Preface

This collection of essays is an outgrowth of discussions that began nearly five years ago. Although the formal process in which those discussions were embedded terminates with the publication of this volume, concern over the issues raised seems unlikely to end in the near future. Neither a reflection of consensus nor even a representation of the individual authors' final views, the essays collected here can be understood only as interim statements of the conclusions each author has reached thus far with respect to an elusive and enormously complex set of questions.

To define those questions properly is itself no mean task; if this preface begins obliquely, it does so precisely because the questions addressed by the volume it introduces are not easily formulated—perhaps the only conclusions to which every author represented here could subscribe without reservation.

Our inquiry began in late 1970 with an initial question posed by Murray Gell-Mann of the California Institute of Technology: If, as then seemed likely, a new national environmental research institute were to be established to provide analysis and guidance for policy makers, how should it go about its work? By what methods, with what institutional arrangements, and with what kinds of intellectual resources might such an institute hope to perform its analyses with adequate sensitivity to "fragile" values, such as those of preserving wilderness and endangered species? How might such an institute then hope to influence public decision making in directions consistent with such sensitivity? Professor Gell-Mann asked the American Academy of Arts and Sciences to sponsor several exploratory

meetings to address these questions. The group organized by the Academy included individuals from many intellectual traditions, representing a range of disciplines from the natural and social sciences to the humanities, each of which we felt might contribute special insights into a complex problem.

What united the members of this initial planning group was not simply a fascination with Gell-Mann's question and a sense of its importance in dealing with a rapidly growing number of disputes at the local, regional, and national level involving the environment; there was also the recognition that the difficulty of dealing with "fragile" values was critical for analysis and decision making in many other areas of national policy, areas as diverse as highway safety and medical ethics.

Quite early in our conversations, we came to realize that the problem under discussion was at once conceptual and institutional: the analytic techniques on which an environmental institute could draw—like the legal, bureaucratic and political frameworks into which its advice would have to fit — were likely to be biased against the adequate representation of some sorts of interests, values, or concerns, and in favor of others. Thus "hard" values, such as short-term economic efficiency, would be likely to swamp "soft" values, such as ecological balance, and even "softer" ones, such as the love of natural beauty. Regretting that prospect, we tried both to understand its causes and to project possible remedies—to discover ways of doing, and of effectively implementing, what Gell-Mann provocatively described as "systems analysis with heart."

As our sessions progressed, and as we exchanged memoranda on the themes defined by our first discussions, our sense of the problem itself underwent a subtle transformation. Some of us at first (and later all of us) began to wonder just what *were* the "fragile" values that we feared technological and economic analysis and political bargaining would dwarf. What, for example, was the common factor among the following interests that made the values they represented difficult to incorporate into traditional modes of analysis and political decision: the preservation of a dying species of whale, the love of wilderness and natural beauty in the northern Cascades, the desire for privacy and retreat in the Maine woods, the maintenance of ecological balance in the Everglades, the energy needs of future generations, even the call of national pride in a monumental engineering venture like the SST? Were such concerns being properly addressed by techniques originally designed to evaluate water quality, employment and recreation needs, or the need for mass transportation? Were professionals originally trained to consider such

issues capable of dealing adequately with different ones? Were these interests given adequate weight in the decision-making process? And how was "adequate weight" to be determined?

Furthermore, we asked (and still cannot answer, as the essays in this volume indicate) how are these values best described: as human? fragile? abstract? unquantifiable? environmental? humane? soft? If saving whales and preserving wilderness represent "soft" concerns, in what sense are flood control, or "helping ghetto dwellers," any "harder"? And might not hardheaded economic analyses show the foolhardiness of at least some projects that were ecologically unsound, while richer and more "humane" analyses might make some of these projects seem worthwhile on other than economic grounds?

