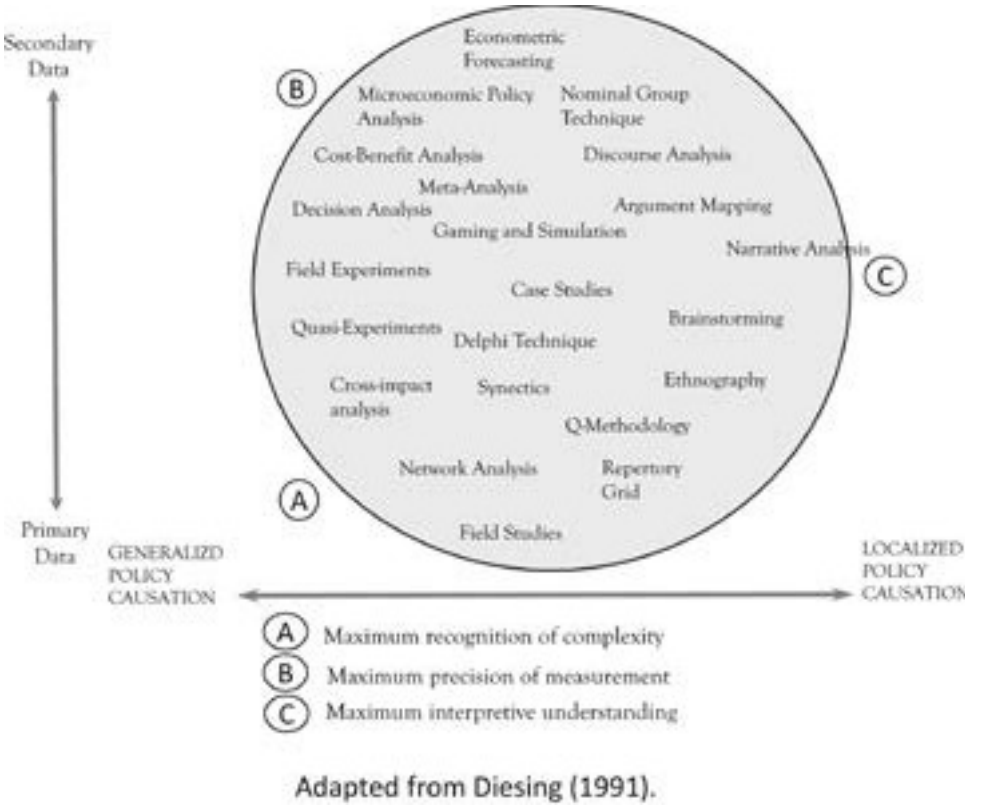

FIGURE 1.3
Opportunity Costs of Using Multiple Methods

Source: Adapted from Diesing (1991): 88.

Ethnographic interviews, by contrast, involve high knowledge costs because they require the collection of substantial primary data through interviews. However, they also lack precision and seldom permit the generalization of policy causation to other set tings. Although greater precision can be obtained by means of field experiments, these are expensive, especially when they are employed in conjunction with mixed (quantita tive and qualitative) methods. To be sure, triangulation among convergent (and diver gent) perspectives, methods, and measures enhance the validity of policy analysis and other applied social sciences.[48] But the time and financial constraints make tradeoffs inevitable.

[48]The case for triangulation in its many forms is Donald T. Campbell, ***Methodology and Epistemology for Social Science: Selected Papers,*** ed. E. Samuel Overman (Chicago, IL: University of Chicago Press, 1988).

CRITICAL THINKING AND PUBLIC POLICY

Policy analysis is complex. Analysts must sift through large volumes of available data, eval uate sources of these data, select appropriate methods of analysis, and employ effective strategies for communicating the results. This challenge requires ***critical thinking,*** which involves the organization, synthesis, and evaluation of different reasons and bodies of evi dence offered to support contending claims. One method available for this purpose is the analysis of ***policy arguments.*** By analyzing policy arguments, we can identify and probe the assumptions underlying competing policy claims, recognize and evaluate objections to these claims, and synthesize knowledge from different sources.

The Structure of Policy Arguments

Policy arguments are the main vehicle for carrying debates about public policies.[49] Although social scientists rightly pride themselves on the use of scientific methods, they too often for get that "public policy is made of language. Whether in written or oral form, argument is central to all stages of the policy process."[50]

The structure of a policy argument can be represented as a set of seven elements (Figure 1.4).[51]

Policy claim (C). A policy claim is the conclusion of a policy argument. Policy claims are of different types. Some are normative ("Congress should pass the amend ments to the Fair Employment Practices Act") and some are descriptive ("The use of the Internet will double in the next 10 years"). Still others are evaluative ("The distribution of employment opportunities is unfair"), and some are defini tional ("Unemployment is the number of persons in the active labor force seeking work").

Policy-relevant knowledge (K). Policy-relevant knowledge provides the grounds for a policy claim. These grounds may be statistical data, experimental findings, expert testimony, or common sense. Policy-relevant knowledge is a response to the question: What knowledge is relevant to the claim? Knowledge, which is the starting point of every argument, provides the grounds for making policy claims. Policy arguments may form argument chains and branch off into trees and cycles.

[49]See Frank Fischer and John Forester, eds., ***The Argumentative Turn in Policy Analysis and Planning*** (Durham, NC: Duke University Press, 1993). Earlier works are Ian I. Mitroff and Richard O. Mason, ***Creating a Dialectical Social Science*** (Boston, MA: D. Reidel, 1981); William N. Dunn, "Reforms as Arguments," ***Science Communication*** 3 (1982): 293–326; Des Gaspers and R. V. George, "Analyzing Argumentation in Planning and Public Policy: Improving and Transcending the Toulmin-Dunn Model," ***Environment and Planning B: Planning and Design*** 25 (1998): 367–390. Giandomenico Majone, ***Evidence, Argument, and Persuasion in the Policy Process*** (New Haven, CT: Yale University Press, 1989); and Deborah Stone, ***Policy Paradox and Political Reason*** (Glenview, IL: Scott Foresman, 1988). [50]Majone, ***Evidence, Argument, and***

Persuasion, p. 1.

[51]This model of argument is built into the computer software called ***Rationale 2,*** which was developed by Tim van Gelder and colleagues in Australia (www.austhink.com). The classic structural model is presented in Stephen Toulmin, ***The Uses of Argument*** (Cambridge: Cambridge University Press, 1958).

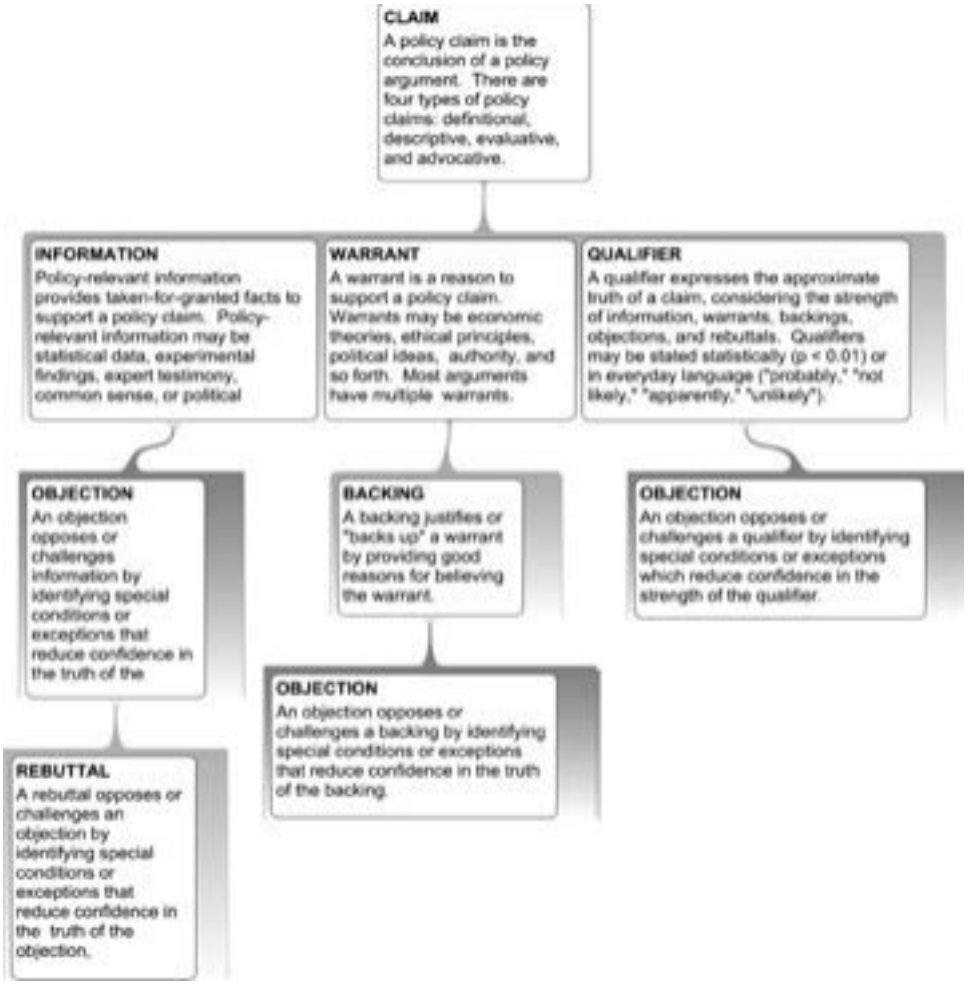

FIGURE 1.4
Elements of a Policy Argument

Warrant (W). The warrant is a reason to support a claim. Warrants may be economic theories, ethical principles, political ideas, or professional authority.[52] A warrant answers the question "Why does this reason support the claim? Different types of warrants are related to arguments made in different disciplines and professions. For example, law uses case comparisons and rules of evidence, while economics uses theories and component laws such as the law of diminishing utility of money. Policymakers as well as social scientists employ causal warrants such as "Ethnic cleansing will be deterred by air strikes that establish NATO's credibility in the region." The warrant, which provides a justification for accepting a claim, answers the question: ***Considering the knowledge, what reasons make the claim true?***

[52]Different kinds of warrants yield the "modes" of policy argument discussed in Chapter 8.

Qualifier (Q). The qualifier expresses the degree to which a claim is approximately true, given the strength of the knowledge, warrants, backings, objections, and rebuttals. Although social scientists may state qualifiers in the language of for mal probability (**p** = 0.01), ordinary language is the normal way of qualifying claims with such terms as: certainly, absolutely, probably, in all likelihood, pre sumably, barring unforeseen circumstances. The qualifier, which begins with the word **unless,** answers the question: **How strong or credible is the claim?** It is primarily through processes of argumentation and debate that policymakers, policy analysts, and other policy stakeholders adjust and sometimes abandon arguments. Such changes, when they occur, are based on the strength of objec tions and rebuttals.

