Reagan Budget Would Reshape Science Policies

Spending priorities would change and the federal role in many programs would be reduced; basic research would be protected

The austere budget that President Reagan dispatched to Congress on 10 March will effect major changes in U.S. science policy. Although most of the attention so far has been directed toward individual cuts, of which there are plenty, the overall pattern of expenditure for science and technology has received much less attention. The Reagan Administration is attempting, in short, to fit the science budget to its conservative political philosophies.

The proposals would shift the center of gravity of the federal government's spending on research and development decisively toward military programs. Direct government involvement in projects aimed at commercializing new technology and stimulating industrial innovation would be drastically reduced. The United States would pull back from many international scientific activities that it has supported for many years. And the leading research agencies would be forced to drop many peripheral programs and concentrate more on support for long-term research and development.

These themes in the science budget were developed without the benefit of advice from the President's science adviser—nobody has yet been appointed—or from the Office of Science and Technology Policy (OSTP), which has been kept on the sidelines of the budget negotiations. Many key federal science posts were also left unfilled while the fiscal blood-letting was being planned, and this gave the Office of Management and Budget (OMB) a stronger hand in restructuring programs.

Tilting toward defense. One of the most striking themes in the science budget is a sharp reordering of priorities, with civil R & D being cut back severely while defense programs are slated for large additional helpings of cash.

The budget for the Department of Defense (DOD) would boost spending on research, development, testing, and evaluation from $13.5 billion in FY 1980 to $16.7 billion in FY 1981 and $21.7 billion in FY 1982. This steep increase is considerably more generous than the Carter Administration had planned, and it would dramatically reverse the trend of the past 15 years in which military programs have claimed a shrinking share of the federal research budget.

Weapons-related programs in the Department of Energy (DOE) have also been favored with massive increases, which should result in a greater flow of money into the national weapons laboratories such as Los Alamos and Lawrence Livermore. Taken together, the military R & D programs of DOD and DOE would account for well over 50 percent of the federal science budget. No other Western industrial country spends as great a share of its government R & D funds on military programs. The proportion in West Germany, for example, is about 12 percent, while in Japan it is just 2 percent.

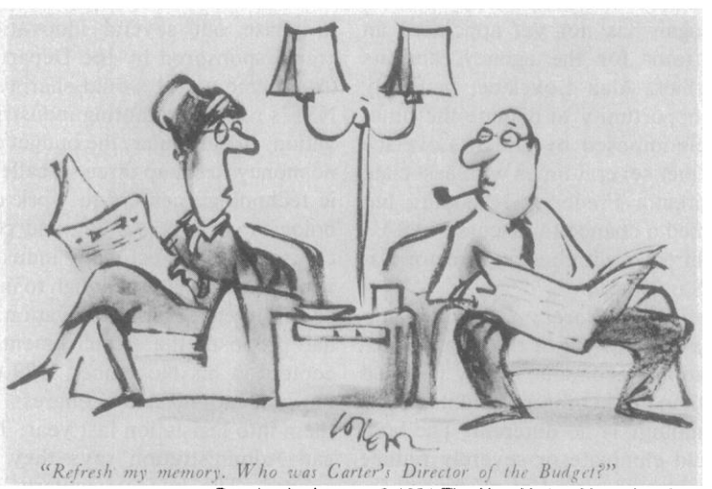
Reordering the priorities of the federal research agencies. The general policy for agencies such as the National Institutes of Health (NIH), the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA) is to defer starts on new programs, cut back heavily in areas that are not directly related to research support, and protect as far as possible funding for basic research in the physical sciences, engineering, and biological sciences.

NSF's budget in particular reflects this philosophy. The Reagan Administration is hoping to hold NSF's total budget down to $1.034 billion in FY 1982, about $320 million less than President Carter had proposed. The ax would fall heavily on NSF's support for science education, which would be phased out; social sciences; and programs aimed at opening up more careers in science for women and minorities. Support for the physical sciences, engineering, and the basic biological sciences would escape relatively unscathed.

The Reagan budget for NSF would dismantle or downgrade many programs that Congress has added in the past decade, and it is far from certain that Congress will go along with the proposals. In hearings last week on NSF's education budget, for example, many key members of the House Committee on Science and Technology expressed reservations about the wisdom of phasing out all support for science education.

