

Courting the Facts

Arthur Kantrowitz and the History of Science Court

Roxanne S. Khamsi '02

Today, the credibility of scientific findings often rests on the distinction and prestige of the group defending the conclusions. Researchers commonly rely upon peer review for evaluation of the quality of their work. Philip Handler, former president of the National Academy of Sciences, first commented upon this notion of an “elitist approach” to science in 1980. Over two decades have passed since then, but scientific conventions have changed little. In the meantime, Dr. Arthur Kantrowitz, Professor of Engineering at the Thayer School, has been encouraging both researchers and the general public to address the need for a forum to tackle the uncertainties that arise in scientific pursuits.

“Before the Second World War, science existed on minor charities. Expenditures for research measured in millions of dollars rather than billions,” Kantrowitz said. Revolutionary inventions, including atomic weapons, penicillin, and radar contributed to U.S. success in World War II—and received nothing less than global attention. The promising role of science encouraged governments to increase research funding far beyond any previous numbers.

The proliferation of research left a lasting impact on all aspects of society. Political measures began to root themselves in scientific findings. The 1987 Montreal Protocol, for example, helped pave the way toward a worldwide phasing out of ozone-depleting CFCs (chlorofluorocarbons). From the moon to Chernobyl, the influence of science appeared throughout the media—but the scientists featured on these programs did not always

sing the same praises. More recently, questions surrounding the environmental impact of greenhouse gases with respect to global climate change have come into the spotlight. Several researchers have expressed their skepticism concerning the accuracy of computerized Global Circulation Models. At the same time, large groups of climatologists and the members of the International Panel on Climate Change argue that the majority of scientists in their area would agree with the claim that the average global temperature will rise in the next few decades as a possible result of anthropogenic emissions. The uncertainties regarding climate change and other science-based issues have swamped policy makers. In the present information age, it has become increasingly challenging for the public to discern reliable facts from institutionalized propaganda.

To overcome the difficulties of scientific disagreement and political distortion, Kantrowitz has devoted nearly a third of a century to promoting the establishment of a new forum for researchers to question and verify facts. He believes that scientists should publicly discuss their disputes over the findings of their experiments—and in doing so reach an agreement on specific results.

During the early advocacy of Kantrowitz’s proposed institution, the media began referring to the concept as a “science court.”

“The purpose of the science court begins with the separation of facts from values and is an attempt to deal with the myth of the unprejudiced expert,” Kantrowitz said.

The technical aspects of this concept are relatively straightforward: the advocates in science



Dr. Arthur Kantrowitz

court situations would operate much as they do in a court of law. Specifically, they would have the opportunity to question the evidence submitted by the opposing side. Trained scientists would act as judges—although, to avoid bias, they would not be experts in the disputed issue. After hearing both sides present their evidence, including techniques and results, the panel of judges would render a decision.

Kantrowitz, however, is quick to point out the differences between the norms of scientific controversy and legal due process. He stresses that a science court would deal strictly with facts and avoid passing policy recommendations. The decisions reached by the judges would only relate to the validity of the presented results. Thus, unlike a court of law, Kantrowitz's science court would not arrive at conclusions suggesting ethical actions that one could take based on the agreed upon facts. The tentative nature of science creates another important distinction between the two systems.

Kantrowitz took the idea of science court as far as the White House. During the mid-1970's he headed a task force to serve President Ford's newly re-established Scientific Advisory Group. The committee he led had been specifically formed to examine the functions of science court and propose possible actions.

"A key step was when President Ford, under the influence of Nelson Rockefeller [30], brought science advisors back into the White House," Kantrowitz said.

While teaching at University of California, Berkeley, Kantrowitz held Scientific Advisory Experiments (SAE) in order to aid the development of effective procedures. During the winter quarter of 1983, researchers in the Berkeley community whose public statements were in diametric opposition participated in this SAE, examining the Love Canal disaster within a micro-science court framework.

When Kantrowitz arrived at Dartmouth in 1979, he continued working on his science court model. On May 2, 1985 the first of two SAE at Dartmouth brought leading advocates for widely differing positions to discuss various aspects of

To overcome the difficulties of scientific disagreement and political distortion, Kantrowitz has devoted nearly a third of a century to promoting the establishment of a new forum for researchers to question and verify facts.

On May 2, 1985 the first of two SAE at Dartmouth brought leading advocates for widely differing positions to discuss various aspects of President Reagan's Strategic Defense Initiative (SDI).

President Reagan's Strategic Defense Initiative (SDI). At that time, the cost and technical feasibility of deploying a shield in space to guard against incoming ballistic missiles was intensely debated among scientists. Dartmouth hosted another SAE on the same topic later that same month.

Government professor Roger Masters also became involved with Kantrowitz's efforts to demonstrate the possibilities of his pioneering scientific institution.

Critics of science court emphasize the difficulty of separating scientific facts from values. In his February 1987 article published in *The Scientist*, President of the Institute for Scientific Information Eugene Garfield argued that "the really difficult questions disputed among scientists, and those which Kantrowitz imagined would be most helpful in sorting out, generally concern probabilities rather than certainties" (p. 29).

Kantrowitz believes that science court would apply to any issue in which expert views differ. "Controversies are the only source of [scientific] information for the general public."

Kantrowitz's keen familiarity with the scientific process is no coincidence. From magnetically contained fusion in the 1940s to the development of the first supersonic high intensity molecular beams, he has witnessed the influence of invention first-hand. After earning degrees in physics

at Columbia University, he went on to teach aeronautical engineering and engineering physics at Cornell. Kantrowitz then

founded and was CEO of the Avco Everett Research Laboratory, where researchers investigated areas ranging from the intra-aortic balloon pump to high power lasers. Later, he served the US government on advisory boards to the Department of Commerce, NASA, the General Accounting Office, and the National Science Foundation. He holds membership in both the National Academy of Sciences and the National Academy of Engineering.

Scientists across all disciplines frequently struggle with uncertainty. According to Kantrowitz, these researchers have much to gain by exposing

their results to public scrutiny and questioning by other experts.

“When you confess your ignorance, you elevate the credibility of whatever you say you know.” ■

REFERENCES

- Garfield, E. (1987). Contemplating a science court. *The Scientist*, 1, 29.
- Kantrowitz, A. R. (1993). Elitism vs. checks and balances in communicating scientific information to the public. *Risk*, 4, 101-111.
- Kantrowitz, A. R. & Masters, R. D. (1986). Scientific Adversary Experiments. *Thayer School Directions*, 1, 15-21.

DUJS

on the web

Dartmouth Undergraduate Journal of Science

current issue
submissions
archives
community
about DUJS
subscriptions

Comments, Suggestions?



<http://www.dartmouth.edu/~dujs>