Backing (B). The backing is an additional reason to support or "back up" the war rant. The backing, which begins with the word **because,** answers the question, **Why does the warrant support the claim?,** by providing a more general reason, assumption, or argument. Different kinds of backings are employed by different disciplines and professions. Backings may be scientific laws, rules of evidence, appeals to the authority of experts, or ethical and moral principles. For example, consider the warrant illustrated earlier: "Ethnic cleansing will be deterred by air strikes that establish NATO's credibility in the region." The backing for warrants advocating the use of coercive force is frequently an informal statement of the law of diminishing utility: "The greater the cost of an alternative, the less likely it will be pursued."

Objection (O). An objection opposes or challenges the knowledge, warrant, back ing, or qualifier by identifying special conditions or exceptions that reduce confidence in the truth of the knowledge, warrant, backing, or qualifier. An objection, which begins with the word **but,** answers the question: **Are there special circumstances or exceptions that threaten the credibility of the warrant?** Analysts who incorporate objections into their analysis are more likely to adopt a critical perspective toward an issue by identifying weak or hidden assump tions, anticipating unintended consequences, or questioning possible rebuttals to objections. Thereby, analysts are self-critical, challenging their own assump tions and those of others.

Rebuttal (R). A rebuttal is an objection to an objection. Rebuttals oppose or chal lenge objections by identifying special conditions or exceptions that reduce confi dence in the truth of the objection. Rebuttals, which begin with the word **however,** answer the question: **Are there special circumstances or exceptions that threaten the credibility of the warrant?** Many policy arguments have objections and rebuttals, because policymaking involves bargaining, negotiation, and competition among opponents and proponents of policies.

The perspectives of analysts may be found by identifying their underlying warrants, backings, objections, and rebuttals. Significantly, the identical policy-relevant knowledge is usually interpreted in distinctly different ways. A decrease

in crime rates in urban areas may be welcomed by the urban poor, viewed with skepticism by owners of central city businesses, rejected by criminologists who attribute urban crime to changes in unem
ployment and homelessness, and hailed as an achievement by elected officials. By exam ining contending arguments and their underlying assumptions, analysts can uncover and

critically assess reasons and evidence that otherwise may go unnoticed. Equally impor tant is what critical thinking brings to analysts themselves, who are enabled to probe their own assumptions by examining the objections, qualifications, and exceptions to their own claims.

CHAPTER SUMMARY

This chapter has provided a methodology for pol icy analysis that identifies the functions of meth ods in creating and transforming policy-relevant knowledge. The four regions of the framework, along with inner and outer cycles, call attention to distinctive properties of these methods and point to their origins in different social science

REVIEW QUESTIONS

1. What does it mean to define policy analysis as a process of inquiry as distinguished from the application of methods of policy analysis?
2. Describe the dynamics of types of policy relevant knowledge, policy-analytic methods, and knowledge transformations.
3. Contrast segmented and integrated policy analysis. Give examples.
4. How does normative decision theory differ from descriptive decision theory?
5. List some of the key differences between prob lem solving and problem structuring.
6. Contrast retrospective and prospective analy sis. Which social science disciplines tend to specialize in prospective analysis? Retrospec tive analysis?
7. Discuss the strengths and limitations of criti cal multiplism.
8. Contrast the “logic-in-use” and the “reconstructed logic” of policy analysis. Provide examples. 9. How can argumentation mapping assist ana lysts to become critical thinkers?

DEMONSTRATION EXERCISES

1. Scorecards are a convenient way to represent complex outcomes and impacts of policies. At the same time, scorecards assume causal link ages that may not exist. What other methods are available to assess the effects of policies? Return to Figure 1.1 as a guide to your answer. 2. Influence diagrams and decision trees are useful for structuring policy problems. The diagram and tree displayed in Figure 1.4 help identify policy stakeholders, policy alterna tives, uncertain outcomes and events, prob abilities of these outcomes and events, and objectives. Consider the influence diagram, disciplines and professions. Because no one method is appropriate for all or most problems, there is a need for multidisciplinary analysis, which requires tradeoffs and opportunity costs. In turn, the analysis of tradeoffs and opportunity costs demands critical thinking. The analysis of policy arguments is well suited for this purpose.

which represents the problem of energy sup ply in 1973 and 1974, when the OPEC oil embargo posed significant challenges to U.S. energy supply and national security. How does Figure 1.4 help us formulate the prob lem? What do the arrows suggest about the causes of the energy shortage as well as the causes of the decline in traffic fatalities? What does the influence diagram suggest about the conditions that gave rise to the 55 mph speed limit? After comparing the influence diagram with the decision tree (which is based on the influence diagram), describe why these two

problem representations are good examples of descriptive and normative decision theory. 3. Create an argument map based on the influence diagram presented in Case 1.3. Begin with the claim: “The United States should return to the 55 mph speed limit in order to conserve fuel and save lives.”

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Fischer, Frank, and John Forester. ***The Argumentative Turn in Policy Analysis and Planning.*** Durham, NC: Duke University Press, 1993.
Imbens, Guido W., and Donald B. Rubin. ***Causal Infer ence for Statistics, Social, and Biomedical Sciences.*** Cambridge: Cambridge University Press, 2015.

Include in your map as many warrants, backings, objections, and rebuttals as you can. Assuming that the original qualifier was "certainly," indicate whether the quali
fier changes as we move from a simple, static, uncontested argument to a complex, dynamic, and contested one.

Kaplan, Abraham. ***The Conduct of Inquiry: Methodology for Behavioral Science.*** San Francisco, CA: Chandler, 1964.
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When advanced technologies are used to achieve policy goals, complex social and technical systems are involved. While it is analytically tempting to prepare a comprehensive economic analysis of the costs and benefits of such technologies, many practicing analysts do not have the time or the
resources to do so. Many analyses are completed in a period of several days to a month, and in most cases policy analyses do not involve the collection and analysis of new data. Early on in a project policymakers and their staffs typically want an overview of the problem and the potential impacts of (*continued*)

alternative policies. Under these circumstances, the scorecard is appropriate.

The Goeller *scorecard,* named after Bruce Goeller of the RAND Corporation, is appropriate for this purpose. Table C1.1 shows the impacts of alternative transportation systems. Some of the impacts involve transportation services used by members of the community, while others involve impacts on low

Scorecard

income groups. In this case, as Quade observes, the large number of diverse impacts are difficult to value in dollar terms, making a benefit–cost analysis impractical and even impossible.[53] Other impacts involve financial and economic questions such as investments, jobs created, sales, and tax revenues. Other impacts are
distributional. j

Impacts	Conventional Takeoff and Landing Aircraft (CTOL)	Vertical Takeoff and Landing Aircraft (VTOL)	Tracked Air-Cushion Vehicle (TACV)
TRANSPORTATION			
Passengers (million miles)	7	4	9
Per trip time (hours)	2	1.5	2.5
Per trip cost ($)	$17	$28	$20
Reduced congestion (%)	0%	5%	10%
FINANCIAL			
Investment ($ millions)	$150	$200	$200
Annual subsidy ($ millions)	0	0	90
ECONOMIC			
Added jobs (thousands)	20	25	100
Added sales ($millions)	50	88	500
COMMUNITY			
Noise (households)	10	1	20
Added air pollution (%)	3%	9%	1%
Petroleum savings (%)	0%	−20%	30%
Displaced households	0	20	500
Taxes lost ($millions)	0	0.2	2
Landmarks destroyed	None	None	Fort X
DISTRIBUTIONAL			
Low-income trips (%)	7%	1%	20%
Low-income household Noise-annoyance (%)	2%	16%	40%

Source: Quade (1975): 60.

[53]E. S. Quade, ***Analysis for Public Decisions*** (New York: American Elsevier, 1975), p. 65.

Along with other methods of policy analysis discussed earlier in this chapter (Figure 1.1), the *influence diagram* and *decision tree* are useful tools for structuring policy problems.[54] The influence diagram (Figure C1.2.1) displays the policy, the National Maximum Speed Limit (NMSL) of 1974, which established the 55 mph speed limit. The rectangle in Figure C1.2.1 refers to a policy choice, or decision node, which in this case is the choice between adopting the national maximum speed limit of 55 mph and not adopting it. To the right and above the decision node are uncertain events, represented as ovals, which are connected to the decision node with arrows showing how the speed limit affects or is affected by the uncertain events. The rectangles with shaved corners represent valued policy outcomes, or objectives. The objectives are to lower fuel consumption, reduce travel time, and avert traffic fatalities and injuries. To the right of the objectives is another shaved rectangle, which designates the net benefits (benefits less costs) of the four objectives. In this case, the surprising result of using the influence diagram was the discovery of causally relevant economic events such as recession and unemployment, which affect miles driven, which in turn affects the achievement of all four objectives. The "root cause" appears to be the OPEC oil embargo.

The decision tree is another way to represent the influence diagram. Whereas the influence diagram shows how policy choices and uncertain events affect the achievement of objectives, the decision tree displays the monetary value of these outcomes. In this abridged and simplified decision tree, there are two branches that not only represent the two alternatives (renew or not renew the NMSL), but also the OPEC oil crisis, the recession, the costs of miles traveled, and the dollar benefits of reducing fatalities. The bolded branches show the events with the greatest likelihood of occurring, or which already have occurred. j (*continued*)

[54]The diagram and tree were created with the Decision Programming Language (DPL), which is available from Syncopation Software at www.syncopation.com. Educational, professional, and commercial versions of DPL 7.0 are available.