The proposed budget for NIH and the National Institute of Mental Health (NIMH) tells a similar story. Support for biological research has suffered only relatively modest cuts, while funds for the social sciences and for research training have been slashed. Although the budget for NIH would not keep pace with inflation, it would be sufficient to support about 4900 new project grants in FY 1982, about the same as this year. Biomedical research has always been a particular favorite of Congress, however, and it has become something of an annual ritual for the Administration to propose a stringent budget for NIH in the expectation that Congress will add to it.

NASA has suffered more than NSF and NIH at the hands of OMB, partly because it has been struggling for several years to maintain its support for space science while spending on the shuttle has consumed a growing proportion of the agency's budget. The Carter Administration proposed to boost NASA's spending



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by $1.2 billion in FY 1982 to restore some vigor to its scientific programs, but the Reagan budget permits an increase of only $600 million. Two-thirds of the increase will go to the space shuttle, whose drain on the agency's funding continues to surpass all previous expectations. The FY 1982 shuttle costs are about 30 percent higher than anticipated by NASA a year ago, but because of its military role, the spacecraft continues to receive top priority.

The remainder of NASA's budget is insufficient to support all the projects the agency hoped to work on next year, and NASA officials have consequently been forced to eliminate or defer many planned missions. Aside from a White House directive not to disturb the schedule for the shuttle, the allocation of cuts was made mostly within the agency. It was decided to give highest priority to the Galileo mission to Jupiter, scheduled for launch in 1985, and the Large Space Telescope (*Science*, 6 March 1981).

NASA may have been hurt by the fact that Reagan has not yet appointed an administrator for the agency, and its acting chief, Alan Lovelace, had only limited opportunity to dispute the funding levels imposed by OMB. Lovelace says he met several times with associate OMB director Frederick Khedouri, but was denied a chance to discuss NASA's budget directly with budget director David A. Stockman.

Letting market forces determine technology policy. Much of the Reagan Administration's economic policy is based on a faith in market forces, and its policy for technology is no different. The budget would eliminate or severely reduce many programs aimed at pushing technologies into the marketplace, and it would scrap many of the initiatives launched by the Carter Administration to stimulate industrial innovation. The argument is that such programs should be the responsibility of private industry and the federal government should simply let market forces do their work.

R & D in the Department of Energy, FY 1980–82 (millions of dollars).

Program	Actual, 1980	Reagan budget	
		1981	1982
Conservation	779	558	195
Fossil energy	858	834	441
Solar and other renewables	751	597	241
Electric energy systems	37	35	10
Energy storage systems	66	52	39
Magnetic fusion	350	383	460
Nuclear fission	1198	1166	1247
Environment	235	227	231
Energy supporting research	252	265	294
Multiprogram facilities		25	40
Less unobligated balances		−11	
Total	4526	4131	3198

To this end, the Reagan budget seeks to phase out several innovation programs sponsored by the Department of Commerce and it would sharply reduce NSF's role in promoting industrial innovation. In particular, the budget contains no money to set up three so-called generic technology centers to work on technologies such as welding and corrosion control which affect many industries but which do not matter enough to individual firms to encourage innovation. Carter had proposed the establishment of such centers in his November 1979 message on innovation, and Congress enacted them into legislation last year. The Reagan Administration says they are not needed. The budget similarly contains major reductions in expenditures proposed for NSF's industry/university cooperative research program and its support for small business innovation.

Nowhere is the free market philosophy for technology more pronounced than in energy policy. The Reagan budget proposals would fundamentally reorder R & D priorities in energy, pulling the federal government out of a broad array of demonstration programs and focusing activities more on long-term research and development. The argument is that if oil and gas prices are decontrolled, market forces will make alternative energy supplies more attractive and stimulate conservation.

Consequently, the Reagan Administration is proposing to eliminate direct government funding for synthetic fuels pilot and demonstration plants. Many commercialization programs in solar energy would be scrapped, and government support for the development of many conservation technologies would be eliminated. DOE's solar, conservation, and fossil energy budgets, which had grown by leaps and bounds in the past few years, would be sharply reduced.

