Pentagon Seeks to Build Bridges to Academe

But continuing attempts to restrict dissemination of unclassified data could hamper its efforts to harmonize its relations with the universities

After a long period of somewhat strained relations, the Department of Defense and the universities are eyeing each other with renewed interest. The Pentagon, anxious to tap into academic ideas and talent, is planning a significant increase in support for university research, while the universities, facing a squeeze on many areas of civilian R&D, are generally looking with favor on these financial overtures.

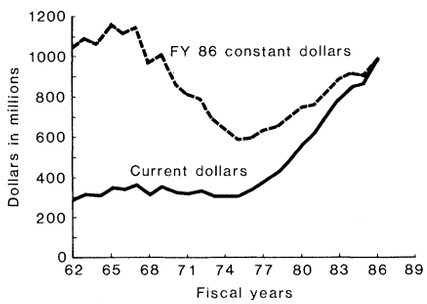
But more than just a change in the scale of the relationship is taking place, for the Pentagon is also broadening the types of campus activities it is willing to support. For the first time since the Vietnam War, the department is proposing to fund a variety of programs designed more to enhance the health of the universities than to meet short-term defense needs.

These moves to build bridges to academe are, however, being undercut by a continuing dispute over controls on the publication of unclassified but potentially sensitive data. For the past 4 years, the Administration has tried sporadically to impose such controls, but last year it backed off and the matter appeared to have been settled in favor of open publication. Last week, however, Pentagon officials ruled that some papers should be withdrawn from a meeting of the Society of Photo-Optical Instrumentation Engineers and that access to some of the sessions be restricted. Francis Sobieszczyk, a Defense Department official concerned with information controls, warned at the meeting that similar restrictions may be applied to other groups in future.

Attempts to control dissemination of unclassified research results, combined with continued disquiet on some campuses over connections with the military—Stanford and the University of Michigan recently went through major debates over the types of defense projects they would accept, for example—will not make it easy for the Pentagon to reestablish its presence on campuses. Yet there is growing realization within the Defense Department that national security will increasingly depend on shoring up the universities.

The most visible sign of this is a financially modest but politically significant initiative in the Pentagon's fiscal year (FY) 1986 budget request, which is now making its way through the congressional mill. A $25-million program divided equally among the Army, the Navy, the Air Force, and the Defense Advanced Research Projects Agency, the initiative is aimed at strengthening university programs in areas of potential interest to the Defense Department. The funds, which the department intends to expand to $100 million a year by FY 1988, will support such things as high-risk basic research, research fellowships, multidisciplinary centers, and the purchase of research equipment.

If Congress approves the initiative, it would effectively signal the end of an era that began with the passage in 1970 of the Mansfield amendment, which restricted the use of defense R&D funds to projects with a "direct or apparent relationship to a specific military function or operation." Although the language was loosened a year later to permit the Secretary of Defense to approve projects that have a "potential relationship to a military function," Pentagon officials say the amendment still influences the department's thinking on R&D.



The Pentagon's basic research budget

Almost back to the level of the early 1960's.

The political significance of the new initiative is that it sends a strong message that the Department of Defense now considers broad support of university programs a legitimate part of its mission, says Leo Young, a Pentagon official responsible for the department's basic research policy.

This attempt to broaden links between the military and academic scientists comes at a time when the Pentagon is also taking steps to increase its overall funding of basic research, about half of which is performed on university campuses. For example, the FY 1986 budget request includes some $970 million for basic research, a 13 percent increase over this year. In addition, the managers of the Strategic Defense Initiative (SDI) are inviting universities to put in proposals for about $70 million worth of projects next year (see box). Although that is only a small fraction of the total funding proposed for the SDI, it represents a substantial chunk of new money for campus research.

The Pentagon has, in fact, been edging toward a new relationship with the universities for some time. Its first move came 2 years ago, when a modest effort, involving $30 million a year for 5 years, was initiated to help universities purchase equipment. Some 1900 proposals, totaling $373 million, were submitted in the first year of the program alone.

One driving force behind these moves has been a growing belief that the department has been underinvesting in basic research. Between the mid-1960's and the mid-1970's, the department's spending on basic research dropped by more than 50 percent in real terms. Although budgets have risen steadily during the past decade, the current level of spending is still below that of the early 1960's in terms of purchasing power. "An unfortunate result of decreased research funding in [the Department of Defense]," argues George A. Keyworth, II, President Reagan's science adviser, "was the fact that most of the cuts occurred in university programs. As budgets became tighter, research and exploratory development in the department's own laboratories tended to be preserved and external research cut back."

Even in the past 4 years, when the overall Pentagon budget has risen sharply, basic research has increased relatively slowly. Consequently, basic research is expected to drop from 3.5 percent of the department's outlays on research, development, test, and evaluation in FY 1984 to 2.5 percent in FY 1986.