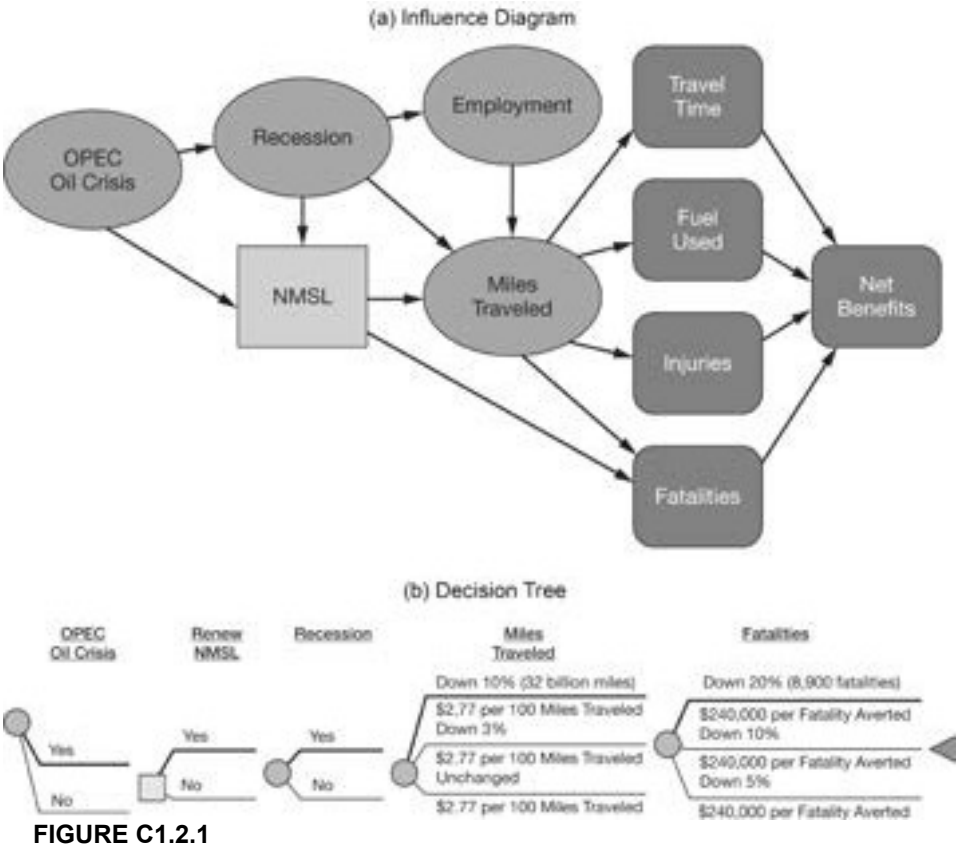


FIGURE C1.2.1
Influence Diagram and Decision Tree

Another way to represent problems is to use the argument mapping methods introduced earlier in this chapter (Figure 1.3). The role of argument mapping in structuring policy discourses may be illustrated by Graham Allison's well-known study of foreign policy decision-making during the Cuban missile crisis of October 1962.[55] Showing how different explanatory models yield different conclusions, Allison argues that government policy analysts use implicit conceptual models to think about and make policy recommendations. These conceptual models explain the behavior of governments in terms that assume the rationality of political choices (rational actor model), the inertia created by organizational processes (organizational process model), and the effects of bureaucratic politics (bureaucratic politics model). Each of these models provides its own explanation of policymaking.

In 1962, the policy alternatives open to the United States in responding to the crisis ranged from no action and diplomatic pressure to secret negotiations, invasion, surgical air strikes, and blockade. Among the several claims made at the time of the Cuban missile crisis, let us consider the policy actually adopted by the United States: "The United States should blockade Cuba." In this case, the policy relevant knowledge (I) is "The Soviet Union is placing offensive missiles in Cuba." The warrant states that "the blockade will force the withdrawal of missiles by showing the Russians that the United States is determined to use force." In providing reasons to accept the warrant, the backing (B) supports the warrant by stating that "an increase in the cost of an alternative reduces the likelihood of that alternative

being chosen."[56] The backing (B) represents a general theoretical proposition, or law, within the rational policy model. After the objection (O) has successfully challenged the warrant, the qualifier (Q) changes from *absolutely* to *doubtful.*

Allison's account shows how the use of multiple competing explanations can facilitate critical thinking. The use of multiple competing models moves the analysis from a simple uncontested argument (Figure C1.3.1) to a new argument which is complex, contested, and dynamic (Figure C1.3.2). This change occurs because a serious objection has been raised about the warrant and the backing of the claim. The objection states: "But Soviet leaders may fail to convince their naval units to depart from established organizational routines." The warrant

for this objection is: "The bulk of research on organizations shows that major lines of organizational behavior tend to be straight. Behavior at time *t + 1* differs little from behavior at time *t*.[57] The blockade will not work." The warrant for the objection is again a general proposition or law within the organizational process model, otherwise known as the disjointed incremental theory of policy change.

Simple uncontested maps of arguments about the OPEC oil embargo are presented alongside arguments about the Cuban missile crisis (Figures C1.3.1[a] and [b]). The comparisons show that the simple argument maps tend to result in uncritical thinking. By contrast, the complex, dynamic, and contested maps of the same crises (Figures C1.3.2[a] and [b]) illustrate what is meant by *critical thinking.* j

(*continued*)

[55]Graham T. Allison, "Conceptual Models and the Cuban Missile Crisis," ***American Political Science Review*** 3002, 3 (1969): 689–718.

[56]Allison, "Conceptual Models," p. 694.

[57]Ibid., p. 702.

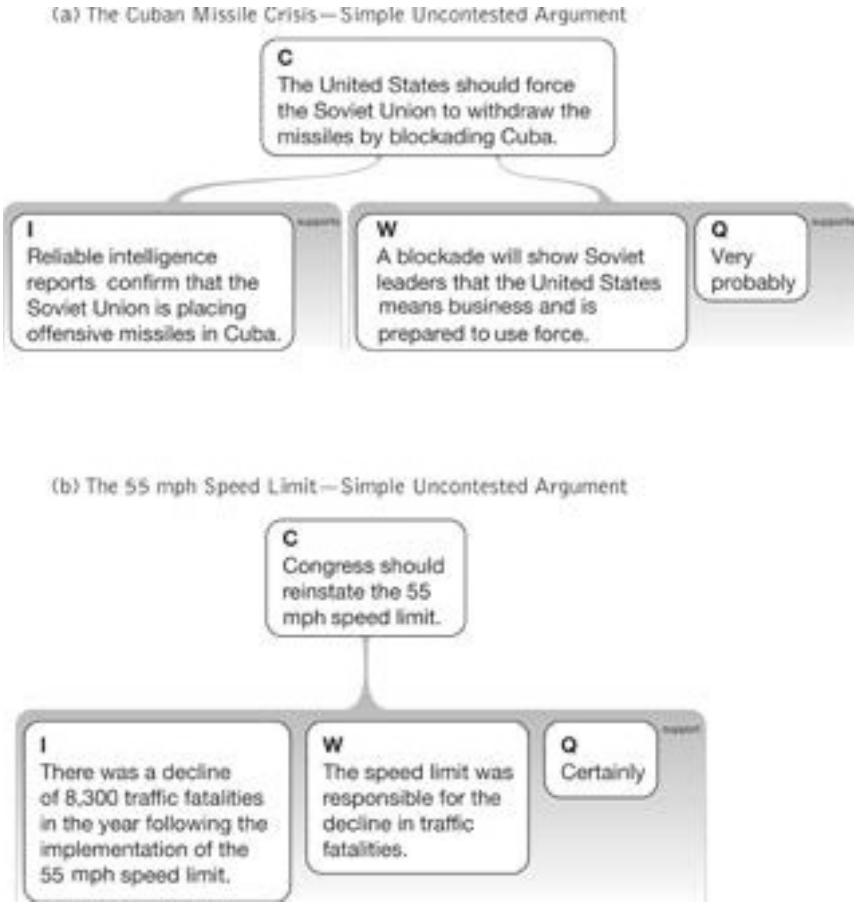
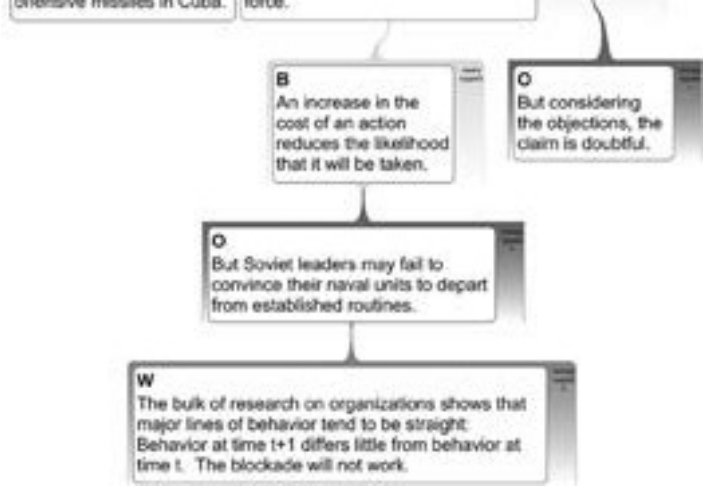


FIGURE C1.3.1
Simple Argument Maps Are Static and Uncontested
(a) The Cuban Missile Crisis—Dynamic Contested Argument



(b) The 55 mph Speed Limit—Simple Uncontested Argument

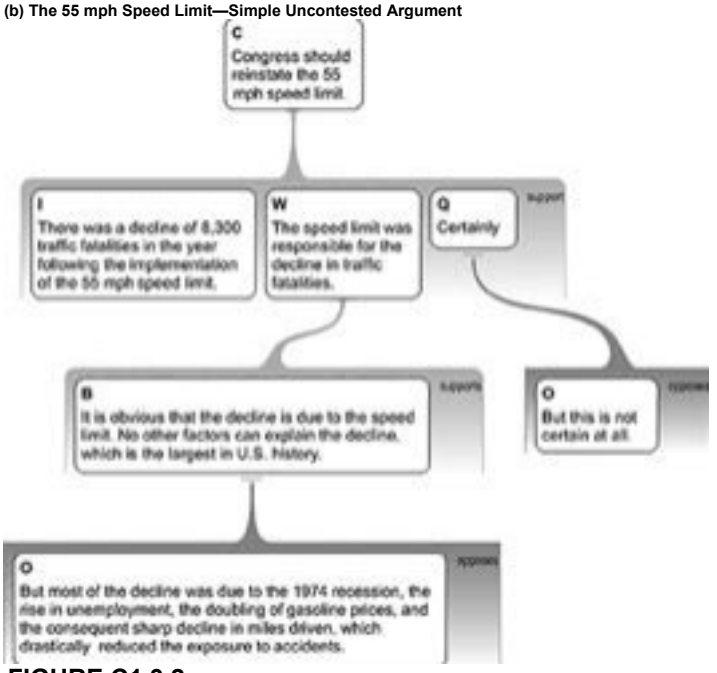


FIGURE C1.3.2
Complex Argument Maps Are Dynamic and Contested

Policy Analysis in the Policymaking Process

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LEARNING OBJECTIVES

By studying this chapter, you should be able to:

- Understand policy analysis as an intellectual activity embedded in a social process
- Explain the historical development of policy analysis as a response to practical problems
- Describe policymaking as a complex process with multiple phases ordered in time
- Contrast competing explanations of policy continuity and change
- Identify potential and actual uses of policy analysis
- Distinguish the composition, scope, and expected effects of using knowledge
- Use criteria associated with "truth" and "utility" to explain the uses of analysis

INTRODUCTION

Policy analysts create, critically assess, and communicate knowledge about and in the pol icymaking process.[1] The distinction between ***about*** and ***in*** marks an essential difference between policy analysis, on one hand, and political science and economics, disciplines that specialize in developing and testing empirically theories about policymaking. Although some members of these disciplines work on practical problems facing policymakers, the majority are motivated by incentive systems that demand the production of knowledge for its own sake. By contrast, policy analysts work under incentives designed to promote practical knowledge—typically, knowledge of what works.[2] Although policy analysis draws on traditional social science methods, theories, and substantive findings, the aim is to solve practical problems. This requires the communication and use of knowledge ***in*** as well as ***about*** the policymaking process.[3]

THE HISTORICAL CONTEXT

In a broad sense, policy analysis is as old as civilization itself. It includes diverse forms of inquiry, from mysticism and the occult to modern science. Etymologically, the term ***policy*** comes from the Greek, Sanskrit, and Latin languages. The Greek ***polis*** (city-state) and San skrit ***pur*** (city) evolved into the Latin ***politia*** (state) and later into the Middle English ***policie.***

The latter referred to the conduct of public affairs or the administration of the state. The etymological origins of the word policy are the same for two other important words: ***police*** and ***politics.*** These multiple connotations are found in Germanic and Slavic languages, which have only one word (***politik, politika***) to refer to both policy and politics. This is among the reasons for the porous boundaries among political science, public admin istration, and policy analysis, and the resultant confusion about their aims.