The same philosophy was not applied to some areas of the nuclear power budget, however. The Reagan budget includes funds to build the Clinch River Breeder Reactor, a project that the Carter Administration tried to cancel and which Stockman himself roundly attacked 3 years ago as being incompatible with a free-market energy policy. Stockman is believed to have fought the program during budget negotiations with DOE, but was overruled partly because the project happens to be in the state of Senate Majority Leader Howard Baker, who will play a crucial role in shepherding the Administration's economic policy through the Senate. The target date for completing Clinch River is now 1989, according to DOE officials.

The share of DOE's research and development budget devoted to nuclear power would climb from 26.5 percent in FY 1980 to 40 percent in FY 1982 if Congress goes along with the proposals.

Reducing support for international programs. The Reagan Administration's budget has already generated considerable anger and unease in Europe and in some international scientific organizations, for it would eliminate some international projects, end U.S. participation in a few multilateral activities, and reduce U.S. support for some bilateral scientific cooperation programs.

The most conspicuous casualty is a joint solar research project sponsored by NASA and the European Space Agency (ESA). The original idea was to launch two spacecraft in 1983 and send them over opposite poles of the sun. NASA was to have provided one spacecraft and the launch facilities, and ESA would

National Science Foundation budget, FY 1980–82 (millions of dollars).

Program	Actual, FY 1980	Reagan budget		Carter budget, FY 1982
		FY 1981	FY 1982	
Mathematical and physical sciences	227.0	248.2	295.4	301.3
Engineering	76.6	83.8	102.6	104.6
Biological, behavioral, and social sciences	185.7	183.1	172.0	219.0
Astronomy and earth sciences	218.1	228.0	253.2	268.0
Ocean drilling programs	19.5	22.0	26.0	30.0
Antarctic program	55.8	64.7	70.1	70.1
Scientific, technological, and international affairs	36.6	36.0	37.7	80.0
Cross-directorate programs	15.6	16.2	0.0	97.9
Program management	58.2	60.7	63.2	67.2
Science and engineering education	77.2	64.7	9.9	111.9
Special foreign currency programs	4.9	5.6	3.5	3.5
Total	975.1	1013.0	1033.5	1353.5

have provided the second probe, but NASA has now decided that it cannot afford to build its spacecraft. It will still provide the launcher if ESA wants to go it alone.

The Europeans are upset that they have lavished a good part of their meager space science budget on a project whose scientific value would be considerably reduced. ESA sent a strong protest to the State Department last week, suggesting that cancellation of NASA's share of the program would jeapordize future space cooperation between Europe and the United States.

Another action that is sure to upset scientists in other countries is the elimination from NSF's budget of about $1 million for U.S. subscriptions to the International Council of Scientific Unions (ICSU) and support for U.S. delegates to ICSU business meetings. The United States has supported ICSU since 1935.

Bilateral scientific cooperation between the United States and the Soviet Union and Eastern Europe would be cut by one-third from the present level, while cooperation with China would stay at the current level.

Finally in the international area, the Reagan budget has eliminated all support for the International Institute for Applied Systems Analysis (IIASA), an interna-

Federal Job Exam to Be Retired

The Justice Department in January consented to phase out the examination used in hiring federal employees on the grounds that it has an "adverse impact" on minorities.

The exam, known as PACE (Professional and Administrative Career Examination), is the chief instrument used to screen applicants for entry-level professional jobs in the government. Similar in content to the college entrance examination, it was introduced in 1975 as a fairer measure than the old federal service entrance exam.

But in 1979 four blacks and Hispanics who flunked the 1978 PACE filed a class action suit claiming the test was biased against minorities. The evidence: in 1978, although 42 percent of whites passed the test, only 13 percent of Hispanics and 5 percent of blacks achieved passing grades.

