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LAW AND SCIENCE IN COLLABORATION

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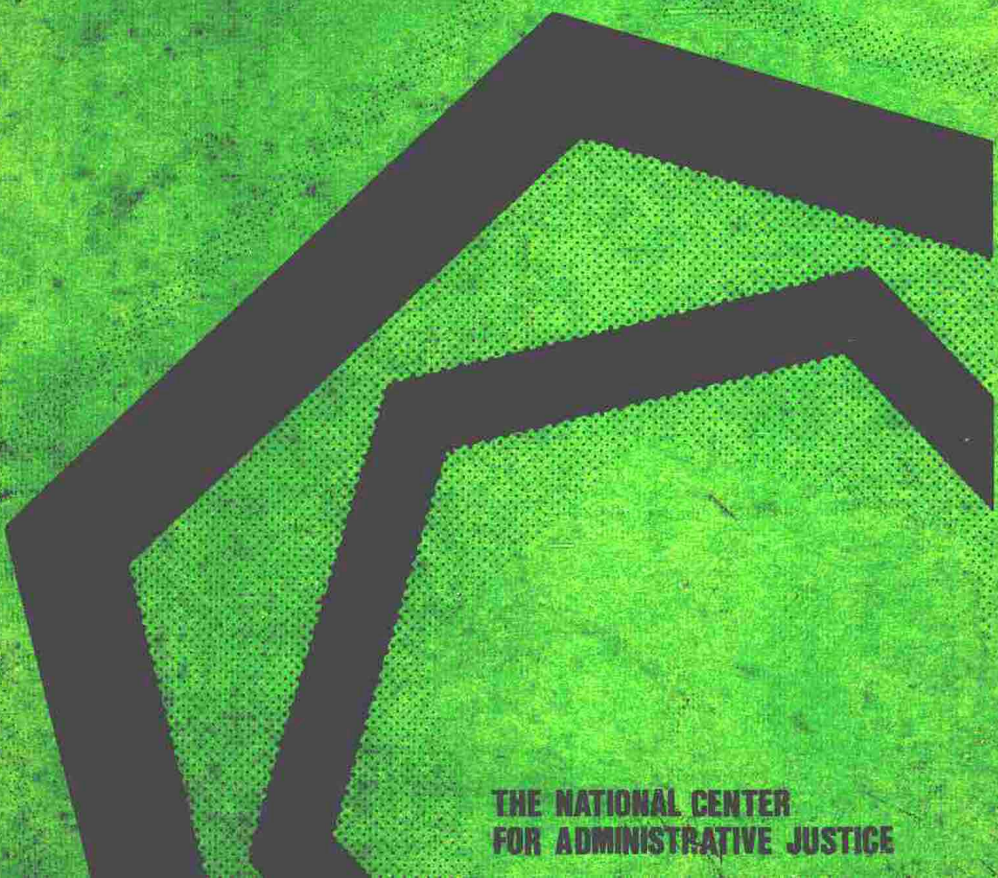

THE NATIONAL CENTER
FOR ADMINISTRATIVE JUSTICE

Law and Science in Collaboration

Resolving Regulatory Issues of Science and Technology

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The National Center for Administrative Justice seeks to advance administrative justice in society. It conducts research and education programs in law and public affairs and training courses for the improvement of skills related to administrative and regulatory processes.

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Preface and Acknowledgments

The material in this book is designed to provide a framework for regulatory and judicial decision making involving science and technology. We selected five case studies representing a cross section of present processes for fact finding, evaluation, and decision making, and then arranged for the chapters to be written on them by scientists and lawyers. These were, in turn, critiqued in written comments by persons trained in disciplines other than the authors'. In addition, one chapter was prepared to provide a conceptual overview of the subject and another to analyze the different cognitive styles of lawyers and scientists. The chapters and comments were intensively discussed at a three-day conference attended by a group of lawyers, scientists, regulators, and other professionals and then revised for this book. A transcript of the presentations and discussions at the conference is available for examination at the offices of the National Center for Administrative Justice.

Prior to the preparation of the chapters, we furnished the contributing authors and commentators with a detailed plan of the project and continued a dialogue with each of them throughout the preparation period. After the conclusion of the conference, we wrote the introductory and concluding chapters to synthesize the salient aspects of the chapters and proceedings and also, on the basis of the critiques and suggestions, to design a distinctive model for regulatory and judicial decision making involving science and technology.