[1]Harold D. Lasswell, ***A Pre-view of Policy Sciences*** (New York: American Elsevier Publishing, 1971), pp. 1–2. For Lasswell, knowledge ***about*** refers to "systematic, empirical studies of how policies are made and put into effect," while knowledge ***in*** refers to the fact that "the realism of a decision depends in part on access to the stock of available knowledge." [2]Here as elsewhere the term ***knowledge*** is used in preference to ***information***. As Fritz Machlup shows, knowledge does not have to be scientific or intellectual to qualify as knowledge. Other types of knowledge are practical, pastime, religious, and unwanted. Fritz Machlup, ***Knowledge: Its Creation, Distribution and Economic Significance***, Volume I: ***Knowledge and Knowledge Production*** (Princeton, NJ: Princeton University Press, 2014). [3]Carol H. Weiss's ***Social Science Research and Decision Making*** (New York: Columbia University Press, 1980) is a comprehensive synthesis of research and theory on the uses of social science research in policymaking. Similar efforts include William N. Dunn and Burkart Holzner, "Knowledge in Society: Anatomy of an Emerging Field," ***Knowledge in Society*** (later titled ***Knowledge and Policy***) 1, 1 (1988): 1–26; David J. Webber, "The Distribution and Use of Policy Knowledge in the Policy Process," in ***Advances in Policy Studies since 1950***, ed. Dunn and Kelly (New Brunswick, NJ: Transaction, 1991), pp. 415–441; and National Academy of Sciences, ***Using Science as Evidence in Public Policy*** (Washington, DC: National Academies Press, 2009). Journals that focus on these problems include ***Science Communication*** (formerly ***Knowledge: Creation, Diffusion, Utilization***) and ***Science, Technology and Human Values.***

EARLY ORIGINS

The term ***policy analysis*** need not be restricted to its contemporary meaning, where analy sis refers to breaking problems into basic elements or parts, much as we disassemble a clock or a vehicle. This is the sense of "analysis" when the term is used to speak about the decomposition of a decision into options, alternatives, and outcomes. A related view is that policy analysis is a collection of quantitative techniques used by systems analysts, decision analysts, and economists to examine the likelihood and utility of policy outcomes. Understood in a wider sense, however, policy analysis may be seen to have emerged at some point in the evolution of human societies where practical knowledge was consciously cultivated, thereby prompting a self-reflective examination of links between knowledge and action. The development of specialized procedures for analyzing policies was related to the emergence of urban civilization out of scattered and largely autonomous tribal and folk societies.[4] As a specialized activity, policy analysis followed changes in social and, above all, political organization that accompanied new production technologies and stable patterns of human settlement.

An early effort to cultivate policy-relevant knowledge occurred in Mesopotamia, in what is now the Basra region of southern Iraq. In the ancient Mesopotamian city of Ur, one of the first legal codes was produced in the twenty-first century b.c., some two thousand years before Aristotle (384–322 b.c.),

Confucius (551–479 b.c.), and Kautilya (ca. 300 b.c.) produced classic treatises on government and politics. In the eighteenth century b.c., the ruler of Babylon, with the assistance of professionals whom we would now call policy ana lysts, created the Code of Hammurabi. The Code was designed to establish a unified and just public order in a period when Babylon was in transition from a small city-state to a large territorial state. The Hammurabian Code, a set of policies that parallel Mosaic laws, reflected the economic and social requirements of stable urban settlements where rights and obligations were defined according to social position. The Code covered criminal pro cedures, property rights, trade and commerce, family and marital relations, physicians' fees, and what we now call public accountability.[5]

The early Mesopotamian legal codes were a response to the growing complexity of fixed urban settlements, where policies were needed to regulate the distribution of com modities and services, organize record keeping, and maintain internal security and external defense. A growing consciousness of relations between knowledge and action fostered the growth of educated strata that specialized in the production of policy-relevant knowledge. These "symbol specialists," as Lasswell called them, were responsible for policy forecasting. They were expected to forecast crop yields at the onset of the planting season and predict the outcomes of war.[6]

Because analysts used mysticism, ritual, and the occult to forecast the future, their methods were difficult to replicate. To be sure, these and other procedures were based in part on evidence acquired through experience. However, any reasonable definition of

[4]Lasswell, ***A Pre-view of Policy Sciences***, pp. 9, 13.

[5]***The Code of Hammurabi***, trans. Robert F. Harper (Chicago, IL: University of Chicago Press, 1904). [6]Lasswell, ***A Pre-view of Policy Sciences***, p. 11.

science requires that knowledge claims be assessed against observations that are independ ent of the hopes of analysts, or of those who hire them.[7]

Then as now, policy-relevant knowledge was ultimately judged according to its success (or failure) in shaping better policies, not simply because special methods were used to produce it. The ancients knew what some contemporary analysts forget—when methods are used to perform functions of ritualistic purification and symbolic legitimation, analysts and their clients eventually must face the issue of practical performance.[8] Statements such as "drug policy is based on good science," or that public opinion results are based on a "sci entific" sample, are in vogue. But the invocation of "science" in this context may represent little more than symbolic legitimation or ritualistic purification.

In India, Kautilya's ***Arthashastra,*** written in the fourth century b.c., is a systematic guide to policymaking, statecraft, and government administration. The ***Arthashastra*** synthesized much that had been written up to that time on material success, or what we now call eco nomics. Kautilya, an adviser to the Mauryan Empire in northern India, has been compared to Plato (427–327 b.c.), Aristotle (384–322 b.c.), and Machiavelli (1469–1527), all of whom were deeply involved in practical aspects of policymaking. Plato served as adviser to the rulers of Sicily, while Aristotle tutored Alexander of Macedonia from the time Alexander was 14 years old until he ascended the throne at the age of twenty. Although Aristotle, like some present-day social scientists, found practical politics repugnant, he seems to have accepted the assignment because he wanted to bring knowledge to bear on policy issues of the day. In this respect, he followed his teacher Plato, who said that good government would not occur until philosophers were kings, or kings philosophers. The opportunity to influence policy by instructing Alexander, the heir apparent, was an offer that in good

conscience he could not refuse.[9]

These are examples of preeminent individual producers of specialized knowledge, not of groups of educated classes who later would influence policymaking in Europe and Asia. In the Middle Ages, the gradual expansion and differentiation of urban civilization brought with it an occupational structure that facilitated the development of specialized knowledge. Princes and kings recruited policy specialists to provide advice and technical assistance in areas where rulers were least able to make effective decisions: finance, war, and law. Ger man sociologist Max Weber described the historical development of a class of educated policy specialists in these three areas: finance, law, and war. This "expert officialdom," wrote Weber, was triumphant by the sixteenth century.[10]

The growth of expert officialdom, also known as "professional politicians," assumed different forms in different parts of the world. In medieval Europe, India, China, Japan,

[7]Donald T. Campbell, "A Tribal Model of the Social System Vehicle Carrying Scientific Knowledge," in ***Methodology and Epistemology for Social Science: Selected Papers,*** ed. E. Samuel Overman (Chicago, IL: University of Chicago Press, 1988), pp. 489–503.

[8]Edward A. Suchman, "Action for What? A Critique of Evaluative Research," in ***Evaluating Action Programs,*** ed. Carol H. Weiss (Boston, MA: Allyn and Bacon, 1972), p. 81, and Martin Rein and Sheldon H. White, "Policy Research: Belief and Doubt," ***Policy Analysis*** 3, 2 (1977): 239–271.

[9]J.A.K. Thompson, ***The Ethics of Aristotle: The Nichomachean Ethics Translated*** (Baltimore, MD: Penguin Books. 1955), p. 11.

[10]Max Weber, "Politics as a Vocation," in ***From Max Weber: Essays in Sociology***, ed. Hans C. Gerth and C. Wright Mills (New York: Oxford University Press, 1946), p. 88.

and Mongolia, the literate and technically useful clergy comprised expert officialdom. Christian, Brahmin, Buddhist, and Lamaist priests, much like many modern social scien tists, earned a reputation for impartiality and disinterestedness insofar as they stood above practical politics and temptations of political power and economic gain. Educated men of letters—whose modern counterpart is the special presidential adviser—influenced policy making until court nobles, who later came to dominate the political and diplomatic ser vice, replaced them. In England, petty nobles and urban rentiers (investors) were recruited without compensation to manage local governments in their own interest. Jurists trained in Roman law and jurisprudence had a strong influence on policymaking, particularly in Con tinental Europe. They were largely responsible for the transformation of the late medieval state and the movement toward modern government.

The age of the Industrial Revolution was also that of the Enlightenment, a period in which a belief in human progress through science and technology became an ever more dominant theme among policymakers and their advisers. The development and testing of scientific theories of nature and society gradually became the preferred means for under standing and solving social problems. For the first time, policy-relevant knowledge was pro duced, for the most part, according to the canons of empiricism and the scientific method.

The Nineteenth-Century Transformation

In nineteenth-century Europe, producers of policy-relevant knowledge began to base their work on the systematic recording of empirical data. Earlier, philosophers and statesmen had offered explanations of policymaking and its role in society. Yet for several thousand years, there was an essential continuity

in methods for investigating and solving social, economic, and political problems. If evidence for a particular point of view was provided, it was typi cally based on appeals to religious authority, ritual, or philosophical doctrine. What was new in the nineteenth century was a basic change in the procedures used to understand society and its problems, a change reflected in the growth of empirical, quantitative, and policy oriented research.[11]

The first censuses were conducted in the United States (1790) and England (1801). It was at this time that statistics, sometimes known as "state arithmetic," and demography began to develop as specialized fields. The Manchester and London Statistical Societies, established in the 1830s, helped shape a new orientation toward policy-relevant knowledge. Organized by bankers, industrialists, and scholars, the societies hoped to replace traditional ways of thinking about social problems with empirical analyses of the effects of urbaniza tion and unemployment on the lives of workers and their families. In the Manchester Soci ety, an enthusiasm for quantification was coupled with a commitment to social reform, or "progress of social improvement in the manufacturing population."[12] The London Society, under the influence of Thomas Malthus (1766–1834), stressed that it confined its attention

[11]Daniel Lerner's essay, titled "Social Science: Whence and Whither?" treats this important transition. See ***The Human Meaning of the Social Sciences***, ed. Daniel Lerner (New York: World Publishing, 1959), pp. 13–23. [12]Nathan Glazer, "The Rise of Social Research in Europe," in ***The Human Meaning of the Social Sciences***, ed. Daniel Lerner (New York: World Publishing, 1959), p. 51.

to facts, and, as far as possible, stated these facts numerically and in tables.[13] The London and Manchester societies used questionnaires to carry out studies, including paid "agents" who were the counterpart of today's professional interviewer or census enumerator. There were similar developments in France, Germany, and the Netherlands.