We began to see that the central question we needed to address was how to resolve value conflicts as such. The issues involved in certain conflicts—for example, those between what are generally accepted to be "hard" and "soft" values (between, say, industrial development and preserving natural beauty)—were in some ways easy to articulate if not to resolve. But environmental disputes also involve conflict among what might be considered competing "soft" values, such as the value of preserving wilderness trails as against the liberty and autonomy of trail-bikers or even hikers seeking refuge from bureaucratic regulation. Gradually we arrived at a somewhat altered vision of the issue before us. We no longer believed, for reasons outlined in some of the following essays, that values or goals could usefully be separated into the "fragile" and the "hardy" such that those associated with one were superior but were harder than the other to "incorporate" into analysis and decision making.

We were thus prepared by our third or fourth meeting to redefine the question at hand. What emerged was a sense that the problem we had been grappling with involved *not* a particular subset of endangered and noble values but rather the realm of values as a whole. It was not so much that the analytic and legal tools available to us inherently skewed policy choices toward some kinds of values and away from others (though some of us continued to find that a troubling possibility); it was that those tools, however well designed for the relatively technical task of finding suitable measures for achieving agreed-upon ends, seemed inadequate to the task of explicitly addressing controverted issues of value *at all*. Indeed, they were not designed to deal with such conflicts.

A cost-benefit analysis, for example, of a proposal for a dam or an oil refinery is simply not a means of resolving a true conflict between competing values. An analysis that purports to calculate the net

"benefit" or "cost" of the project as a whole—its overall score on the systems analyst's "objective function"—*assumes* that there is a general agreement on values, at least on the basic values in terms of which costs and benefits to various affected groups are defined and measured, and also on the values that determine how the affected interests are to be compared and weighed against one another. However useful a tool of analysis might be as a means of enabling each affected party to perceive and articulate where its own best interests lie with respect to a problem or proposal, the utility of such a tool as a method of selecting a specific solution for all parties to agree upon or at least to accept is always dependent on a basic agreement among value perspectives.

Inherited from an era when certain basic values and ideals seemed to be more clearly (if tacitly) understood and widely (if not universally) shared, the intellectual and institutional techniques available to the proposed institute of environmental studies—or indeed to *any* policy-oriented research institute—seemed distinctly ill adapted to the task of helping to reach important decisions in a more fragmented society, a society which, for a variety of reasons, was no longer confident about the priorities among its values, and which was becoming increasingly aware of the inherent difficulty of choosing among values in conflict, coupled with the increasingly unavoidable need to do so. Thus with regard to environmental disputes, value conflicts may have been submerged in the past because of a nearly universal agreement that economic growth and efficiency were desirable ends in themselves, or at least that they were important in whatever system of ends might be pursued. In today's much more fluid situation, competing values, recognized by many as equally valid, are receiving widespread support. The result is an inherent tension and moral ambiguity in any claim about values—a classic instance of Hegel's conflict of right against right.

The issue before the study group formally organized by the Academy thus became one of understanding how analytic and institutional devices might be reshaped to address more directly the kinds of value uncertainties and conflicts that our society in the past—surer of its purposes, less uncertain about the adequacy of available resources and about its own long-range prospects, and with fewer articulate interest groups—could more comfortably ignore. The analyst in these circumstances, we agreed, can rarely if ever remain quite the "neutral" scientist who eschews all value judgement; he will often be required to take a forceful role in articulating values, particularly those that seem hidden or obscure, explaining their implications and suggesting alternative and imaginative solutions to

the problems in which they figure. He must ask provocative "what if" questions. In sum, we agreed that specific recognition of the role of values, and of the implications of value conflicts throughout the entire analytic and decision process, would increase the probability that a society in transition could be thoughtful about its goals, most of which are not clearly perceived and may be shrouded in controversy, and thus could retain some measure of intelligent control over the directions in which it was moving.

