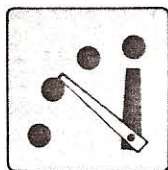


VOL. 33
NO. 4
APRIL
1977



THE
bulletin
OF THE ATOMIC SCIENTISTS

Mediation: a better alternative to science courts

**A mechanism avoiding the adversary relationship
can present the decision-maker with the
real dimensions of his choice**

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We have great sympathy for the concern and the goals of the Task Force of the Presidential Advisory Group on Anticipated Advances in Science and Technology. But we have serious reservations about the specific mechanism. Some of our criticisms are aimed at problems of the Science Court as now conceived. Most of these are difficult but probably soluble. Two problems, however, seem to us insurmountable. Both stem from the choice of the adversary relationship for the resolution of scientific disputes. We propose an alternative, which we hope will avoid these larger problems and ease at least some of the others.

On the big issues where science

touches public policy, such as nuclear energy, recombinant DNA, or fluorocarbons in the stratosphere, scientific information is required mainly to assess risks and alternatives and to guide the decision-maker to understand and appreciate the implications—and uncertainties—of technology, whether that technology is a tool or the subject matter of law. There is, of course, a consensus among scientists on the great body of scientific knowledge, but frequently no such agreement holds at the frontiers. This is precisely where controversies erupt over impacts of new technology, and where decisions must be taken in the public sector.

We will examine the appropriateness of the Science Court for providing relevant advice to policymakers, consider its most troublesome secondary effects and propose

an alternative mechanism that seeks to minimize those difficulties.

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The fundamental weakness of the Science Court concept lies in its use of the adversary proceeding. In the legal system, the purpose of the adversary proceeding is not to discover truth but to settle disputes without violence. Truth is valued in the courts because it usually makes the judgment based upon it more acceptable (which keeps the parties from going out after the trial and shooting each other). But other considerations are often more important than truth in preventing violence: predictability of results, blindness to individual differences and respect for social values are examples. The adversary process has survived for centuries because it has developed rules and procedures that balance these elements, of which truth is merely one.

In a policy context, resolution of disputes among scientists is not the real goal. It is a means toward informing policy-makers. The Science Court, in so far as it behaves like a court, must sacrifice truth for the sake of resolving disputes, a complete reversal of the scientist's priorities.

Moreover, the adversary process puts a premium on winning and polarizes the issues, which in scientific matters may be misleading and counterproductive. Advocates in law are careful to introduce only the facts that are clearly supportive of their positions. Any body of information, however extensive and relevant whose implications might lie between the antagonists' positions is almost certain to be left out. Both sides fear that evidence supporting an intermediate conclusion will give advantage to the other side. There is no reason to expect advocates in the Science Court to behave differently.

The adversary process in science will create problems not only through application but through its image. The sight of nonlawyers conducting an adversary proceeding with none of the familiar rules and safeguards of the courtroom will compel those trained in law to step in and "correct" the procedure,

eventually taking the Science Court largely out of the control of scientists. This has already begun to occur. Lawyers at the Science Court Colloquium were so disturbed by the procedures suggested that they volunteered their services to the Task Force to help devise better procedures. The irony of the situation is that they are right: the procedures cry out for improvement. But to improve them by making them legalistic will decrease the chances of ever exposing the facts. If this continues, the Science Court will lose the confidence of the science community, without which it cannot succeed.

However well the Science Court itself might function, the most critical decisions are to be made outside the proceedings, by the organizers of the Court and the client agency, rather than by the participants. For example, who may come before the Court is to be decided beforehand, the assumption being that there should be two sides. But the number of sides to a dispute, as well as the critical determination of what evidence is and is not relevant, depends on how the issues are defined. Definition of the issues is to be determined beforehand—by the client agency. The Science Court organizers would select the agency but, in their own words, "it is most important that the issue be stated in a manner as close as possible to the actual decision to be made by the agency."*

This raises the broader question of what public the Science Court or any other such mechanism should serve. Should its obligations be to the agency that calls on its services, or to the public for which the agency was created? The answer to this question determines whether the scientist-participants will be free to consider alternatives outside the scope of the question as framed by the agency, if the information exposed in the proceedings implies that the public would be better served by these new alternatives.

*Task Force of Presidential Advisory Group on Anticipated Advances in Science and Technology, "The Science Court Experiment: An Interim Report," *Science*, 193 (Aug. 20, 1976), 654.