A preeminent contributor to the methodology of social statistics and survey research was Adolphe Quetelet (1796–1874), a Belgian mathematician and astronomer who was the major scientific adviser to the Dutch and Belgian governments.[14] Many topics now covered in present-day texts on survey design and analysis were addressed by Quetelet: question naire design; data collection, analysis, and interpretation; data organization and storage; and identification of conditions under which data are collected. In the same period, Fred eric Le Play (1806–1882) wrote ***Les Ouvriers Europeans*** [***The European Workers***], a detailed empirical investigation of family income and expenditures of European workers in several countries. In Germany, Ernst Engel (1821–1896) sought to derive laws of "social econom ics" from empirical data expressed in statistical form.

In England, the work of Henry Mayhew and Charles Booth, who studied the life and employment conditions of the urban poor in natural (what we now call "field") settings, was representative of the new empirical approach to the study of social problems. Mayhew's ***London Labour and the London Poor*** (1851) described the lives of the laborers, peddlers, performers, and prostitutes who comprised London's urban underclass. In writing ***Life and Labour of the People in London*** (1891–1903), Booth employed school inspectors as key informants. Using what we now call ***participant observation***, Booth lived among the urban poor, gaining firsthand experience of actual living conditions. A member of the Royal Commission on the Poor Law, he was an important influence on the revision of policies on old-age pensions. Booth's work also served as something of a model for policy-oriented research in the United States, including the

Hull House Maps and Papers (1895) and W.E.B. Du Bois's ***The Philadelphia Negro*** (1899), both of which sought to document the scope and severity of poverty in urban areas.

The nineteenth-century transformation was not the result of declarations of meth odological loyalty to canons of empiricism and the scientific method. Declarations to this effect did not and could not occur until the next century, when Vienna Circle philosophers engaged in the logical reconstruction of physics to propose formal principles and rules of scientific practice. The transformation came, it seems, from the uncertainty accompanying the shift from agrarian to industrial societies, a shift that actually preceded the Industrial Revolution, when industry and industrialized science required a politically stable order to operate efficiently. Political stability was a buffer against profound social instability.[15]

Thus, contrary to academic theorizing, science and technology was not responsible for the growth of newly centralized systems of political control. The situation was more com plicated. Although science and technology contributed to problems of a newly uprooted, uneducated, and displaced class of urban workers and their families, it was the political steering of science and technology that was part of the solution. Dominant social groups

[13]Ibid., pp. 51–52.

[14]A significant history of statistics and statisticians is Stephen M. Stigler, ***The History of Statistics: The Measurement of Uncertainty before 1900*** (Cambridge, MA: Harvard University Press, 1990).

[15]J. H. Plumb, ***The Growth of Political Stability in England, 1675–1725*** (Baltimore, MD: Penguin Books, 1973), p. 12.

valued policy-oriented scientific research as a means to solidify and legitimate political and administrative control.

In the sphere of factory production, for example, the political organization of work preceded scientific and technological developments that later culminated in efficiency enhancing machinery and the specialization of tasks.[16] In the sphere of public policy, we see a parallel development. Methods of empirical, quantitative, and policy-oriented research were a product of the recognition by bankers, industrialists, politicians, and the Victorian middle class that older methods for understanding the natural and social world were no longer adequate. The key questions of the day were practical: How much did members of the urban proletariat need to earn to maintain themselves and their families? How much did they have to earn before there was a taxable surplus? How much did they have to save from their earnings to pay for medical treatment and education? How much should capital
ist owners and the state invest in day care facilities so that mothers might put in an effective day's work? How much investment in public works projects—sanitation, sewerage, hous ing, roads—was required to maintain a productive workforce and protect the middle and upper classes from infectious diseases cultivated in urban slums? Policy-oriented empirical research provided answers to these and other practical questions.

Twentieth-Century Professionalization

An important feature of the twentieth century, as compared with the nineteenth, is the professionalization of the social and behavioral sciences.[17] Twentieth-century producers of policy-relevant knowledge were no longer the heterogeneous group of bankers, indus trialists, journalists, and university professors who coalesced around the early statistical societies. Rather, they were graduates with first and advanced degrees in policy-relevant disciplines and professions. Along with some of their professors, they occupied influential positions in government, working as consultants or researchers under contracts and grants. In

background, experience, and qualifications, they were members of established profes
sions that were guided by generally accepted scientific and professional standards. The new professionals played an active role in the administration of Woodrow Wil son, particularly during World War I in the War Department. Later, under the Republican administration of Herbert Hoover, groups of social scientists carried out two major social surveys, ***Recent Economic Trends*** and ***Recent Social Trends.*** The largest influx of social sci entists into government came, however, with Franklin Roosevelt's New Deal. Large num bers of social scientists staffed the numerous new agencies established during the Roosevelt administration (National Recovery Administration, Work Projects Administration, Pub lic Works Administration, Securities and Exchange Commission, and Federal Housing Administration).

The primary function of social scientists in the 1930s was to investigate broad sets of potential solutions for general policy problems and, and not, as in later periods, to employ

[16]Stephen A. Marglin, "What Do Bosses Do? The Origins and Functions of Hierarchy in Capitalist Production," ***Review of Radical Political Economy*** 6, 2 (1974): 33–60.

[17]Elliot, Freidson, ***Professional Powers: A Study of the Institutionalization of Formal Knowledge*** (Chicago, IL: University of Chicago Press, 1986).

economic modeling, decision analysis, and policy experimentation to identify and select specific solutions to well-defined problems. The Roosevelt administration's National Plan ning Board (later the National Resources Planning Board), a majority of whose members were social and political scientists, illustrates the general approach to policy questions char acteristic of the 1930s. The board was conceived as "a general staff, gathering and analyz ing facts, observing the interrelation and administration of broad policies, proposing from time to time alternative lines of national procedure, based on thorough inquiry and mature consideration."[18] This same general orientation toward problems was evident among econo mists working for the Department of Agriculture, political scientists involved in the reor ganization of the Executive Branch, and anthropologists conducting studies for the Bureau of Indian Affairs. However, social scientists also contributed to specific methodological innovations. For example, the Department of Agriculture led in developing the sample sur vey as a new research tool and instrument of government census policy.[19]

World War II and the period of postwar readjustment also provided social scientists with opportunities to demonstrate their value in solving practical problems. Interwar achievements in the area of survey research had laid a foundation for the use of inter views by the Office of War Information, the War Production Board, and the Office of Price Administration. Military and civilian agencies relied on social scientists to investigate prob lems of national security, social welfare, war production, price controls, and food rationing. The activities of agencies such as the Office of Strategic Services were continued after the war by the Office of Naval Research, by the Department of the Air Force, and, later, by the Research and Development Board (subsequently RAND) of the Department of Defense, and the Central Intelligence Agency. Special research institutes were established by the fed eral government, including the Operations Research Office of The Johns Hopkins Univer sity and the Human Resources Research Office at George Washington University. Among the seminal contributions to policy research in this period was ***The American Soldier*** (1950), a four-volume study produced by many notable social scientists. The director of the Army Morale Division commissioned this large-scale project in 1941, under the general direction of sociologist Samuel Stouffer. The project is significant, not only because of its scale but also because it was

part of the development of governmental support for policy research and analysis. Military policymakers turned to the social researcher, not only for facts but also for causal inferences and conclusions that would affect the lives of millions of troops.[20] This large research program contributed to the development and refinement of multivariate statistical analysis and other quantitative techniques that are now widely used by research ers in all social science disciplines.

After World War II, the first systematic effort to develop an explicit policy orienta tion within the social and behavioral sciences was ***The Policy Sciences: Recent Develop ments in Scope and Method*** (1951), edited by political scientists Daniel Lerner and Harold

[18]Gene Lyons, ***The Uneasy Partnership: Social Science and the Federal Government in the Twentieth Century*** (New York: Russell Sage Foundation, 1969), p. 65.

[19]Harry Alpert, "The Growth of Social Research in the United States," in ***The Human Meaning of the Social Sciences***, ed. Daniel Lerner (New York: World Publishing, 1959), pp. 79–80.

[20]Howard E. Freeman and Clarence C. Sherwood, ***Social Research and Social Policy*** (Englewood Cliffs, NJ: Prentice Hall, 1970), p. 25.

D. Lasswell. The "policy sciences," as Lasswell stated in the introduction, are not confined to theoretical aims of science; they also have a fundamentally practical orientation. Their purpose is not simply to provide a basis for making efficient decisions but also to provide knowledge needed to improve the democratic processes. "In a word, the special emphasis is upon the policy sciences of democracy, in which the ultimate goal is the practical reali
zation of human dignity in theory and fact." Twenty years later, in 1971, Lasswell would acknowledge his debt to John Dewey and the founders of pragmatism. "The policy sci ences," wrote Lasswell, "were a contemporary adaptation of the general approach to public policy recommended by John Dewey and other pragmatists."[21]

The systematic study of public policy also grew out of public administration, then a field within political science. In 1937, Harvard University established the Graduate School of Public Administration, which focused in part on public policy. In the late 1940s, an interuniversity committee was established to develop public policy curricula, the major product of which was Harold Stein's ***Public Administration and Policy Development: A Case Book*** (1952). The interuniversity committee, composed of professors and practitioners of public administration, speaks for the close relationship between public policy and public administration before and after World War II.[22]

The impetus for developing methods and techniques of policy analysis—as distin guished from its theory and methodology—did not originate in political science or public administration. The technical side of policy analysis rather grew out of engineering, opera tions research, systems analysis, and applied mathematics. Many of those responsible for developing methods and techniques had received their formal training outside the social sciences. World War II had prompted the involvement of specialists whose orientation toward policy was primarily analytical rather than conceptual. The idea of "analysis" came to be associated with efforts to decompose problems into their fundamental components, for example, decomposing problems of national defense into policy alternatives (nuclear war heads, manned bombers, conventional ground troops) the consequences of which could be measured against the attainment of policy objectives. This new orientation, which budget specialist Alan Schick calls the

"analycentric perspective,"[23] tended to preclude or restrict concerns with political and administrative aspects of public policy, for example, concerns with the political feasibility of alternatives or their implementation for purposes of demo cratic reform. Although Schick's "analycentric turn" represented a movement away from the contextual, problem-oriented, and multidisciplinary orientation of the policy sciences,[24] it has also supplied more systematic procedures for identifying, selecting, and estimating the benefits and costs of policies.[25]

The analycentric turn was accompanied by the growing influence of nonprofit research organizations ("think tanks") such as the RAND Corporation, which fostered the spread of

[21]Lasswell, ***A Pre-view of Policy Sciences***, pp. xiii–xiv.

