

A Conversation with D. Allan Bromley

The President's science adviser is determined to bring science and technology into a broad range of national policy issues

ALL SCIENCE is not created equal. That's the way D. Allan Bromley sees the world and that's what he says will define his role as science adviser to George Bush. "Quite frankly, some research is better than others. If the President of the United States is going to use scientific information for policy-making, I have to help him judge how reliable it is," Bromley declared in a recent interview with *Science*. "My job . . . is to be an honest broker."

Just 2 months after taking over as head of the White House Office of Science and Technology Policy (OSTP), Bromley has settled into his job with the air of a man who is intent on making his mark on Washington. In stark contrast to William Graham, his nearly invisible predecessor in the Reagan Administration, Bromley is taking a visible role as President George Bush's man for science.

"The President has really bent over backwards to be supportive," said Bromley, who was named an "assistant to the President." In title-conscious Washington, that ranking elevates the status of the OSTP directorship and puts Bromley on a par with the National Security Adviser. During a long talk in his office in the Old Executive Office Building, Bromley also said he has good relations with White House Chief of Staff John Sununu.

Bromley, who was not named science adviser until the Administration had been in office for 4 months, was initially concerned that he would have a hard time fitting into a White House staff that was already in place. But he reports that, from his point of view, this has not been a problem.

Bromley, who describes himself as both physicist and engineer, is comfortable with the engineer in Sununu, who was a professor at Tufts before moving into politics. "Sununu has an instinct for asking the right question," Bromley observes. "He has an engineer's ability to approximate and to rapidly calculate orders of magnitude—to ask, 'Is this reasonable?' It is an important quality in policy-making where you don't always need a scientist's precision."



Allan Bromley: "Science is not an afterthought," in the Bush White House.

As assistant to the President, Bromley has a seat on a number of White House bodies, including the economic policy council, the domestic policy council, the space council, and the competitiveness council. "It means that I routinely sit in on a full range of meetings," says Bromley, "and expect to bring science to the table before policies are otherwise worked out. In this White House, science is not an afterthought."

Clearly, Bromley is in his element. The 63-year-old professor from Yale has spent years preparing for this role as an author of science policy papers, as president of the AAAS, and as a member of the White House science council since 1981—an institution that will be reincarnated as the President's Council of Advisers on Science and Technology (PCAST). A list of candidates for the council was agreed upon before Bromley officially took office but, as yet, no one has been named. This, Bromley says, is because of generic conflict-of-interest issues that were raised recently regarding scientists on federal advisory panels (7 July, p. 20 *Science*). "We've spent a lot of time talking with our lawyers about the rules governing advisers and think we have things worked out. I expect we'll be able to announce PCAST appointments very soon." President

Bush has said he will sit in on some of the council's meetings.

What are the most important issues on OSTP's agenda?

Fresh back from the "education summit" at which the President and the nation's 51 state governors spent 2 days setting goals for America's schools, Bromley put education first on his list. "The decisions to set national performance goals and to give the classroom back to the teacher are terribly important," said Bromley, adding that "in a great many cases, precollege education in the past decade has been literally perpetrating a fraud on the younger generation" by turning out students who cannot add and cannot read.

Bromley sees a shortage of "technicians" as one of the country's major challenges in education. "We still lead the world in basic research, but we fall apart when it comes to manufacturing. We focus on revolutionary developments, where the Japanese focus on evolutionary improvements. With even a small advance in manufacturing techniques, they can capture the market." Why? "Japan produces bachelor's graduates who are good at synthesizing materials, for instance; people very good in a narrow range. We're not educating enough of those people."

Bromley looks to the private sector to play a greater role in educating the work force. "We can't just rely on the school system," he observes, and suggests that industry take a lesson from the military, which has long experience in training people "who are not notably motivated." For instance, "The military uses computers extensively and effectively to teach people routine things. That expertise should be exploited."

In recent years, OSTP's greatest activity has been in military affairs. Former science adviser George Keyworth, for example, devoted enormous effort in promoting the much criticized Star Wars defense system. Will the Bromley OSTP play a major role in military affairs? "Certainly, OSTP will be active in certain areas but we'll have to be selective if we're not to be swamped by military issues." Bromley's first substantive meeting with Defense Secretary Richard Cheney is scheduled for this week.

What else is on the OSTP agenda? "The global environment," says Bromley, who has discussed this issue personally with President Bush. "The environment has moved to the world stage politically. Science and technology input are critical to policy here. This is an area where we really need solid information on the assumptions behind various environmental initiatives—a place where OSTP's role in evaluating the 'reliability' of data will be vital."

