Election Politics and Science Policy

The candidates are not far apart on many key issues affecting federal support for science and technology

If campaign rhetoric is any guide, the scientific community should have few concerns about what the next U.S. president will do to federal support for science and technology. Both candidates are touting the economic virtues of high technology and the party platforms speak enthusiastically of increasing government support for basic research. With little apparent difference between the two sides, and little political mileage to be gained from the topic, science policy is not going to be a hot item in the campaign.

It was not expected to be that way. Following their decisive defeat at the hands of Ronald Reagan 4 years ago, the Democrats cast around for new ideas and appeared to have found them in the widely proclaimed (but ill-defined) area of industrial policy. Spurred by a group that quickly became known as "Atari Democrats," the party began to issue position papers extolling the need to shore up the nation's technology base through increased federal support for research and development, the universities, and precollege education. Those themes took concrete from in last year's Democratic budget resolution, which authorized large helpings of cash for several science-related programs. (Few of them actually got funded, however.) It looked, from the depths of the recession, like a potent campaign theme.

But economic recovery has taken much of the steam out of the industrial policy debate and the candidate most likely to push hardest on the high-technology theme, Senator Gary Hart (D–Colo.), didn't get the nomination. Moreover, the Democrats would have a hard time making a campaign issue out of the Reagan Administration's handling of science and technology because on many key issues the two parties seem to be in accord.

This accord exists in spite of the fact that the Reagan Administration has made some major changes in the scientific programs it inherited from the Democrats. It has dramatically shifted the center of gravity of the federal government's R&D spending toward defense, redefined the role of private enterprise in civilian programs, and cut back in many areas—such as energy and the environment—that the Carter Administration had emphasized. Moreover, in many key areas in which scientists play a strong role, such as arms control and environmental policy, the two sides are far apart. Nevertheless, in areas that pertain directly to research and higher education, there is not much conflict.

Consider basic research, for example. After a rocky start, when the Administration took an ideological ax to the research budget, chopped out a large chunk of funds for social sciences, and trimmed support for the National Science Foundation, overall funding for basic research has been increased substantially. It has climbed from $5.5 billion in 1980 to an estimated $7.8 billion this year. However, that's not much different from the Carter years, when basic research support rose from $3.4 billion to $5.5 billion, an increase that marked a turnaround in the decade-long decline in real federal support for basic research (see chart).

George Keyworth

Support for basic research should survive a post-election squeeze on the federal budget.

The Administration's proposals for basic research have, however, run into some hostile fire for being deliberately uneven, favoring physics and engineering over environmental and life sciences. Each year, for example, the budget request for the National Institutes of Health entails little or no increase, and Congress ends up setting biomedical research policy by adding funds itself. Similarly, 4 years running, the Reagan budget has proposed major reductions in research funded by the National Oceanic and Atmospheric Administration, but Congress has refused to go along. All this has prompted grumbling within the biological research community, but it is not the stuff of which election politics is made.

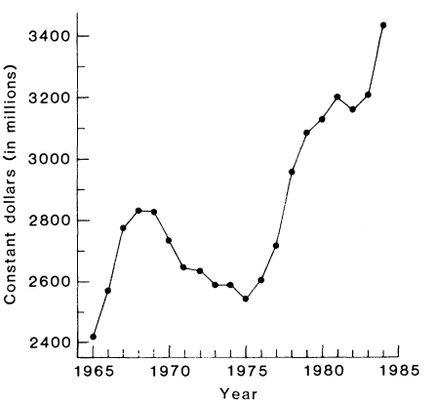
The overall increases in basic research during the Reagan years have come at a time when total spending on nonmilitary R&D has been held constant, a feat achieved by slashing federal support for applied research and development projects and reprogramming the money into basic science. The bulk of these savings has come from dismantling a range of energy programs that were initiated in the Nixon-Ford era and expanded greatly by the Carter Administration. When the Reagan Administration took the knife to these programs, there was a lot of talk that the nation would be left unprepared for another prolonged energy crisis. But emergence of a world-wide oil glut resulting from economic recession and conservation has effectively removed energy policy from the political agenda this election year.

The cuts in applied research and development in the civilian sector were based on the explicit philosophy that private industry, rather than the federal government, should determine patterns of expenditure on the development of commercial technologies. By the same token, the Administration dismantled a set of programs put in place by the Carter Administration to foster industrial innovation and instead pushed through a series of tax changes designed to stimulate industrial R&D and investment. They range from a steep cut in the capital gains tax, which supporters claim has attracted large sums into the venture capital markets, to tax credits for in-

creases in corporate spending on R&D. Several recent studies have claimed that the tax credit may not be cost effective, but it has been enthusiastically endorsed by business groups, and the Republican platform, in one of its few specific pledges on R&D, promises to extend it permanently. (It is due to expire at the end of this year.)