[22]H. George Frederickson and Charles Wise, ***Public Administration and Public Policy*** (Lexington, MA: D. C. Heath, 1977).

[23]Allen Schick, "Beyond Analysis," ***Public Administration Review*** 37, 3 (1977): 258–263.

[24]Peter de Leon, ***Advice and Consent: The Development of the Policy Sciences*** (New York: Russell Sage Foundation, 1988), Ch. 2.

[25]Martin Greenberger, Matthew A. Crenson, and Brian L. Crissey, ***Models in the Policy Process: Public Decision Making in the Computer Era*** (New York: Russell Sage Foundation, 1976), pp. 23–46.

systems analysis and other techniques to government agencies and the academic commu nity.[26] The development of program-planning-budgeting systems (PPBS) was due in large measure to the efforts of operations researchers and economists working under Charles Hitch at the RAND Corporation. The RAND group wanted to find out how the United States could "purchase' national security in the most efficient manner: "how much of the national wealth should be devoted to defense, how the funds allocated to defense should be distributed among different military functions, and how to assure the most effective use of these funds."[27] Although PPBS was introduced into the Department of Defense in 1965 and later mandated for use in all federal agencies, it proved difficult to implement. After 1971 it became discretionary and soon fell into disuse. Despite mixed conclusions about its success as a tool of policy analysis, PPBS does appear to have captured the attention of government and university analysts who value systematic procedures for selecting and evaluating policy alternatives.[28]

The analycentric turn has been offset to some extent by the rapid growth of private foundations whose mission is to support traditional lines of research in the social sciences and humanities. More than three-fourths of these foundations were established after 1950.[29] In the period after 1950, the federal government began to set aside funds for policy-related research in the social sciences, although the natural sciences continued to receive the bulk of total government research support. Although funding for applied and basic research in the social sciences fell by approximately 40 percent in constant dollars in 1980–1990,[30] it is important to recognize that more than 95 percent of all research funded by all types of organizations—governmental, nonprofit, and private—is represented, not by basic research, but by applied research on practical problems.

By the 1970s, many social science disciplines had established institutions expressly committed to applied and policy-related research, each with its own journal of record. These include the Policy Studies Organization (Political Science), the Society for the Study of Social Problems (Sociology), and the Society for the Psychological Study of Social Issues (Psychology). In the 1980s, the process of institutionalizing policy-relevant social science was carried a step further by the creation of multidisciplinary professional associations such as the Association for Public Policy and Management, which holds annual research conferences and publishes a journal of record, the ***Journal of Policy Analysis and Manage ment.*** The new journal

brought an applied and practical focus, as distinguished from the predominantly intellectual focus of mainstream disciplinary journals such as ***The American Political Science Review***, ***The American Economic Review***, and ***The American Sociological***

[26]Bruce L. R. Smith, ***The Rand Corporation: A Case Study of a Nonprofit Advisory Corporation*** (Cambridge, MA: Harvard University Press, 1966).

[27]Greenberger, Crenson, and Crissey, ***Models in the Policy Process,*** p. 32.

[28]For example, Alice Rivlin, ***Systematic Thinking for Social Action*** (Washington, DC: Brookings Institution, 1971), and Walter Williams, ***Social Policy Research and Analysis: The Experience in the Federal Social Agencies*** (New York: American Elsevier Publishing, 1971).

[29]Irving Louis Horowitz and James E. Katz, ***Social Science and Public Policy in the United States*** (New York: Praeger Publishers, 1975), p. 17.

[30]National Science Foundation, ***Federal Funds for Research, Development, and Other Scientific Activities*** (Washington, DC: NSF, 1973), and National Science Board, ***Science and Engineering Indicators—1989*** (Washington, DC: NSB, 1989).

Review. By contrast, journals such as ***Policy Sciences,*** the ***Policy Studies Journal,*** and ***Policy Studies Review*** helped create a more applied and policy-relevant orientation, as indicated partly by the term ***policy*** in their titles. In addition to mainstream journals were literally hundreds of other publications that focused on specific issues involving health, welfare, education, criminal justice, education, science and technology, national security, and other policy issue areas.[31]

In the same period, universities in the United States and Europe founded new gradu ate programs and degrees in policy analysis. In the United States, a number of new pro grams were established with the support of the Ford Foundation's Program in Public Policy and Social Organization. Most research universities in the United States have pol icy centers or institutes listed in the ***Encyclopedia of Associations,*** along with thousands of freestanding nonprofit policy research organizations and advocacy groups. Most were established after 1950. In Washington and most state capitals, and in the European Union, "policy analyst" is a formal job description. The National Governor's Association and the National League of Cities have policy analysis units. There are similar units throughout the United States government listed in directorates of the European Union, the United Nations, and the World Bank. Wikipedia lists tens of thousands of policy think tanks in more than 150 countries, while the ***Encyclopedia of Organizations,*** maintained by Gale Publishing Company, lists 23,000 organizations in the United States engaged in policy research or policy advocacy.[32]

The Era of Evidence-Based Policy

In the first decade of this century, there was widespread acknowledgement among ana lysts and policymakers that interdependencies among problems in related policy fields— energy, environment, public health, social welfare, national security, criminal justice, and economic development—appear to be increasing at an increasing rate, much as a river accumulates force and significance as it traverses falling cascades. In the area of health policy, which is one of the most

rapidly growing sectors in the United States, the number of organizations devoted to health policy research and policy advocacy has grown at a rate of approximately 17 percent annually since the turn of this century. It is noteworthy, and perhaps prophetic, that this is the approximate rate of growth of health expenditures as a percentage of GDP in the past 20 years. By the year 2020, the number of these organi zations may surpass 15,000.

One response to this and other instances of accelerating interdependency is the devel opment of different systemic visions of these dynamic interdependencies. The 2010 National

[31]Twenty-five years ago, Michael Marien, editor of ***Future Survey*** (the journal of record of the World Future Society), estimated the number of policy journals to exceed 400. Michael Marien, in "The Scope of Policy Studies: Reclaiming Lasswell's Lost Vision," in ***Advances in Policy Studies since 1950,*** vol. 10, ***Policy Studies Review Annual***, ed. William N. Dunn and Rita Mae Kelly (New Brunswick, NJ: Transaction, 1991), pp. 445–488. [32]The Gale Group web page (http://galegroup.com/) states that ***The Encyclopedia of Associations*** (***EA***) is the only comprehensive source of detailed knowledge concerning nonprofit American research, professional, and membership organizations of national scope. ***EA*** is a guide to more than 23,000 organizations in subjects such as Trade, Business, Commercial; Legal, Governmental, Public Administration, Military; Cultural; Educational; Health and Medicine, Veterans, Sports, and many more.

Academy of Medicine report characterizes the world as a complex system composed of a large number of influences that, for the most part, are interacting simultaneously. A sys tems perspective encourages policymakers and analysts to think expansively, rather than focus on component parts in isolation. A systems perspective can enhance the ability to develop and use evidence effectively and suggest actions with the potential to effect change. A systems perspective "can forecast the potential consequences of not taking action, pos sible unintended effects of interventions, the likely magnitude of the effect of one or more interventions, conflicts between or complementarity of interventions, and priorities among interventions."[33]

The growth of systems thinking has paralleled the call for ***evidence-based policy,*** first in the United Kingdom and then in the United States and the European Union. Evidence based policy is a response to complexity, but at a meso- or micro-level of analysis. On one hand, there is an acknowledgement that ideological, religious, and political influences, often hidden and lacking in transparency, have exerted a potentially harmful effect on our understanding of the factors responsible for unsuccessful policies. In the words of a British House of Commons report called ***Scientific Advice, Risk and Evidence Based Policy Making*** (2006), evidence-based policymaking "has its roots in Government's commitment to 'what works' over ideologically driven policy. . . . This Government expects . . . new ideas, more willingness to question inherited ways of doing things, better use of evidence and research in policymaking."[34]

Evidence-based policymaking, although it takes different forms, is united in its definition of evidence as causally relevant knowledge of relations between policies, on one hand, and short-term, intermediate, and long-term policy outcomes on the other. Among the largest and most competent repositories of evidence-based policies in health policy and medicine are the Cochrane Collaboration (C1) (www.cochranecollaboration.
org) and the Campbell Collaboration (C2) (www.campbellcollaboration.org). C1 and C2 combine a concern with assessing the causally relevant outcomes of policies (and also medical interventions in the case of C1) and the analysis of extant world research on outcomes of these interventions. The two main methodologies used by policy researchers working with C1 and C2 are research synthesis and meta-analysis,[35] which are exception

ally powerful and appropriate methods for analyzing the global stock of knowledge on a subject.

In the United States, evidence-based policy has been promoted by leading program evaluators and policy analysts associated with the Coalition for Evidence-Based Policy of the Council for Excellence in Government.[36] Some procedures of the Office of Management and Budget are based on evidence-based policy analysis, especially methods and standards of program evaluation. In addition, a brief review of recent titles of books on public policy,

[33]Quoted in ***Using Science as Evidence in Public Policy***, Committee on the Use of Social Science Knowledge in Public Policy, Division of Behavioral and Social Sciences and Education (Washington, DC: The National Academies Press), p. 60.
[34]United Kingdom, House of Commons, Science and Technology Committee, ***Scientific Advice, Risk and Evidence Based Policy Making.*** Seventh Report of Session 2005–06, Volume I (London: HMO Printing House, 2006). [35]A comprehensive text on these two methodologies is Harris M. Cooper, ***Research Synthesis and Meta-Analysis: A Step-by-Step Approach***, 4th ed. (Thousand Oaks, CA: Sage Publications, 2010).
[36]Coalition for Evidence Based Policy, www.evidencebasedprograms.org/.

social policy, education policy, security policy, and so forth, shows that the titles begin with the phrase "evidence-based." In this context, it should also be said that some see the move ment toward evidence-based policy as a new and harmful logical positivist ("scientistic") approach to questions of public policy, an approach that may be inconsistent with democ racy.[37] Others see evidence-based policy as only one of several alternatives to conducting research on public policy, including approaches grounded in qualitative, hermeneutic, and interpretive inquiry.[38]

THE POLICYMAKING PROCESS

As we have seen, the development of policy analysis has been a response to practical prob lems. Although recognition of its practical origins is essential for understanding policy analysis, historical awareness alone does not tell us much about the characteristics of poli cymaking and how it works. For this we must turn to the founders of the movement known as the ***policy sciences***.

