INSIDE AAAS

Bromley Speaks

D. Allan Bromley, entering his fourth month as head of the White House Office of Science and Technology Policy, casually mentions that he was talking earlier that day to Dick Cheney, that he spent the afternoon reviewing budgets with Dick Darman, that tomorrow he's lunching with Dr. Sullivan. He is referring, respectively, to the Secretary of Defense, the head of the Office of Management and Budget, and the Secretary of Health and Human Services.

In Washington, that's first-order name-dropping. It illustrates Bromley's high-visibility, meeting-intensive style. It also implies, no doubt intentionally, that the President's science adviser once again wields power and influence.

Bromley speaks often about how he has more than doubled the OSTP professional staff, from 15 to 33, and of his gentlemen's agreement with Darman to add another dozen next year. "But there is no question whatever about our trying to do everything within our own office. That wouldn't make sense. What is critically important," he said, is that "by coordinating our activities closely with OMB we get to leverage the much greater staff that OMB has and can influence the decisions that are being made on a daily basis in OMB. One of the things I've learned very early is that if you have all the money, you have a lot to do with the policy."

Bromely made those remarks while meeting with more than 100 science writers at AAAS headquarters in mid-November. It was the second time in a month that Bromley had come to AAAS to establish friendly relations with outposts in the science community; late in October, he talked to some three dozen science attaches.

He wants the Defense Department to increase its spending on basic research, now about eight percent of its R&D budget—and he wants the additional money to go to university and private sector labs. The apparent end of the Cold War furnishes a marvelous argument for reorienting some of the funds allocated to the Strategic Defense Initiative, he declared to the science writers. Typical of his savvy approach however, Bromley's argument for increased basic research was presented partly in terms of Defense Department self-interest: "This time of lessened tension is a time where the Defense Department has to protect itself against technological surprise, against being blind-sided."

He is realistic about budget constraints and their implications for megaprojects like the Superconducting Super Collider and the human genome project. "It is quite clear that all of them cannot be continued in parallel," he told the journalists. "We're going to have to have some phasing—if, in fact, we continue with them all." He vowed to seek scientists' opinions, noting, "They're the people who really are behind the drive to do these things." But he remained vague about specifics of the priority-setting process.

Bromley has already taken some heat—undeserved, he insists—over environmental issues. "We are *not* dragging our feet," he told the journalists. His skepticism about whether global warming has begun is oft-stated and well-known; he maintains that the evidence is not yet convincing. But he said the United States will spend a billion dollars studying it in the coming fiscal year, and he expects concrete agreements to stablize or reduce greenhouse gas emissions by 1991.

Like other science politicians, he shies away from the idea of industrial policy, which he characterized in both AAAS talks as a government attempt to pick winners and losers in private-sector technology. But he favors technology policy, which he defined for the attaches as strategic policy for the use of technology—involving, for example, technology transfer from federal labs to the civilian economy and encouraging government-industry-university partnerships. He promises a draft technology policy early next year.

Bromley pledged to try for stronger U.S. participation in international science. "I fully recognize that some of the actions of our Congress in the recent past have led to us being considered in many countries abroad as unreliable partners," he told the attaches. The problem, he said, is the one-year federal funding cycle that makes mincemeat of long-range commitments. A solution, he suggested, might be treaties establishing cooperative structures that wouldn't change when administrations did.

■ TABITHA M. POWLEDGE

Liberal Education and the Sciences

Undergraduate courses in the natural sciences should be multidisciplinary and make explicit the relationship of the natural sciences to other academic disciplines and the practical and fine arts. That is one of the recommendations of the report of the AAAS Project on Liberal Education and the Natural Sciences, to be released next year.

The report addresses the place of the natural sciences in liberal education. Its recommendations regarding content and teaching strategies for the natural sciences are directed primarily to natural science faculties. The report also urges that teaching strategies should reflect the values and methods of practicing scientists, and calls upon professional societies, government, and the private sector to provide resources that will enable faculty members to follow the report's recommendations.

The report results from an invitation to AAAS from the Carnegie Corporation of New York to organize a study of the education of prospective teachers in the natural sciences. AAAS expanded the study to include the place of the natural sciences in the liberal arts curriculum for all students, in the belief that such understanding is equally important for all who will be America's future leaders.

Planning was undertaken with the help of the AAAS Coalition for Education in the Sciences, a consortium of scientific and educational associations. Six representatives of the scientific, engineering, educational communities, and the private sector comprise the project's

advisory board, and the 15 members of the study group represent diverse disciplines.