EXPERT OPINION

*How the perspective of the agency can distort the real issues is nicely illustrated by the process of choosing a new bullet by the Denver Police Department. K. R. Hammond and L. Adelman describe how the decision very nearly passed into the hands of the ballistics experts: "As a result of focusing on bullets and their technical ballistics characteristics, legislators and city councilmen never described the social policy that should control the use of force and injury in enforcing the law; . . . Instead, the ballistics experts assumed that function. When the legislators requested their judgment as to which bullet was 'best,' the ballistics experts implicitly indicated the social policy that should be employed" ("Science, Values, and Human Judgment," *Science*, 194 (Oct. 22, 1976), 389).*

The standards of relevance determine what may and may not be heard. Proponents of the Science Court intend the procedures to expose all relevant scientific information. This is based on the assumption that the scientist-participants will be able to decide what is relevant by their own understanding of the rules of scientific evidence. But it is the agency and not the scientist-participants who will define relevance because it defines the issue. With the wisest of agencies, this would be a problem. But real agencies sometimes fulfill their mandates by doing better the things they already do best, rather than by examining how their expertise can best serve the public (see also "Expert Opinion").

The judgment of a Science Court may also be a source of difficulty. What would be the second and third order consequences of a judgment by eminent scientists that, given the limited data at hand, "X" should be deemed true for public policy purposes?

- A judgment by a Science Court could overemphasize the technical dimension of a public question, at the expense of its social and political aspects. At worst, it could lead

FACTS AND VALUES

At the Science Court Colloquium in September 1976, John Holdren, a physicist from the University of California at Berkeley, illustrated this problem with the nuclear controversy. Ranking the risks of nuclear power as follows, he pointed out that the most critical issues have the least technical components:

- proliferation,
- nuclear theft,
- sabotage and accidents (at reactors, reprocessing plants and waste facilities),
- routine emission (from reprocessing plants, mining and milling, fuel fabrication plants, and reactors).

Although Holdren thought other people might rank the dangers differently, Hans Bethe, a noted nuclear proponent on the program to counter Holdren, agreed with that ordering. It has been suggested that if the Science Court limited itself to very narrow questions, avoiding complex issues like nuclear power or recombinant DNA that involve many non-technical dimensions, this problem would be minimized. However, by limiting itself to such narrow issues, the Science Court would shy away from the very questions whose complexity had brought decision-makers to the point of needing a Science Court.

decision-makers to expect a bottom-line or single-valued scientific answer without which no policy decision would appear entirely justifiable (see also "Facts and Values").

• A simplistic judgment by sages would seem to carry more authority than a conventional publication, especially among those outside the scientific community, who rely on it for expertise. The court's decisions would be hard to erase if sound contradictory data were found subsequent to the judgment of the court.

• No assignment of burden of proof can be made in order to set standards from the beginning what would constitute the establishment of a case. And if scientists did attempt for this purpose to set standards of *prima facie* proof which fell short of tradi-

tional standards of proof in science, they might create far more problems for science than they would solve.

Progress could probably be made on all these problems if not one but a whole series of Science Court experiments were run, each one modified by the learning accumulated from its predecessors. The fundamental weakness—the adversary relationship—nevertheless remains. To us it seems insurmountable. We therefore question whether such painstaking creation would be worth the price.

Mediation: An Alternative

We propose as an alternative a mechanism modeled on mediation. It would aim not at resolving conflict, as adjudication does, but at bringing out the facts through better communication, whether differences remained or not. Very simply, it would work like this.

The initial selection of issues would be done as proposed for the Science Court. They would have to satisfy the first criterion prescribed by the Task Force for the Science Court: "Issues must be relevant to policy and must have technical components that are both important and apparently disputed" ("Interim Report," *Science*, p. 654).

The mediator would be a person or team capable of understanding the area relatively well but whose primary qualifications would be his understanding of the dynamics of the mediation process and his acceptance by all parties as trustworthy and aboveboard—regardless of whether he has ever taken a position in the past on related questions. Since loss of trust by any party means the mediation is over, the limits on a mediator's advocacy are self-enforcing.

Each side would put on paper its data and reasoning and exchange these summaries with the others before the meeting.* All parties would

*Where parties are already clearly delineated, as in labor-management disputes, the mediator takes the sides as he finds them. But in more creative mediation contexts, such as community disputes or environmental disputes, it is rarely clear at the start what parties or interests should be represented, and by whom. Here the mediator seeks to identify necessary positions and legitimate represen-

then know the position of the other and also have a frame of reference for progress. In mediation, each party would explain the opposing positions to the mediator until he could do it to the satisfaction of his counterparts. This idea from Herman Kahn is a brilliantly simple way to ensure that everyone really knows what he thinks he is fighting.* When they have thoroughly understood the relationship among their arguments, the participants would be obligated to write a joint paper explaining:

Each other's position originally, Where and why they originally differed,

What has changed (perhaps the whole formulation of the question), and

Which differences remain and why—or, alternatively, their final consensus, if one has been reached and no party wants to expose more than the logic of that consensus.**

The scientist-participants would then publish this paper.

Why Mediation?