In order to test against reality our emerging hypotheses about analysis and values, to identify a source of still further hypotheses, and to find a setting in which our conclusions might actually have significant consequences, we resolved to expand our mode of inquiry to include the assessment of a "live" environmental dispute. The controversy over the Tocks Island Dam, which was still very much alive at the time of this writing after over a decade of dispute and delay, provided an ideal subject. A group based at Princeton University began a study of the history of this controversy and of the role that values played in its evolution—a study that has richly complemented the more theoretical work whose tentative conclusions are reported here.

During the life of this Academy study, the two groups worked closely together. The students of the Tocks controversy have provided the authors of this volume with a common basis of data from a case displaying most of the value systems, analytic problems, and bureaucratic processes we have considered. The authors in this volume have contributed conceptual and methodological insights that guided and supported the lines of inquiry in the case study, and, in turn, have been stimulated by the ideas the case study has generated. Thus, although the two volumes stand separately, the development of each was continually dependent on that of the other, an interrelationship reenforced by the fact that Robert Socolow of the Princeton group has chapters in both, while Irene Thomson narrates the Tocks story in this book.

Many of the conclusions of both groups focus explicitly on the breakdown of discourse that we eventually came to identify as one of the central issues before us. Our ways of evaluating policy options, and our ways of implementing policy choices, cannot rise above our ways of *talking* about what is at stake and what is to be done. As bearer of a language and mode of analysis long used to address questions less beset by an evident conflict and indeterminacy among values, our society does not come easily to frank and illuminating interchange about the questions of values that now seem to divide it. Thus it is fitting that the first of the essays to follow these

introductory remarks, that by Robert Socolow, is concerned with "failures of discourse," a topic that in some respects embraces all that this volume is about.

But our collective discussions, and our individual research, have pushed many of us further—further along and further apart as well. For however we might agree at the general level represented by Robert Socolow's essay, we begin to disagree once the direction of a more successful "value discourse" is to be specified. For some of us, there can be no satisfactory way of talking about, much less acting upon, issues dominated by value controversy without a commitment, necessarily subjective, tentative, and self-correcting, to an evolving moral conception of man and his relationship to nature. For others among us, the very idea of any such commitment, however evolutionary, seems impractical and abstract; they approach the issues in very different terms. For them, the path of wisdom seems rather to be composed of the incremental and pragmatic steps of improving analytic and decision-making techniques in a direction that, among other things, gives greater recognition to value conflicts and to the possible alternatives that might help resolve them.

Most of us, whatever our more distant aspirations, can find little of immediate operational significance in the relatively abstract "option" of developing a systematic communitywide commitment. We cannot, after all, postpone decisions on environmental disputes—or, indeed, on any of the many other problems where values are in conflict—until we have resolved the deepest philosophical issues they pose, issues that have commanded man's attention for centuries. Thus we all rest most of our hopes for improvement in the short run on a more creative deployment of existing scientific and analytic resources, resources that can often circumvent value conflict and value uncertainty by fashioning options, and perhaps even reshaping preferences, so as to satisfy seemingly irreconcilable constraints.

A host of unanswered questions have surfaced—questions about "nature," its cultural and historic meanings and man's relationship to it; about the place of knowledge and analysis in situations of value conflict; about the actual making of hard choices; and about the evolution of decision processes. We now see the surfacing of such questions as the most vital residue of our work. And all of us see a major role for institutional invention—a topic hinted at but barely developed in the essays that follow—in realizing our varying images of the future. But to deny that those images do indeed vary (convenient as such a denial might be from the perspective of editors straining to find unity and cohesion in a collection of essays) would

be to falsify the deepest insights this long and often surprising journey has generated for us all.

The several essays that follow seek to distill those insights in a manner faithful to their tentative and sometimes conflicting character. Necessarily, therefore, the aim must be to stimulate further reflection and research rather than to lay any issue to rest. If these essays achieve that goal even moderately well, they will have more than justified the efforts that they and their many discarded predecessors represent.

LAURENCE H. TRIBE
CORINNE S. SCHELLING
JOHN VOSS