The report reaffirms the place of the natural sciences in the liberal arts curriculum and contains the study group's recommendations of goals for liberal education in the sciences as well as the multidisciplinary curriculum and the teaching strategies necessary to achieve them. Cross-disciplinary teaching that involves faculty from the humanities, social sciences, and the practical and fine arts is encouraged. The study group also recommends teaching science as it is practiced. This means incorporating the philosophy, values, and methods of science into instruction in the natural sciences.

■ **AUDREY CHAMPAGNE, Directorate of Education and Human Resources**

AAAS Briefs

Reports on the final two workshops in the AAAS Project on Scientific Fraud and Misconduct are now available free from the AAAS Directorate for Science and Policy Programs, 1333 H St., N.W., Washington, D.C. 20005, 202/326-6600.

Grants of up to $300 are available to help foreign graduate students attend the AAAS Annual Meeting in New Orleans from 15–20 February. Applications must be received by 10 January. For information on application procedures, contact Laura Mann, AAAS Directorate for International Programs, 1333 H St., N.W., Washington, D.C. 20005, 202/326-6664.

Conflict of Interest in Science

Increasing ties between academic and government research and industry have come about largely because of mounting concern over the loss of American preeminence in the high-technology international marketplace. The impetus for cooperative research has come not only from scientists and their institutions, but also from the executive branch and from Congress.

Although such policies have broad support, the resulting changes in scientific funding and associational patterns have some vehement critics and scores of concerned observers. Many of the problems raised by the increasing complexity of scientific relationships can be grouped under the umbrella heading "conflict of interest." And it is becoming clear that it will be harder to agree on policies to manage conflict of interest than has been the case with scientific fraud. Fraud is committed infrequently and is uniformly condemned by scientists, policy-makers, and the public. But conflicts of interest potentially affect most members of the research community. By encouraging cooperation, the government has, ironically, also been encouraging scientists and their institutions to form relationships that can lead to personal or institutional conflicts, can bias research, and can lead to loss of the public's confidence in research conducted with public funds.

Some critics, for example, fear that the large financial stake that industry now has in American universities is irretrievably compromising the laudable goal of open research that has been a hallmark of academic science. Some also argue that American academic and government science is no longer conducted in a spirit of wide-ranging intellectual curiosity. Instead, they say, large industry investment can force laboratories to become job shops, solving practical commercial problems rather than pursuing the basic research for which American universities have been noted.

There is also concern that America is losing the cadre of disinterested scientists who can advise on a wide range of technical dilemmas and decisions facing American policy-makers and the electorate. Advisory committees to the federal government have a hard time finding knowledgeable technical advisers who are not also employed by relevant industries, or who do not receive income through consulting arrangements.

Conflict of interest has come under scrutiny by a number of agencies, public and private, among them the National Institutes of Health. When Katherine Bick, its deputy director of extramural research, visited AAAS on 7 November to talk about her agency's draft guidelines on conflict of interest, the discussion turned out to be a short course on just how ubiquitous—and tough—these issues are.

Pointed comment was provided by George C. Levy, director of a Syracuse University data processing lab and founder of New Methods Research, Inc. The company was set up to explore the commercial potential of software developed at the lab and pays it royalties. "Undoubtedly, I have split loyalties. That really is a problem," he said. "But the alternative is to let the Japanese buy the United States."

The discussion took place at the fall meeting of the AAAS Professional Society Ethics Group, composed of over 40 professional societies. Coordinated by Mark S. Frankel, who is the acting assistant director of the Directorate for Science & Policy Programs, the group provides a forum for the interdisciplinary exchange of ideas relating to professional ethics issues in science and technology.

AAAS also organized a symposium on conflict of interest at the 1989 AAAS Annual Meeting. The symposium was exceptionally well attended, evidence of scientists' intense interest in this topic. We are coordinating a workshop on "University-Industry Ties: Headaches and Blessings" for the 1990 Annual Meeting in New Orleans. Last June, I organized a roundtable on conflict of interest, attended by individuals from government, industry, professional societies, academia, and citizens groups.

The directorate plans to maintain a leadership role by providing opportunities for people from the affected sectors of society to meet, share points of view, and attempt to arrive at a consensus on strategies for managing the increasing conflicts of interest in the scientific community.

■ **DEBORAH RUNKLE, Office of Scientific Freedom & Responsibility**