Science thrives on the myth that scientists are dispassionate seekers after truth. Certainly the working scientist is aware that he sometimes becomes emotionally involved with a position, especially in controversial situations. However, we do a service to the scientist caught in this web by making it as easy as possible to rid himself of that attachment, by providing a means for people with conflicting views to emerge with a common understanding and either an appreciation of their real differences or, better, a consensus. To force disagreeing scientists into rigid conflicting roles is to undercut the basic myth of how science operates,

tatives of them. In scientific mediation, this extremely important and sensitive task would be necessary, although it could be done by another mechanism as well as by the mediator.

*Herman Kahn, ed., "Comments on Scope, Methodologies, and Format," Hudson Institute, Inc., Jan. 1970, p. 3.

**It is important that any group with a legitimate position has access to the mechanism regardless of its financial capabilities. Funding of individual and public interest groups would be as necessary in mediation as in a Science Court.

and to diminish the chances of exposing the truth. It is not important that scientists do not always adhere to the myth; it is important that the myth remains as a standard of ethical value for how scientists *ought* to conduct their business.

Consider some of the advantages of mediation:

- It requires no rules of evidence or arbitrary limits on what can be discussed. No *a priori* distinction would have to be drawn between "facts" and "values" as the Science Court would attempt to do.

- The underlying causes of a dispute can be brought out without fear of compromising one's ultimate position or giving something away. The real issue sometimes turns out to be distrust of another party for reasons unrelated to the original issue, or related in a way others cannot see without an explanation.

For this reason, the mediation sessions must be private. There is no freedom to negotiate in a public arena, nor is there any apparent reason why the public should even be interested in watching, as long as their interests are represented and the final paper is public.

- The number of parties that may participate is unlimited. Consequently the range of parties can reflect the actual range of arguments rather than the poles created by the choice an agency may be mandated by law to make.

- Mediation is a process of education, not only in the data and reasoning of other parties but in their humanity and legitimacy. Mediation well done can set a precedent for talking to other sides, for no longer seeing them as stereotypes, and for recognizing where power lies and how it affects what becomes accepted as truth.

- Mediation can produce not only a currently useful paper or agreement but also a follow-up mechanism tailored to the particular issue. Depending on experimental-

tion now in progress or expected, for example, parties could agree among themselves to re-evaluate their final paper within a year, maintaining contact and information flow during that time if they chose.

- Finally, mediation is a potential win-win situation. No one's position or reputation need be discredited. Every participant would receive credit as co-author of probably the most cited paper on the issue.

negotiations where the parties are not of equal sophistication or bargaining strength. The kind of mediation we are proposing here appears to be the least susceptible to that danger, for two reasons: first, because of the relative sophistication of the scientists participating and their common acceptance, regardless of political differences, of the language and intellectual values of science; and, second, because of the

To force disagreeing scientists into rigid conflicting roles is to undercut the basic myth of how science operates, and to diminish the chances of exposing the truth.

The paper would be a contribution to non-scientists as well as scientists, and most of all to policy-makers, because it would be the only primary source in which proponents of different views spoke to *precisely* the same questions, in the same language, and at every point in complete awareness of alternative arguments on *that* point. The paper would foreclose no future research—in fact, it might suggest some new directions—nor would it purport to state "truth." Whether the mediation generated agreement, partial agreement, or no agreement at all, the paper would be equally useful.

Mediation has dangers as well as advantages. An ethical mediator, recognizing how deep the effects of mediation may be, must protect the process, even at the cost of consensus, by not letting parties stray too far from what their constituencies will support. Otherwise not only would a consensus be on paper only, resolving nothing: by coopting the leaders of a side, it could harm immeasurably both the constituency of that side and the reputation of the mediation process. The other dangers of mediation derive mainly from the manipulative capacity of an unethical or unskilled mediator in

wide publicity and thorough scrutiny to be given the final product.

We cannot be positive that mediation techniques are transferable from a context in which parties are attempting to devise a course of action acceptable to all, to a context in which they attempt to illuminate the implications of possible courses of action in a way accepted by all as neither false nor misleading. But we believe that if the goals are kept clear, it can be done and should be tried. Mediation has traditionally been most useful not in determining policy, but in figuring out what to do when society has established several policies or rights—*all* of which are to some degree legitimate, and yet they conflict.

On scientific issues, the analogy is very close: the mediation would not attempt to determine "What is truth?" but to lay out for the decision-maker where he stands and the real dimensions of his choice.

It is important that the alternative forms of an adversary proceeding and a mediation proceeding be examined. If an experimental Science Court proceeding is held, we urge that a parallel experiment—an experiment in Scientific Mediation—be held, to compare the two approaches. □

Acknowledgment: One of us (NEA) would like to thank Gerald Cormick of the Office of Environmental Mediation, University of Washington, for much of her understanding of the mediation process and her awareness of its many possibilities.