Another reason for renewed interest by the Pentagon in the health of the universities is a fear that there will not be enough scientists and engineers graduat-

ing in the next few years to meet both defense and industrial needs. Even before the SDI was begun, the Department of Defense directly employed 3.6 percent of the nation's scientists and engineers, and some 13 percent of the total workforce was engaged in defense-related programs. The defense buildup and the shift to high-tech weaponry is expected to increase this demand just as the private sector will be recruiting large numbers of physicists and engineers.

As a result, a committee consisting of the presidents of some of the nation's leading research universities and Defense Department officials 2 years ago urged the department to increase its support for basic research in general and to launch a new initiative to rebuild bridges to the universities. Richard DeLauer, then the head of research and engineering at the Pentagon, subsequently wrote letters to President Reagan and senior Administration officials expressing alarm at what he saw as a deterioration in the nation's ability to produce highly qualified scientists and engineers. The Senate Armed Services Committee joined the chorus with a report in May last year stating its concern "over the lack of growth in the Defense technology base" and urging the department to "do its share to maintain the excellence of our scientific infrastructure through strong support of university research."

The idea of launching the university research initiative began to gather political momentum very late in the budget cycle, at a time when everybody in the federal government was looking for cuts, not increases. Keyworth advocated a $200-million budget for the first year of the initiative, the Pentagon is said to have pushed for $100 million, and the Office of Management and Budget finally approved $25 million. The sum was added to the budget in mid-January, just days before the final documents went to the printer.

If approved by Congress, it would involve three separate components. The first would be to increase funding for research projects in areas such as mathematics, where immediate defense applications are not expected but long-term military benefits may arise. The second involves building up the general university infrastructure in areas of interest to the Defense Department by providing fellowship support and funds for new instruments. And the third is aimed at increasing interaction between academic researchers and Defense Department laboratories by establishing a competitive awards program in which faculty members can spend a sabbatical year working in a defense lab and later return to their universities with a grant to continue the research.

So far, the initiative has been received warmly on Capitol Hill. The House Armed Services Committee has held extensive hearings on the proposal and is said to be considering a substantial addition to the budget request. What happens in the appropriations committees will, however, be more important. There the Defense Department's overall request for R&D funds will be under considerable pressure as Congress looks for some significant savings in the military budget. University groups, led by the Association of American Universities, are lobbying hard.—**COLIN NORMAN**

NSF Names Engineering Centers

After an intense competition involving virtually every engineering school in the United States, the National Science Foundation (NSF) has selected eight universities to establish six multidisciplinary engineering research centers. The six facilities will receive $94.5 million from NSF over the next 5 years, and they are expected to attract substantial additional sums from private industry.

These centers are the first to be established in a new program that could become one of NSF's largest endeavors. The foundation hopes eventually to support as many as 20 engineering research centers on campuses around the country, in an effort aimed at encouraging multidisciplinary research on topics likely to have broad industrial applications. The total cost of the program could reach $100 million a year in federal funds.

The six pioneers are:

- The Center for Robotic Systems in Microelectronics, at the University of California at Santa Barbara. NSF will supply $14 million over the next 5 years to establish and operate the facility. It will focus on new automation technologies for the fabrication of semiconductor devices.
- The Engineering Research Center for Telecommunications, at Columbia University. This will receive $20 million from NSF and focus on the development of telecommunications networks to integrate data, facsimile, voice, graphics, and video transmissions.
- The Center for Composites Manufacturing Science and Engineering, at the University of Delaware with participation from Rutgers University. The program will focus on a range of problems in the design and production of composite materials. The Rutgers portion will be concerned with ceramics. NSF will supply $7.5 million to the center over the next 5 years.
- The Center on Systems Research, at the University of Maryland in collaboration with Harvard. This will receive a $16-million 5-year grant to conduct research on the application of artificial intelligence and very large scale integrated circuits to automatic control and communications systems.
- The Center on Biotechnology Process Engineering, at Massachusetts Institute of Technology. The center will focus on engineering problems in biotechnology and will be supported with a $20-million grant from NSF.
- The Center for Intelligent Manufacturing Systems, at Purdue University. The focus will be on automation of batch processing. NSF will provide $17 million over the next 5 years.

Because of the intense interest in the new program—the proposals submitted totaled more than $2 billion—NSF went to great lengths to ensure that the selection process was pristine. Proposals went through a four-stage review including a site visit for the 14 that were ranked highest. NSF officials were thus somewhat chagrined when Senator Alfonse D'Amato (R–NY) sent out a press release saying he was "pleased to have been associated with the selection of Columbia University." Asked what part the senator played in the selection, NSF director Erich Bloch said "none at all, to my knowledge." An aide to D'Amato said the senator told NSF he thought the proposal looked good, but "the selection was made by NSF, he didn't play any part in it."

NSF will fund a new batch of centers next year. Exactly how many will depend on whether Congress approves the full $25 million requested for the program in fiscal year 1986.—**COLIN NORMAN**