The Justice Department chose not to contest the suit and instead worked out a consent decree, subject to approval by the U.S. District Court, which it signed in the last days of the Carter Administration. The decree called for a gradual phaseout of PACE over the next 4 years and its replacement by "alternative testing procedures"—meaning "disassembled" or nonwritten tests—to be worked out on an agency-by-agency basis for each of the 118 jobs covered by PACE. The decree said new tests had to be found which would not disproportionately disqualify minorities, and that for up to 5 years after the PACE phaseout, "all practicable means" had to be used to see that minorities were hired in proportion to their presence in the applicant population—whether or not suitable new tests had been developed. In other words, the decree would establish a quota system in which roughly 20 percent of those hired would have to be black or Hispanic.

When the office of the President-elect got wind of this arrangement, it filed a brief asking that the court postpone action on the decree. The court acceded and the Justice Department has since drawn up a modified decree. This one eliminates the 20 percent figure and shortens the time of the decree's jurisdiction to no more than 5 years during which agencies have to use "all practicable means" to eliminate the proportional discrepancy in hiring. It also allows personnel research to be centralized in the Office of Personnel Management (OPM) so each agency doesn't have to develop tests from scratch. The court gave preliminary approval to the decree on 26 February.

The case has caused considerable clamor among those who believe that the decree amounts to subversion of the merit system in federal hiring—and a mighty expensive one at that. The Internal Revenue Service has estimated that the use of less valid selection measures for agents would culminate in a yearly revenue loss of $115 million. Research by the OPM indicates that there would be an annual drop in federal worker productivity worth $456 million if PACE is replaced with "unassembled" alternatives. The Social Security Administration 18 months ago inaugurated a disassembled test called CRESS (Claims Representative Exam for Social Security), which turned out to cost them $10,000 per hire.

But money aside, the real questions relate to the validity of various tests. William C. Burns, an industrial psychologist who served as expert witness for the plaintiffs, has said it is "patently absurd" to expect a single test "to evaluate 'merit' for 118 different jobs." Other psychologists contend there is already ample evidence that PACE is valid—that is, successful in predicting job performance. The competencies, quantitative and verbal, that the test measures are common to all 118 jobs and, according to Marilyn Quaintance of the International Personnel Managers Association, hundreds of studies during the 1970's showed that the cognitive abilities measured by PACE are related to "successful performance in PACE-type jobs."

James C. Sharf, an industrial psychologist and consultant formerly employed at the Equal Employment Opportunity Commission (EEOC), says the Carter Administration erroneously interpreted EEOC guidelines (which Sharf himself drafted) to mean that separate validation studies are required for each job. But this, he says, does not comport with professional standards for psychological testing. Furthermore, says Sharf, when a valid test shows adverse impact on minorities, it is up to the plaintiffs to demonstrate the existence of equally valid, less discriminatory tests. This, he says, is impossible, because those who want to junk PACE have no evidence for the validity of "alternative" tests. Indeed, it is just about impossible to validate oral interviews because they are "notoriously unreliable"—that is, assessments of the same applicant change over time and from rater to rater.

The Reagan Administration has chosen to get the consent decree modified rather than take the political heat for fighting it. But the elimination of PACE is likely to precipitate future showdowns. Many may share the view of Washington *Post* columnist William Raspberry that the consent decree could be "the most absurd affirmative-action proposal since the Cleveland school official ordered that the city's high school basketball teams must henceforth be at least 20 percent white."—CONSTANCE HOLDEN

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tional think tank based in Austria. The National Academy of Sciences is formally the U.S. member organization of IIASA, but the annual subscription of about $2.4 million comes from NSF's budget. Because IIASA's by-laws require at least 1 year's notice before any member organization can pull out, academy officials are concerned that the academy itself may be stuck with the bill for the 1982 IIASA membership.

Although there may be no overall plan for R & D, the cuts support a conservative theme: reduce federal involvement in business and education, boost defense, and cut international programs with limited short-term payoff.

—COLIN NORMAN

Blue Shield as a Medical Cartel

The "physician's cartel" in mental health care lost an important battle in February, says an adversary who celebrated the occasion, Anne Marie O'Keefe, lobbyist for the Association for the Advancement of Psychology (AAP). On 23 February the Supreme Court refused to hear a case brought against a group of Virginia psychologists by the Blue Shield medical insurance plan of Richmond, Virginia.

In dismissing the case without comment, the Supreme Court handed the psychologists a new legal tool which they hope to use in the struggle to persuade the world—and particularly insurance managers—that they are at least as competent as medical doctors to treat mental illness, and should be recognized as such.