Democrats would be likely to play a more interventionist role in stimulating industrial innovation if they were returned to power, but exactly what their policies would be is far from clear. The platform calls for increases in "commercially-related R&D," but, in a campaign statement, Walter Mondale has also endorsed many of the policies of his opponent in calling for the R&D tax credit to be made permanent, the elimination of capital gains tax for some small business investments, and relaxation of antitrust restrictions on cooperative R&D ventures.

The Reagan Administration's steep reductions in commercial R&D do not mean that the federal government is now putting less money directly into corporate labs. Far from it. The civilian cuts have been more than offset by a huge surge in spending on defense technologies. Defense R&D has soared during the Reagan years from $17.8 billion in 1981 to an estimated $35 billion next year, with much of this largesse going to big weapons projects carried out by defense contractors. As a result, federal R&D contracts to private industry have jumped from $16.4 billion to $23.4 billion over the past 4 years. The militarization of federal R&D will undoubtedly get an airing during the campaign, but it will be in the context of the debate over defense and arms control rather than in the context of science and technology policy.



Federal funds for basic research

Real support for basic research increased in the Carter years and has risen under Reagan.

One science-related area in which the Democrats have been in sharp conflict with the Reagan Administration is education. In the early budget-slashing exercise, the Administration attempted to eliminate entirely the National Science Foundation's science education programs, arguing that such efforts are not the responsibility of the federal government. Congress, however, put the money back in with considerable partisan rhetoric about the Republicans' lack of commitment to a serious national problem.

But in midterm, when a series of reports testified to the problems in precollege science and math and the issue began to capture widespread public attention, the Administration did an about-face, resurrected NSF's education division, and requested a budget increase. Although the Democrats generally advocate a stronger federal role—and neither

A Department of Science?

Will the next administration make any significant changes in the federal government's science bureaucracy? The odds are against it—just about every administration has given the matter some attention, but the basic structure has endured since the late 1950's. Nevertheless, interest in federal arrangements for the care and feeding of R&D is growing, and a reorganization cannot be written off entirely.

One focus of the discussions will be a 2-year study of U.S. science policy to be conducted by the House Committee on Science and Technology. The committee says it is launching the study because it is "concerned that present policies and practices, many of which can be traced back to the famous 'Bush Report' of 1945, may not be fully adequate to the new environment facing U.S. science in the coming decades."

Similar sentiments are expressed by George A. Keyworth, II, President Reagan's science adviser. "I think the time has come when we need to take a hard look at how science and technology is managed, but it needs to be done extremely carefully," Keyworth said in an interview with *Science*. "I think we have reached the point when we need to do something."

Early last year, Keyworth and other senior officials in the White House Office of Science and Technology Policy (OSTP) looked into the pros and cons of creating a Cabinet-level Department of Science and Technology, composed of most of the civilian science agencies. But their discussions were cut short when, as part of a scheme to create a Department of Trade and Industry, the Administration proposed to merge the National Science Foundation and the National Bureau of Standards and to establish the National Oceanic and Atmospheric Administration as an independent agency. One OSTP official admitted at the time that those proposals were managerial conveniences, and were not driven by science policy considerations. The trade department proposal, however, killed any further thoughts of a broader reorganization of the federal science bureaucracy.

If the Reagan Administration is elected to a second term, OSTP may revive its discussions. Keyworth argues that the present fragmented structure makes it difficult to plan and execute across-the-board policies for science and technology. But the problems in getting any significant changes through are considerable. "If I go to the Cabinet and say, 'Look, let's talk about reorganizing the federal government in the areas of science and technology,' I would be wasting my time," says Keyworth. Only if the President and a broad spectrum of people adopt it as a high priority will anything be done, he notes.

Even if the Administration were to formulate a proposal, getting congressional approval would be tough. Any scheme that cuts across committee jurisdictions would lead to bloody turf-fighting. The Administration's plans to do away with the Departments of Energy and Education and to create the Department of Trade and Industry ran into that problem. Then there is potential opposition from the scientific community to any scheme that would reduce plurality in the federal science system (that is, the ability to submit grant applications to several places).

In short, the federal scientific landscape is not likely to look much different 4 years from now.—**C.N.**

side has a really clear idea of what the role should be—party differences on the matter are now considerably narrowed.

In general, both sides are thus promising strong support for science and technology, with basic research seen as a key area. But campaign promises have a habit of running up against post-election realities, and this year the reality will be an enormous federal deficit that will put a heavy strain on the budget. The problem this poses for R&D is twofold: research programs, as opposed to pensions and other entitlement programs, mostly fall in the segment of the budget that can be relatively easily controlled, and if there is a squeeze on the R&D budget, some large programs that have been initiated over the past few years could edge out other areas of research.