The policy sciences movement was founded by the preeminent political scientist, Harold D. Lasswell, who offered a new vision of the relation between the social sciences and policymaking. Although fragments of Lasswell's vision may be traced to the nine teenth century, the policy sciences did not only mandate the creation of knowledge about policymaking, something that had been done for several centuries. The policy sciences also required that the knowledge that was created be used to improve the process of policymaking.[39] Like Robert S. Lynd's ***Knowledge for What***? (1939), this was a revolu tionary vision, one that affirmed the centrality of the social sciences in the process of policymaking.

For the policy sciences, analysis was seen as an ***intellectual*** activity embedded in a ***social*** context. For Lasswell and Myers S. McDougall, his decades-long collaborator in the development of the policy sciences, this process was divided into three compo nents. The first component is ***contextuality***, which refers to the fact that decisions are embedded in a wider social process. The second is ***problem orientation.*** Practitioners of the policy sciences are proficient in the intellectual activities involved in clarify ing goals, trends, conditions, projections, and alternatives. The third is ***methodological diversity***, which stresses that the methods employed are broad rather than narrow in range (Lasswell 1971: 4).

The founders of the policy sciences represented the decision process as seven sequen tially ordered ***decisional functions***, each based on the coercive and persuasive powers of government. Each decisional function has outcomes, and each outcome has effects. Values

[37]Wayne Parsons, "From Muddling Through to Muddling Up: Evidence Based Policy-Making and the Modernisation of British Government," ***Public Policy and Administration*** 17, 3 (2002): 43–60.

[38]John W. Creswell, ***Qualitative Inquiry and Research Design: Choosing Among Five Approaches*** (Thousand Oaks, CA: Sage Publications, 2013).

[39]The policy sciences, stated Lasswell (***A Pre-view of Policy Sciences***, 1971: 1), "are concerned with knowledge ***of*** and ***in*** the decision processes of the public and civic order."

identified by Lasswell and Kaplan[40]—for example, enlightenment and skill—are effects of outcomes such as gathering, processing, and disseminating knowledge.[41] Here are the seven sequentially ordered decisional functions:

Intelligence. Outcomes of the intelligence function include gathering, processing, and disseminating knowledge for the use of participants in the decision process, for example regulatory agencies and judicial bodies. Values of enlightenment, wealth, and skill are among the possible effects of gathering, processing, and disseminating knowledge.

Promotion. Outcomes of the promotion function include agitation and propa ganda for the use of leaders, political parties, and interest groups. Values of power and skill are among the possible effects of agitation and propaganda.

Prescription. Outcomes of the prescriptive function include the routinization and institutionalization of enforceable norms by executives and legislators. Values of power, respect, and skill are among the possible effects of executive orders, legisla tive statutes, and other enforceable norms.

Invocation. Outcomes of the invocation function include enforced conformity to prescriptions by staff in line agencies. Among the possible effects of enforced con formity to prescriptions are wealth, health, and well-being.

Application. Outcomes of the application function include the characterization, or written documentation, by appellate court judges of conditions under which prescriptions are applied. Values of skill, respect, and rectitude are possible effects of cases written by appellate court judges.

Termination. Outcomes of the termination function include the adjudication of claims of parties affected by the cancellation of prescriptions. Values of power and well-being are among the possible effects of adjudicating cases before small claims courts.[42]

Appraisal. Outcomes of the appraisal function include the assignment of legal or administrative responsibility for the assessment of policy objectives. Values of wealth, power, and enlightenment are possible effects of the assessment of objec tives by means of investigative commissions, inspectors general, and research offices of legislatures.

The seven original decisional functions were later revised in Lasswell's ***A Pre-view of Policy Sciences,*** published in 1971, which was his last major work on the decision process before

[40]Harold D. Lasswell and Abraham Kaplan, ***Power and Society: A Framework for Political Inquiry*** (New Haven, CT: Yale University Press, 1951). The ten values (or "base-values") include wealth, enlightenment, power, skill, and well-being. [41]The distinction between outcomes and effects of outcomes is awkward, as originally stated by Lasswell. Another way to state the distinction is to use the terms outcomes (short-term effects) and impacts (long-term effects), as is often done in public program evaluation.
[42]Critics sometimes note that it is illogical that Lasswell placed termination before appraisal. However, "termination" refers to what we now might call "late-stage-implementation." Appraisal then becomes necessary in order to evaluate the outcomes, for example, outcomes in the form of claims adjudicated in a small claims court.

his death in 1978. At first glance, the book appears to present a typical theory of sequential decision-making. Such theories begin with a policy problem, followed by a sequence of activities directed toward its solution. A widely known reworking of these decisional func tions includes seven stages of agenda setting, policy formulation, policy adoption, policy implementation, policy communication, policy evaluation, and policy adaptation.[43] However, Lasswell's sequenced decisions are called functions, not stages or phases, a difference of pivotal theoretical significance, because Lasswell followed John Dewey in viewing a function as a purposeful (or teleological) act, not simply a set of temporally ordered activities. For Dewey, a function is "any process sufficiently complex to involve an arrangement or coordination of minor processes which ***fulfills a specific end*** in such a way as to conserve itself."[44] Functions, viewed in this way, may be traced to a tradition of practical reasoning documented by Georg Henrik von Wright in his treatise on epistemological the ories associated with logical positivism and interpretivism.[45] Achieving a purpose is a con sequence of making decisions, or choices, about future states of affairs, rather than applying inductive or deductive rules in advance.[46] Policymaking, write Lasswell and McDougal, "is not a body of rules, but . . . a process of making authoritative decisions about the production and distribution of values in the community. . . . Rules alone could not explain why past decisions had been made or how future decisions were likely to be made."[47]

The legacy of Lasswell, McDougall, and the policy sciences is what we know now as the ***policymaking process,*** or ***policy process*** for short. Today, as in Lasswell's time, it is useful to visualize this process as a series of interdependent functions arrayed through time. The process begins with agenda setting, policy formulation, and policy adoption and proceeds through policy implementation, policy assessment, and policy adaptation (Table 2.1).[48] Depending on circumstances, analysts produce knowledge relevant to one, several, or all phases of policymaking.

The policy process is composed of complex cycles (Figure 2.1). Each phase of a ***policy cycle*** is linked to the next, in backward and forward loops, and the process as whole has no definite beginning or end. Individuals, interest groups, bureaus, departments, and

[43]Although they differ slightly, the first reworking of the decisional functions was Charles O. Jones, ***An Introduction to the Study of Public Policy***, 2nd ed. (North Scituate, MA: Duxbury Press, 1977), followed by James A. Anderson, ***Public Policymaking: An Introduction***, 7th ed. (Boston, MA: Wadsworth, 2011). Each are organized in accordance with similar stages of the policymaking process that are based on Lasswell.

[44]John Dewey, "Brief Studies in Realism. II," ***The Journal of Philosophy, Psychology and Scientific Methods*** 8, 20 (1911): 546–554.

[45]Georg Henrik von Wright, ***Explanation and Understanding*** (Ithaca, NY: Cornell University Press, 1971). [46]McDougal, Myres S., Harold D. Lasswell, and W. Michael Reisman, "The Intelligence Function and World Public Order." ***Temple Law Quarterly*** 46 (1972): 365.

[47]Lasswell, Harold D., and Myres S. McDougal, "Legal Education and Public Policy: Professional Training in the Public Interest," ***The Yale Law Journal*** 52, 2 (1943): 203–295.

[48]The policy cycle, or stages approach, is summarized by Peter de Leon, "The Stages Approach to the Policy Process: What Has It Done? Where Is It Going?" in ***Theories of the Policy Process***, ed. Paul A. Sabatier (Boulder, CO: Westview Press, 1999). See also Charles O. Jones, ***An Introduction to the Study of Public Policy***, 2nd ed. (North Scituate, MA: Duxbury Press, 1977); James A. Anderson, ***Public Policymaking*** (New York: Praeger, 1975); and Gary Brewer and Peter de Leon, ***Foundations of Policy Analysis*** (Homewood, IL: Dorsey Press, 1983). The classic work that influenced all works cited here is Harold D. Lasswell, ***The Decision Process: Seven Categories of Functional Analysis*** (College Park, MD: Bureau of Governmental Research, University of Maryland, 1956).

Phases of the Policymaking Process

Phase	Characteristics	Illustration
Agenda Setting	Under pressure from organized interests, elected and appointed officials place problems on the governmental agenda. Many problems are not acted on at all, while others are addressed after long periods.	A state legislator, at the request of a local welfare rights organization, passes to staff analysts a legislative inquiry regarding the issue of a living wage. Staff analysts brief members of the Health and Welfare Committee, who show no interest in legislation. The issue is not acted on by government for twenty years.
Policy Formulation	Officials formulate alternative policies to deal with a problem. Alternative policies assume the form of executive orders, court decisions, and legislative acts.	
Policy Adoption	A policy is adopted with the support of a legislative majority, consensus among age agency directors, or a majority court decision.	
Policy Implementation	An adopted policy is carried out by administrative units that mobilize financial and human resources to implement the policy.	
Policy Assessment	Auditing and accounting units in government determine whether executive orders, legislative acts, and court decisions are in compliance with statutory requirements and realizing their objectives.	
Policy Adaptation	Auditing and evaluation units report to agencies responsible for formulating, adopting, and implementing policies that poorly written regulations, insufficient resources, and inadequate training require the adaptation of policies.	
Policy Succession	Agencies responsible for evaluating policies determine that a policy is no longer needed because the problem has been resolved. Rather than terminate the policy, its objectives are redefined. A legislative	
Policy Termination		committee responsible for evaluation and oversight of agencies determines that a policy or an entire agency should be terminated because it is no longer needed.
		A state court considers prohibiting the use of standardized achievement tests such as the Scholastic Aptitude Test (SAT) on grounds that the tests are biased against women and minorities.
		In *Roe v. Wade*, Supreme Court justices reach a majority decision that women have the right to terminate pregnancies through abortion.
		The city treasurer hires additional staff to ensure compliance with a new law that imposes taxes on hospitals that no longer have tax-exempt status.
		The U.S. General Accountability Office monitors social welfare programs such as Temporary Assistance for Needy Families (TANF) to determine the scope of potential welfare fraud.
		A state Department of Labor and Industry evaluates an affirmative action training program, finding that employees wrongly believe that complaints against discrimination should be made to immediate supervisors, who are the objects of

complaints, rather than to officers.

affirmative action

The National Highway Traffic Safety Administration (NHTSA) convinces Congress to maintain the 55 mph speed limit, originally designed to save fuel, because it is unexpectedly reducing traffic fatalities. The U.S. Congress terminates the Office of Technology Assessment (OTA) on grounds that it is not needed because other agencies and the private sector are able to assess the economic and social effects of technologies.