AAP, the political arm of the American Psychological Association, has been campaigning in Congress and on several legal fronts to do away with what AAP sees as rank discrimination against psychologists by medical institutions. For example, it was common until recently for insurance plans to pay freely for outpatient psychotherapy only if given by an M.D. This was done despite the fact that physicians as a rule have less training than psychologists in dealing with mental disorders. Psychologists were often required to bill through hospitals or doctors' offices.

This practice was precisely what brought Blue Shield and the psychologists into conflict in Richmond. Although Blue Shield had been paying clinical psychologists' bills directly from 1962 to 1972, it suddenly made a change of policy in the early seventies. The plan announced in 1972 that from then on psychologists would have to bill through doctors' offices. Blue Shield said that it was just trying to control costs and make certain that every patient received proper medical attention.

Blue Shield held to this rule despite the protests of the Virginia Academy of Clinical Psychologists, and despite passage of a state law in 1973 which specifically ordered Blue Shield to pay psychologists' bills directly.

Not surprisingly, the Academy of Clinical Psychologists sued Blue Shield. The Academy lost in a state court but won an appeal on 16 June 1980 in the Fourth U.S. Circuit Court of Appeals. Blue Shield then appealed to the Supreme Court for a reversal.

The effect of the Supreme Court's action in February is to support the decision of the Circuit Court, which declared that Blue Shield violated antitrust laws in refusing to reimburse psychologists directly. The Fourth Circuit court agreed with the psychologists' charge that Blue Shield was acting in a conspiratorial way to give physicians in the mental health field an economic advantage over nonphysicians. In taking this case to the Supreme Court, Blue Shield hoped to win a reversal on several grounds, two of which are relevant. Blue Shield argued that health insurance companies like itself are automatically exempt from federal antitrust law by the McCarran-Ferguson Act. And it claimed that it was nonsensical to say that Blue Shield, an association of physicians, had conspired with itself.

The Supreme Court does not give reasons for denying to hear a case. Thus O'Keefe offers to make the broadest possible interpretation of the court's action. In her view, this is a landmark decision because it brushes aside the two important arguments raised by Blue Shield. Health insurance companies can no longer consider themselves automatically exempt from antitrust suits involving reimbursement policy. And, O'Keefe says, the Supreme Court has shown that it is possible to argue in certain circumstances that a Blue Shield plan is an inherent conspiracy against nonphysicians. Psychologists will have a stronger legal basis for demanding to be included in Blue Shield plans around the country, O'Keefe thinks. And it will aid nurse midwives, social workers, and others seeking a higher status in the medical establishment.

The legal office at national Blue Shield headquarters in Chicago sees matters differently. According to attorney Mary Lynch, this is "not a case of national importance for the Blue Shield plans" because the behavior of the Richmond office was "atypical." (Blue Shield is a federation of 69 independent plans responsible to the head office only in that they must comply with membership standards.) Lynch says, "We disagreed with the folks down in Richmond. . . . The national association didn't join in at all on this one." Lynch does not think the circumstances found in Virginia exist anywhere else in the country.

Although Blue Shield seeks to minimize the importance of the case, it is interesting to read how the local Blue Shield in Richmond described the case's probable impact in the appeal to the Supreme Court. "The implications of the Fourth Circuit's holding could be catastrophic," the attorneys wrote. "Blue Shield plans insure 80 million people in the United States. Since these plans all have physicians as members of their boards of directors, the Fourth Circuit's inherent conspiracy holding could be construed to have extraordinarily far-reaching and deleterious consequences." Every coot and crank in the nation will want to send his bills to Blue Shield, the brief suggests. Whether accurate or not, that vision didn't scare the Supreme Court into taking Blue Shield's side.

A seasoned antitrust lawyer at the Federal Trade Commission reads the case as important, but not earthshaking. Nonphysician groups have been given a new basis for challenging truly discriminatory reimbursement policies, but not a revolutionary one. This is by no means "an automatic free ride into the prepaid medical plans," he says. As ever, "it depends on how other courts read the case."—ELIOT MARSHALL

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