Bromley cites drugs—"There is a lot we don't know about addiction"—and AIDS as

obvious areas of concern to his office, but he also expects OSTP to play a role in what he sees as one of the greatest crises of the next decade—life-extending technology. “We are rapidly approaching the time when we are going to have to withhold technology from some of the dying,” Bromley told *Science*. “And we don’t even have a fully developed value system for even beginning to figure out how to do that ethically.” This, Bromley argues, is an area in which basic science and technology must “make common cause” with the “social sciences, with humanists, and with religion.”

Before taking office Bromley recognized that if OSTP is going to be in a position to influence national policy, let alone take the lead, he would have to have staff and resources that surpassed those of his predecessors. In that he appears to be successful. Bromley has turned to senior hands to staff three of the four “associate director” positions he has created.

To fill the biomedical post—a long neglected area in OSTP—Bromley has recruited James B. Wyngaarden, former director of the National Institutes of Health. J. Thomas Ratchford, associate executive officer of the AAAS for the past dozen years, is slated to be Bromley’s right-hand man for policy and international affairs. And the word around town is that Berkeley engineer Eugene Wong will be nominated as associate director for physical sciences and engineering.

That leaves just one top post vacant and Bromley acknowledges that he is having a tough time finding a seasoned researcher/administrator from industry to head activities related to industrial technology. “The problem is not comparatively low federal salaries,” Bromley says. “People who want to perform government service can live with that. But the new financial disclosure and divestiture requirements make it very hard to attract the best people. It will just take time,” he says.

Meanwhile, Bromley is busy going about his business of getting to know everyone he can in Washington and letting them know he wants to hear from them. A series of breakfast meetings with members of Congress has gotten under way, with help from the “science” members of the Senate—Al Gore, Jay Rockefeller, John Danforth, Jeff Bingaman, and others. Bromley has met with congressional staff members and he meets regularly with Richard Darman, director of the Office of Management and Budget, so that “OSTP is part of the budget process from the start of the cycle.”

All in all, one of Bromley’s main tasks right now is “building bridges,” and he is going about it with a will.

■ BARBARA J. CULLITON

Plan for Genome Centers Sparks a Controversy

NIH is planning to set up targeted research centers to map and sequence the genome—a move that is setting off alarms among biologists

San Diego

IN JULY, the genome office at the National Institutes of Health took its first, halting step into the era of “big” biology. It announced that it would create special labs or centers, each with perhaps 25 investigators, to pursue the task of mapping and sequencing the human genome. What that means is that a good share of the genome project’s budget—eventually half, predicts James Watson, the project’s director—won’t go to investigator-initiated science but to these new centers.

That’s enough to send shivers throughout much of the biological community.

“Jim Watson is trying to change the social fabric of science. It’s World War II and directed science all over again,” grumbled one participant at a recent NIH workshop on centers.

Not so, responds Watson, who says he is simply trying to get the job done. The “job” is to map the chromosomes within 5 years and to decipher the full nucleotide sequence, all 3 billion base pairs, within 15 years—and at a total cost of no more than \$3 billion. “If we go along the way NIH usually does, it could easily take 100 years to get the sequence,” said Watson, who outlined NIH’s plans in San Diego last week at the Human Genome 1 meeting sponsored by *Science*. Moreover, the cost of doing business as usual would be prohibitive. “We really owe it to the scientific community to keep the cost down,” he said.

“People want to do this with a cottage industry approach,” Watson told *Science*, “but I don’t think it will work. I’m not trying to take away ROIs [investigator-initiated grants] but to create something new.”

Many scientists aren’t impressed. Since NIH issued its request for applications, Watson and his staff have been inundated with complaints. Some investigators oppose centers outright. Others agree with Watson that something different is needed for the genome project, but don’t believe that these centers, at least as originally proposed, are it. And there is lots of grumbling about whether it is wise to invest all that money in a few

groups (especially if yours is not among them).

The complaints seem unlikely to deter institutions from lining up for a piece of the pie. Some 20 teams showed up at the recent NIH workshop for grant applicants, suggesting that competition for the first three grants for next year will be fierce.

Watson cites both Cold Spring Harbor Laboratory, where he remains as director, and MIT’s Whitehead Institute as evidence that centers can work. But he acknowledges that some units set up to fight the war on



—Margot Bennett

James Watson: “We all know how fraudulent most centers are.”

cancer have poor reputations. With his characteristic bluntness, he told the workshop attendees: “We all know how fraudulent most centers are.”

Norton Zinder of Rockefeller University, who chairs the NIH genome advisory board, matched Watson’s outspokenness: The issue, he told *Science*, is how to avoid creating a monster—and how to kill it if you do. “In the past, centers were like werewolves—you couldn’t kill them. And a lot of them go bad.”

That makes decisions on how to structure these centers and ensure accountability ex-