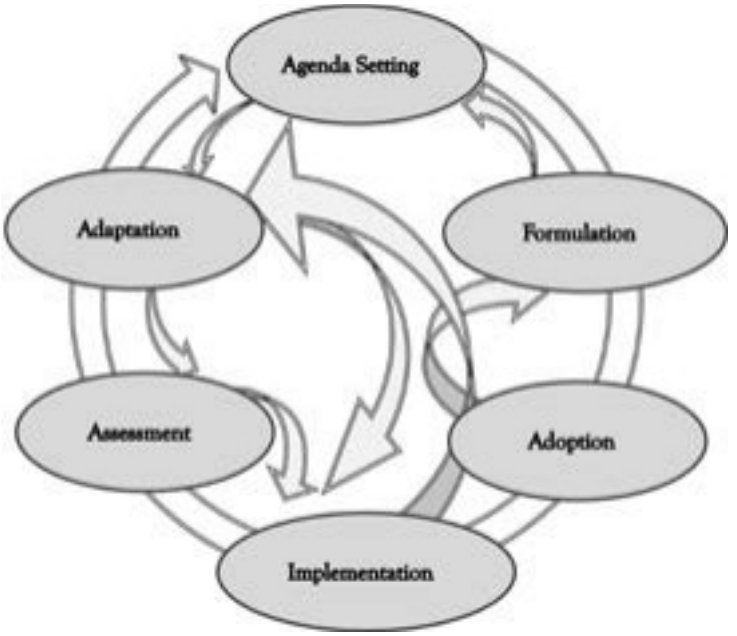

FIGURE 2.1
Complexity, Feedback, and Short Circuiting in the Policymaking Process

ministries are involved in policy cycles through cooperation, competition, and conflict. One form of cycle involves ***policy adaptation,*** where a feedback loop connects to earlier phases. Other forms of cycles are ***policy succession,*** where new policies and organizations build on old ones, and ***policy termination.*** Policy termination may mean the end of a policy or program, although even termination affects what issues are placed on the public agenda and in this sense represents another kind of cycle.

In some cases, a policy is adopted first, and then justified by working backward to agenda setting, where a problem is formulated or reformulated to fit or justify the policy. Parallel cycles occur, where different groups develop policies at the same time, and there may be forward ("arborescent") as well as backward ("assembly") branching from one phase to multiple successor or predecessor phases. Adjacent phases may be linked, or skipped altogether, creating "short circuits." Solutions and problems are in continuous flux, creating "primeval policy soups" and "organized anarchies."[49] Figure 2.1 also assumes that policy relevant knowledge may affect the policymaking process, although there is no assurance that this will occur.

[49]Michael Cohen, James March, and Johan Olsen, "A Garbage Can Model of Organizational Choice," ***Administrative Science Quarterly*** 17 (March 1972): 1–25; John W. Kingdon, ***Agendas, Alternatives, and Public Policies***, 2nd ed. (New York: Harper Collins, 1995).

Metaphors of garbage cans, primeval policy soups, and organized anarchies are easily visu alized, but they are difficult to apply to concrete policies. Indeed, it may seem that policies, when represented in this way, have no structure or form at all. However, a story may help to clarify the importance of these metaphors.[50]

> One month ago, on a secret military base, there were reports of the theft of classified materials. Every day, at about the same time, a worker pushing a wheelbarrow would attempt to leave the base by passing by the security guard. On the first day, the guard asked the worker what was in the wheelbarrow. He replied, "Just dirt." The guard probed the dirt with his baton and, finding nothing, allowed the worker to pass. The probing was repeated successfully for 1 week. During the second week, however, the guards grew suspicious, ordering the worker to dump the contents of the wheelbarrow on the ground. This time, the guards used a rake to examine the contents, again finding noth ing. This continued for another 2 weeks.
>
> A week later the guards summoned a special investigation unit equipped with a scanning device. The worker was again ordered to dump the contents, which were scanned, but with no results. Thereafter, the worker was allowed to pass freely. At the end of the month, thirty wheelbarrows were reported missing.

The point of the story is that structures are just as important as the processes they are intended to represent. Conceptual models, which are particular kinds of intellectual struc tures, are essential for understanding the process of policymaking. These conceptual models, which are frequently based on metaphors such as garbage cans, organized anarchies, and primeval soups,[51] structure the ways we think about and explain processes of policymaking.

The Comprehensive Rationality Model

The ***comprehensive rationality*** model structures the way we think about and explain the process of decision-making. This model explains policymaking as an exhaustive striving for economic efficiency. A rational economic actor, or ***homo economicus,*** weighs the costs and benefits of available alternatives and makes a decision that is motivated by a concern with the efficient use of resources. The basic proposition of the comprehensive rationality model is as follows: Among two or more exhaustive alternatives, the alternative selected will (or should) have net efficiency benefits (benefits less costs) that exceed the other alternatives.[52] Economically rational decisions are made when decision-makers:

- Specify an exhaustive set of alternatives on which there is sufficient consensus to act on behalf of others.

[50]I owe this example to John Funari, personal communication.

[51]Other metaphors and similes are "the wall," "surge," "policy decay," "war on poverty," and "problems as infectious diseases." Rein and Schon call them "generative metaphors" because they generate a framework for structuring policy problems. See Martin Rein and Donald A. Schon, "Problem Setting in Policy Research," in ***Using Social Research in Public Policymaking***, ed. Carol Weiss (Lexington, MA: D. C. Heath, 1977), pp. 240–243.

[52]Rational choice models are reviewed by Elinor Ostrom, "Institutional Rational Choice: An Assessment of the Institutional Analysis and Development Framework," in ***Theories of the Policy Process,*** ed. Sabatier, pp.

- Identify objectives for each alternative.
- Forecast the consequences of selecting each alternative.
- Specify and rank transitively alternatives that best achieve objectives.

- Choose the alternative that maximizes the attainment of objectives.

There are other versions of rational choice that involve the incorporation of institutional transaction costs into choice situations[53]; the redefinition of benefits and costs in political, social, or ethical terms (e.g., ***homo politicus***)[54]; and the qualification that decision-makers are fallible learners with imperfect knowledge, limited computational capabilities, and a propensity for error.[55]

Second-Best Rationality

An important criticism of the model of comprehensive economic rationality is ***Arrow's Impossibility Theorem,*** which provides an alternative explanation of policymaking processes. The theorem states that it is impossible for decision-makers in a democratic society to meet the requirements of comprehensive economic rationality.[56] It is impossible to make a single best choice by aggregating individual rational choices by means of majority voting. The impossibility of creating a collective decision that involves transitive preferences (if A is preferred to B, and B is preferred to C, then A is preferred to C) is described as the "voters' paradox."

Consider a committee composed of three members: Brown, Jones, and Smith. The com mittee wants to decide which of three forms of energy—solar, coal, and nuclear—should be adopted to resolve the energy crisis. Brown, the leader of an energy rights organization, pre fers solar to coal and coal to nuclear, reasoning that this ranking creates least risk to citizens. Because Brown's choice is transitive, it conforms to the rule: If A is preferred to B, and B is preferred to C, then A is preferred to C. Jones and Smith, who represent the coal and nuclear industries, also have transitive preferences. Jones prefers coal to nuclear, nuclear to solar, and coal to solar, reasoning that coal is most profitable, followed by nuclear and solar. In turn, Smith prefers nuclear to solar, solar to coal, and nuclear to coal, reasoning that nuclear is most profitable. Solar energy is less profitable than coal but creates fewer dangers to the environment. Smith sees coal as the least desirable of the three alternatives.

The three choices are rational and transitive from each individual's point of view. Yet, once the three members attempt through majority rule to reach a democratic decision, there is a paradox (Table 2.2). When we ask them to choose between solar and coal, we see that solar is preferred to coal by a margin of 2 to 1 (Brown and Smith versus Jones). Similarly, when we ask them to choose between coal and nuclear, we observe that coal is

35–72. The classic critique of comprehensive rational choice is Charles E. Lindblom, ***The Policy-Making Process*** (Englewood Cliffs, NJ: Prentice Hall, 1968).

[53]Oliver E. Williamson, ***The Economic Institutions of Capitalism*** (New York: Free Press, 1985).

[54]David J. Silverman, ***The Theory of Organisations*** (New York: Free Press, 1972).

[55]Elinor Ostrom, ***Governing the Commons: The Evolution of Institutions for Collective Action*** (New York: Cambridge University Press, 1990), and Mancur Olson, ***The Logic of Collective Action: Public Goods and the Theory of Groups*** (Cambridge, MA: Harvard University Press, 1965).

[56]Kenneth J. Arrow, ***Social Choice and Individual Values*** (New York: John Wiley, 1963).

Committee Member Preference

The Voters' Paradox

Brown A (solar) preferred to B (coal)
B (coal) preferred to C (nuclear)
A (solar) preferred to C (nuclear)

Jones B (coal) preferred to C (nuclear)
C (nuclear) preferred to A (solar)
B (coal) preferred to A (solar)

Smith C (nuclear) preferred to A (solar)
A (solar) preferred to B (coal)
C (nuclear) preferred to B (coal)

Majority A (solar) preferred to B (coal)
B (coal) preferred to C (nuclear)
C (nuclear) preferred to A (solar)

preferred to nuclear by a 2 to 1 margin (Brown and Jones versus Smith). However, if we now apply the transitivity rule to these ***collective*** preferences, we should find that if A is preferred to B (solar to coal), and B is preferred to C (coal to nuclear), then A is preferred to C (solar to nuclear). However, this is not the collective result, because two committee members (Jones and Smith) prefer C to A (nuclear to solar). Hence, individual preferences are transitive, while the collective preference is ***cyclic***, which means that alternatives cannot be ranked consistently. For this reason, a rational choice is impossible.

Arrow's impossibility theorem proves by logical deduction that it is impossible to apply democratic procedures (e.g., majority rule) to reach collective decisions that are transitive. Specifically, it is impossible to meet one or more "reasonable conditions" of any demo cratic decision procedure: (1) ***nonrestriction of choices***, that is, all possible combinations of individual preferences must be taken into account; (2) ***nonperversity of collective choice,*** that is, collective choices must consistently reflect individual choices; (3) ***independence of irrelevant alternatives***, that is, choices must be confined to a given set of alternatives that are independent of all others; (4) ***citizens' sovereignty***, that is, collective choices must not be constrained by prior choices; and (5) ***nondictatorship***, that is, no individual or group can determine the outcome of collective choices by imposing its preferences on others.

To avoid the dilemma of intransitive preferences, collective choices might be delegated to a few decision-makers (e.g., political or technical elites) who can be expected to reach consensus and make a transitive choice. Although this solves the problem of intransitive preferences, it nevertheless violates conditions of citizens' sovereignty and nondictatorship. Alternatively, we might introduce additional alternatives (e.g., wind power) in the hope that this will foster consensus, except this violates the condition of independence of irrelevant alternatives. In practice, however, political systems based on majority rule employ both