"There's going to be increased scrutiny and I think basic research will withstand that scrutiny well, but there is going to continue to be pressure on research," predicts George A. Keyworth, II, President Reagan's science adviser.

—COLIN NORMAN

White House Slashes Landsat Subsidy

In a last minute shift, the White House has changed the rules on commercializing the Landsat system by refusing to pay more than $250 million in subsidies. Since this is about half what was originally promised, and about half what most observers think is needed, only one potential operator is still interested in Landsat—and there may be insufficient money to develop a genuinely competitive system in the future.

On 8 March 1983, after an acrimonious debate stretching well back into the Ford and Carter Administrations, President Ronald Reagan signed a decision memorandum that said, in effect, "Go commercialize Landsat" (*Science*, 11 February 1983, p. 752; 25 March 1983, p. 1410). Among other things, the memorandum recognized that the new Landsat operator would need subsidies of up to $150 million per year in the early years while he developed the market.

Since Landsat was the responsibility of the National Oceanic and Atmospheric Administration (NOAA), which is under the Department of Commerce, it fell to Commerce Secretary Malcolm Baldrige to work out the details. Taking the President at his word, Baldrige issued a request for proposals to operate existing Landsats and to develop follow-on systems.

Seven bids arrived on Baldrige's desk earlier this year. Most featured total subsidies on the order of $500 million, but since that was comfortably in line with the $150 million per year figure mentioned in the President's memorandum, Baldrige moved ahead.

On technical grounds the seven proposals were quickly winnowed down to three: Space America Corporation, a start-up firm in Bethesda, Maryland; EOSAT, a joint venture of RCA and Hughes Aircraft; and a partnership of Kodak and Fairchild. Space America, which reportedly had the bid requiring the lowest subsidy, was subsequently dropped in June on the grounds that its proposal was less technically advanced and that, as a new company, it had no track record. Baldrige then proceeded toward a final selection between the remaining two bidders.

Enter OMB director David Stockman. In midsummer, when Stockman learned that Baldrige was near a selection, he reportedly hit the roof: Baldrige had no right to approve subsidies of such magnitude, Stockman ruled; he would have to take the question before the Budget Review Board [a committee of key White House officials who pass judgment on this kind of issue].

The Board met in the office of White House chief of staff James Baker on 17 July. By coincidence, that also happened to be the day that Reagan signed into law the Land Remote-Sensing Commercialization Act of 1984, a carefully crafted piece of legislation that ratified both the Commerce Department's bidding procedure and the concept of subsidies. However, the fanfare and press releases had little effect in Baker's office. The board ruled that, except for $75 million already in the pipeline, there was to be *zero* subsidy for Landsat.

The next day, Baldrige appealed to the President himself. He pointed to the 8 March 1983 decision memorandum, the Commercialization Act, and the press releases. He pointed to the seven bids. He pointed to the years of controversy and compromise-building. And he asked, Does the Administration really want to collapse the whole house of cards now?

Reagan reportedly listened, told Stockman, Baldrige, and Baker to work it out among themselves, and left the meeting. In the end, Baker overruled Stockman and split the difference: the cap on Landsat subsidies would be $250 million, total.

Baldrige asked the top officials at NOAA to see if EOSAT and Kodak would still be willing to go forward with that low a ceiling. Officially, the answer turned out to be Yes: both bidders have continued to talk. Unofficially, however, Kodak has told Commerce what it can do with its subsidy and has effectively withdrawn. That leaves EOSAT. In mid-September Baldrige is expected to announce his choice of the winning bid to Congress. Somehow, no one feels much suspense.

Thus, in the name of economy, the Administration has managed to narrow the free and open competition for Landsat down to a single bidder by changing the rules in mid-game. As one weary veteran says, "The whole decision-making process in this Administration is appalling. I don't know what to treat seriously as a decision."

"We're crossing our fingers and holding our breath," adds another observer on Capitol Hill. It looks as though Landsat will have an operator. But at best it will be a very lean system, and there is serious question now whether it will ever become a serious competitor on the international scene—especially since the French will soon be launching their highly subsidized SPOT remote-sensing satellite. Congress's General Accounting Office and its Office of Technology Assessment are looking into the matter.

After the operating agreement is signed, the Landsat Commercialization Act does give Congress 30 days to rectify any deficiencies. But it now looks as if those 30 days will fall right before the November elections, so it is not clear that Congress will have time to act.

"My worry," says a Hill staffer, "is that after the election, the cap will go right back down to zero."

—M. MITCHELL WALDROP