This formidable undertaking was accomplished with the valuable assistance and cooperation of a number of people and institutions. Most noteworthy was that of Frederick L. Kirgis, Jr., the director of the Frances Lewis Law Center at Washington and Lee University, Lexington, Virginia. From the start, he helped and encouraged us in the design of the project and in each stage of its development. We are also grateful to the president of Washington and Lee University, Robert E.R. Huntley; Dean Roy L. Steinheimer, Jr.; and other members of the law-school faculty and staff of Washington and Lee University for the opportunity to use their splendid facilities, for their gracious hospitality to all the participants, and, particularly, for the financial contribution to the project by the Frances Lewis Law Center.

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Law and Science in Collaboration

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1 Introduction

Milton M. Carrow and
J.D. Nyhart

One of the more elusive problems of our times is the development of effective decision-making processes of regulatory agencies and courts where science and technology issues must be resolved. Proceedings involving hazardous substances that are introduced and released in the environment, in the work place, and in the production of energy, food, and equipment are familiar examples. In recent years, the issues in such proceedings have concerned cancer-causing and other harmful chemicals, nuclear power, and the disposal of nuclear waste.

The difficulties in arriving at satisfactory decisions when science and technology issues are present arise out of the differences in data-gathering and data-analysis systems of science and law and also from the need to accommodate multiple interests. Decision making is further complicated by lack of clarity as to who has the responsibility and who in fact acts to establish policy and apply value standards.

This book examines the problem with a view toward providing a basis for improving the decision-making process. The chapters in part I provide insightful perspectives on how current problems in the regulatory sector relate to issues involving science and technology. Chapter 2 examines two theoretically contrasting models of regulatory decision making that served as a focal point for discussion by the conference participants. Chapter 3 reviews the legal requirements of evidentiary records on which regulatory decisions are made. And chapter 4 presents two brief statements of different perspectives of the science enterprise as it may affect policymaking today.

Five case studies of institutional processes dealing with science and technology comprise part II. Four of these are in the regulatory sector (chapters 5, 6, 8, and 9) and the fifth deals with medical-science processes (chapter 7). The essay in part III examines the problem of communication difficulties between lawyers and scientists arising from differences in their cognitive styles (chapter 10).

Finally, in part IV, we analyze the preceding chapters and the essence of the discussion of the work presented in this book by the scientists, lawyers, administrators, and other professionals who participated in the proceedings.

References in this chapter and the final chapter are either to the following chapters and comments or to the transcript of the oral presentations and discussions at the April 1981 conference conducted by the National Center for Administrative Justice at the Frances Lewis Law Center, Washington and Lee University. Transcript references are identified by the symbol, "tr.," followed by a page number. The transcript is on file with the editors.

Here we also describe the essential components of a model process that we believe is capable of significantly improving the quality of decision making involving science and technology.

Models for Regulatory Decision Making Concerning Science and Technology

In writing this introduction, we have had the benefit of hindsight and have been able to select significant perceptions from the work leading to this book. Several points seem important. Many of the contributing authors to this book speak in terms of models; others present them without so naming them. To the extent that a model is a way of speaking from experience to a level of greater generality or applicability, their use seems to be a practical way to convey and test ideas. A review of the many different models explicitly or implicitly offered by the authors suggests a need to develop a new conceptual construct explicitly for decision making involving science and technology in legal processes.

In order to focus on this objective, we have found it helpful to portray a larger framework within which such an institutional design falls. Thus, this section identifies a universe of decision-making models, including our own.

We believe there are three basic structures for decision making involving science and technology: the adversary, consensus, and collaborative models. The five case studies in this book, representative of current agency practices, appear to fit into one or another of these basic models.

The Adversary Model

In recent years the traditional adversary model, which is based on the structure and process of the judicial system, has been examined and reexamined, praised and maligned, modified in some instances, and its use sought to be limited. The present chief justice of the Supreme Court of the United States, for example, has been urging that a variety of proceedings, such as divorce, adoptions, and landlord and tenant matters, be handled by some other dispute-resolution mechanism. Judge David L. Bazelon has suggested that the courts have no competence to decide scientific matters and that appellate courts should limit the scope of their review to the fairness of the proceedings. Some scientists, on the other hand, have sought to establish a so-called science court, which would employ the techniques of the adversary system in a forum of scientists by addressing questions of scientific controversy to a panel of scientists charged with preparation of a consensus statement of the current state of knowledge about the science involved, leaving aside the policy—and hopefully the value—issues.

