Editorial & Letters

EDITORIAL

Better Approaches to Science Policy

Who should sit at the table when science policy is being decided? Across the higher echelons of U.S. government, the long-standing norm is to invite scientific leaders, but no one else who will be affected or who might have an illuminating alternative perspective.

For example, to help frame a year-long effort to develop a post–Cold War U.S. science policy, the House Science Committee on 23 October convened an elite group: the presidents of the National Academies of Science and Engineering, representatives from the Council on Competitiveness, leaders of the Sandia and Lawrence Berkeley National Laboratories, the president of MIT, and so on. Notably absent were any representatives from the many grassroots, worker, and public-interest organizations concerned with science policy. There were no social scholars of science, no proponents of alternative science policies (from within the science community or without), and only a solitary science policy critic.

This event's restricted roster was hardly anomalous. For example, in 1992 and 1993—when Democrats controlled Congress—the House Science Committee organized 30 hearings on a comprehensive National Competitiveness Act. Among 120 invited witnesses, there was not one from an environmental, defense conversion, or labor organization commenting on a major piece of legislation with ecological, employment, and other social implications. In the Executive Branch, the composition of high-level science advisory panels—such as the President's Committee of Advisors on Science and Technology and the National Science Board—is similarly constricted.

The problem with exclusively elite, insider approaches to science policy-making is that they fly in the face of inescapable realities: (i) All citizens support science through their tax dollars and experience the profound consequences of science, both good and bad. (ii) In a democracy, those who experience the consequences of an activity and those who pay for it ordinarily expect a voice in decisions. (iii) Scientific leaders have no monopoly on expertise, nor do they have a privileged ethical standpoint for evaluating the social consequences of science and of science policies. (iv) Nonscientists already do contribute to science and science policy (for example, women's organizations have redirected medical research agendas to reduce gender biases). (v) Elite-only approaches are antithetical to the open, vigorous, and creative public debate on which democracy, policy-making, and science all thrive. (vi) There is a danger that public support for science will erode if other perspectives are excluded. (vii) With the Cold War concluded, it is time for science policy to welcome new voices and fresh ideas for addressing the social needs of the 21st century.

There are proven methods that use broadened representation to inform and improve decisions. The Swedish government's Council for Planning and Coordination of Research includes a majority of nonscientists and is noted for promoting innovative interdisciplinary research programs. Japan, Germany, and other European nations have pioneered processes fostering collaboration between industrial engineers, university scientists, workers, and end-users in developing new technologies. Dutch universities advance social responsiveness via a decentralized national network of "science shops" that address questions posed directly by community and worker groups, public-interest organizations, and local governments. For a decade, the Danish government has appointed panels of everyday citizens to cross-examine a range of experts and stakeholders, to deliberate, and then to announce nonbinding science policy recommendations at a national press conference. A 1989 Danish citizens' panel on the Human Genome Project seconded expert support for basic genetics research, but called for more research on the interplay between environmental factors and genetic inheritance and on the social consequences of science, while influencing the Parliament to prohibit the use of genetic screening information in employment and insurance decisions. This carefully structured, participatory process is already being emulated in other countries, including the United Kingdom, Japan, the Netherlands, and Switzerland, and has undergone an independent pilot-scale demonstration in the United States.

Experiences such as these can light the way toward U.S. science policies that are more socially responsive and responsible, more widely supported, and more consonant with the tradition of openness that is the true lifeblood of science and a healthy democracy.

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LETTERS

Evidence suggests

Was the fall of the Akkadian Empire "culturally or climatically driven"? (Left, grain storage vessels hint at ancient plenitude.) "A strong effort to study" the Higgs boson is called for. A 56-bit encryption algorithm bites the dust. And amateur scientists who funded their own work and were "their own 'guinea pigs'" are described.

H. WEISS/YALE UNIVERSITY

Akkadian Empire: Where to Look?

With regard to the Research News article "Sea-floor dust shows drought felled Akkadian empire" by Richard A. Kerr (16 Jan., p. 325), the sediment core described by Heidi Cullen and Peter deMenocal provides compelling data for the idea of atmospheric drying and an increasingly dust-laden atmosphere for the period 2200 to 1900 B.C. For the Gulf of Oman, this amplifies the data presented by Sirocko (*1*), which demonstrates increased arrival of dust in sea floor sediments during periods of decreased strength of the southwest monsoon. However, to explain this dust, rather than look at northern Syria, where trends in atmospheric moisture change may have been opposite to those of the monsoonal area (*2*), we should first look at Arabia, where a well-attested moist period terminated around 5000 years ago, or after. The Yemen highlands and the Arabian desert both show significant drying toward the end of the mid-Holocene and could have contributed increased atmospheric dust to the atmosphere. In the later third millennium B.C., abandonment of settlements and terraced fields (*3*) may have been related to atmospheric drying resulting from increased southerly penetration of summer northwesterly winds during a period of decreased ocean upwelling and reduced monsoonal strength.

In the north, although there was a dramatic decline in settlement in the Rhabur basin in Syria, climatically marginal towns like Tell Brak continued to be occupied in the post-Akkadian period, albeit perhaps with reduced populations. Further west in the Lake Tabqa area, where probably 250 to 300 millimeters of rainfall supported prima-