The main characteristics of adversary proceedings involve opposing antagonistic parties or interests, one party with witnesses striving to prove facts essential to her or his case and the other party striving to disprove those facts. ("The advocate's prime loyalty is to his client, not the truth as such.")[1] Decisions are made by one or more impartial adjudicators. There are additional elements of a due-process nature, such as the right of cross-examination and argument, the need for an adequate record, and the rendering of a reasoned decision.

As a decision-making process for science and technology issues, the adversary model was sharply criticized in the discussion. The most-significant challenge to its utility was that in adversary proceedings, the evidence of technical experts is manipulated to fit the needs of the parties striving to prove or disprove facts. Ashford maintains that parties to a controversy "want to keep the experts free of values, so they can manipulate their testimony . . . in ways which they feel secure about." (tr. p. 248) Wessel asserts that "prostitution of the scientist is an all-too-common feature of socioscientific litigation and its 'battle of experts,' " citing as an illustrative example the well-known case of *Berkey Photo, Inc.* v. *Eastman Kodak Co.*[2] If this is true, and our perception is that it is, "good" science is skewed in the adversary model.

The conventional adversary proceeding is completely under the control of lawyers and judges. This circumstance creates additional problems for scientists. According to Keen, reasonably well-supported data indicate that a substantial gap exists between lawyers and judges, which creates two separate cultures. He also finds that the legal profession may be "intolerant of and impede the academic researchers' less-decisive, more-adaptive mode of work, and, hence, of expertise." (p. 235)

The adversary model does not fit readily into the regulatory process, particularly where policymaking is involved. This is well illustrated in chapter 2. There, Mashaw describes the attributes of two competing models of regulatory decision making, which are laid at a fairly high level of abstraction. One he calls the model of bureaucratic rationality (B/R model), and the other, "the model of micropolitical accommodation" (M/A model). According to Mashaw, the B/R model:

1. Is designed to collect and process data in ways that will promote effective implementation of a specific program.
2. Assumes that values have already been determined.
3. Has a hierarchical structure in which lower-level decisions get reviewed by other managerial or supervisory levels, with the buck clearly stopping somewhere.
4. Attempts to conserve decisional resources and to be efficient. (pp. 13-15)

The M/A model contrasts in several ways:

1. Its goal is harmony.
2. Its structure is informal as in a network where there are "a series of connections among people that are related both to issues and to personalities" and in which people might play any role and shift roles over time.
3. Its cognitive style is to make distributive judgments, to decide who gets how much of what.
4. It seeks consensus through a process that may include virtually any sort of strategic behavior—negotiation, waiting each other out, stroking—whatever is within the broad constraints of fairness in politics. (pp. 15-16)

Lawyers are more familiar with the B/R model, partly because it has some of the attributes of the adversary model. Both of Mashaw's models, however, show that regulatory decision-making proceedings have institutional and hierarchical dimensions not present in the conventional adversary process in the judicial system.

The Consensus Model

Instead of the win-lose nature of the adversary model, the characteristic attribute of the consensus model is the negotiation of differences until all the parties are willing to agree. This institutional design is widely used in labor relations, as in the mediation of labor disputes and in collective bargaining. It is also used to resolve parts of controversies in the judicial process, as in pretrial proceedings to determine issues on which there is agreement, as well as to settle issues. It is also the way in which a jury is expected to operate.

Some of the attributes of Mashaw's M/A model appear in consensus structures, such as its objective "to produce a harmonious accommodation of the interests that surround the issue." The methods of the consensus model include compromise, a search for solutions that bring some degree of satisfaction to conflicting parties; smoothing or "stroking" (Mashaw), which emphasizes areas of agreement and deemphasizes areas of difference; and accommodation, which seeks to achieve harmony by acceptance of less than desired.[3]

The consensus-development program of the National Institutes of Health (NIH), described by Lowe in chapter 7, represents an effort to apply the consensus model where science and technology issues are involved. It is a carefully structured process that seeks to find consensus on medical procedures. Examples involve methods of treating breast cancer and the utility

of tonsillectomies. Its findings, however, have no legal effect, or, as Lowe points out, NIH does not "regulate." Instead, the findings are widely circulated in the medical profession with the expectation that they will be used.

Although the program is not a legally enforceable mechanism, several of its aspects may be usefully applied to a decision-making process. Of particular interest is the formulation of technical questions and the composition of the consensus panel.

Under the consensus-development program, the technology to be reviewed is selected by one of the twelve institutions of the NIH. The selecting institute "identifies critical questions concerning the scientific validity of the technology." (p. 146) Lowe points out that the questions frame the conference in which the issues are debated and that they "must be answerable on the basis of science, not anecdote, not supposition." (tr. p. B56) This is an important factor. It is a subject that is persistently raised in the chapters regarding the shortcomings of present decision-making mechanisms and will be more fully discussed in the collaborative model.

After the technology is selected, a consensus panel is organized which is responsible for the answers to the questions. Lowe says it is a panel consisting of "scientists, clinical specialists and generalists, interested nonmedical professions, and representatives of consumer and special-interest health groups." (p. 147) He also points out that panels can achieve consensus around a question or say there is no consensus. If they do the latter, they must identify the information needed to permit a consensus, in which event its acquisition and evaluation become a research agenda. The diversity of interests represented on the panel is another element that should be and will be considered in discussing the collaborative model.

Another major component of the NIH consensus construct is the assemblage of a large audience in a public forum to which the consensus panel reports its findings and listens to comments and criticisms before preparing its final findings for dissemination.

The Collaborative Model

The collaborative model incorporates several ideas suggested in this book that are designed to remedy the flaws found in the five case studies.

We believe that the concept of collaboration is uniquely appropriate for decision making involving science and technology issues. It connotes an effort among equals to solve a problem or perform a task. It is not one dominated by legal process to which all else must be subservient. It recognizes that there are different areas of expertise and different approaches to problem solving in each area. It seeks to provide a means whereby the gaps and differences in the findings of different disciplines can be bridged or reconciled.

These elements are touched upon in many of the chapters. Keen, in his analysis of the cognitive style of lawyers and scientists, says that the system must allow scientists "room to breathe, to allow them to make their explanation in their own terms and at their own pace." (p. 214) Wessel adds, "we've got to let the scientists be scientists, and we've got to let the lawyers and judges be lawyers and judges, and then fashion a framework to arrive at a resolution of whatever the differences may be that require a public policy decision." (tr. p. 212) Grobstein states that "many scientists feel that the only role that scientists play in relation . . . to the regulatory issues, is to state what is known, and to assume that the regulator is not going to take a position that will be inconsistent with what is known." (tr. p. 128)

The principles of the collaborative model combine these and other ideas essential to a decision-making process. They include the following.

1. Functions of lawyers, scientists, and decision makers should be clearly identified and related to their respective capabilities and authority. Who is in charge of particular functions needs to be established in a collaborative rather than a competitive manner. Value judgments should be related to the functions and be explicit. Ideally, the decision maker should be capable of evaluating the scientific, legal, and policy issues.

2. Questions addressed to the scientists and technologists should be framed so that the specialists can respond in a way that is consistent with their functions. In particular, value-laden questions should be minimized.

3. Communication among the scientists and technologists, lawyers, and decision makers requires a specific effort to establish trust and understanding across discipline lines. This requirement may involve translation of the scientific and technological information into the legal and policy framework in which the decision maker must operate. A lawyer or a scientist may undertake this translation function.

4. Scientists and technologists should have room to breathe in carrying out their agreed functions. That is, scientific or technical data should be gathered, developed, evaluated, and presented in a form and manner acceptable to the presenter and his or her peers.

5. Since scientific data, their evaluation and presentation, will be used in a legal process involving legal rights and powers, care must be taken to ensure that the scientific information can be satisfactorily folded into the legal process. Specifically, due-process and fairness standards appropriate to the nature of the legal process must be met; multiple interests affected, public and private, should have an opportunity to be heard and their views considered; and a record must adequately reflect the scientific and legal processes at work.

6. There should be a sufficiently equitable distribution of the scientific and technological expertise among the parties in interest so that they will accord both credibility and acceptance of the process by which the scientific work is done.