# Administration Grapples with Export Controls

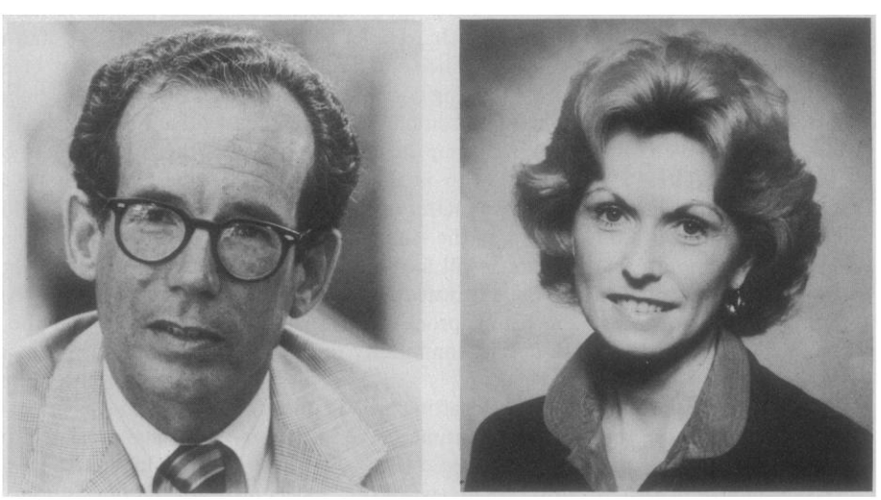
## *The White House and DOD are finally attempting to develop a coherent policy for restricting unclassified but militarily sensitive scientific data*

In February 1980, in the aftermath of the Soviet invasion of Afghanistan, the Carter Administration abruptly precipitated a debate over whether, and how, the federal government should restrict the communication of unclassified but militarily sensitive scientific information. The Commerce Department and the State Department warned the organizers of two open scientific meetings that some papers scheduled for presentation contained sensitive information whose release to foreigners would infringe export control laws. Soviet scientists were subsequently disinvited to one meeting and prohibited by the State Department from attending the other.

Three years later, the debate is still raging, fueled by the rhetoric and actions of the Reagan Administration, which warns that a "hemorrhage" of technology to the Soviet Union is taking place and that tighter control of sensitive information is required. Attempts have been made to restrict access by scientists from China and Soviet bloc countries to unclassified projects on some university campuses, visas have been denied or restricted, and papers have been withdrawn from scientific meetings after the Department of Defense (DOD) raised objections. In one celebrated case, some 150 unclassified papers were withdrawn from an open meeting at the last minute because DOD complained that the authors had failed to obtain clearance for their release (*Science*, 24 September 1982, p. 1233).

These actions have been sporadic and largely uncoordinated because, in spite of its rhetoric, the Reagan Administration has yet to come up with a coherent, government-wide policy for the control of sensitive information. But that may soon change, for a high-level interagency committee has recently begun to develop an overall policy for technology transfer (see box). The effort is being quarterbacked by the National Security Council, and the aim is to complete the work this fall. Meanwhile, DOD is also trying to thrash out its own policy and procedures. And Congress has entered the picture with an attempt to rewrite the Export Administration Act—the key piece of legislation governing export of critical technology—which has been used to restrict communication of sensitive scientific information. Over the next few months, the framework for controlling scientific communication in potentially critical areas should therefore emerge. But the process will not be easy.

The debate over scientific communication is only part of a broader battle over controls on the export of commercial technology that has potential military application. This battle is marked by deep divisions within the Administration, by interagency feuding over who should enforce the controls, by rifts between the United States and its allies over attempts to extend U.S. controls to foreign firms, and by concerns over the damage that overly strict controls will do to U.S. exports.



*Donald Kennedy: The severity of the controls will depend on "whether a few hard liners in the Administration get their way." Edith Martin: "Our intent is to find that minimal set of things that will help slow the flow."*

The fight over controls on the export of commercial technology is currently receiving most of the public attention in the debate over technology transfer, but issues raised by controls on scientific communication will be difficult to resolve as the Administration tries to put together its policies over the next few months. Nevertheless, interviews with key people in and out of the government suggest that compromises may be emerging in some critical areas. The compromises are likely to center on recommendations in three influential documents: the Corson report, a study published last September by the National Academy of Sciences that was put together by a committee chaired by Dale Corson, president emeritus of Cornell University; a report approved in April by the DOD–University Forum, a group that consists of representatives of DOD and the nation's leading research universities; and an unpublished report submitted to DOD on 15 April by Advanced Technology Systems, Inc., a Virginia-based consulting firm.

Although the three studies differ on many points, they contain elements of agreement in the following key areas.

• *The need for controls.* "It is impossible to get cooperation on something like this with anything less than fiat unless people believe in the basic premise, and the basic premise is that the threat is real," says Edith Martin, a DOD official who is chairing a department-wide committee developing DOD policy on technology transfer. She believes that there has been a "phenomenal" change of attitude by many in the university community on this point. The Corson panel and the DOD–University Forum did, indeed, acknowledge that there may be a very limited set of unclassified research projects in the universities that should be subject to controls; the Advanced Technology Systems (ATS) study took that as given. All three reports noted, however, that any restric-

# A Battle on Many Fronts

According to one count, there are 44 separate groups in the federal government looking into various aspects of technology transfer. The following are the arenas where the main battles over restraints on scientific communication are taking place in the Administration.

**The White House**. After sitting on the sidelines for 2 years, the Office of Science and Technology Policy (OSTP) was thrust into the center of the debate late last year. Under a directive from the President, OSTP was asked to draft a statement of Administration policy on scientific communication and national security, incorporating the recommendations of the Corson panel (see accompanying story). A March deadline was set for the study, but in February a broader investigation of technology transfer policy was launched by the National Security Council (NSC), again under presidential directive, and the OSTP study has become part of that. The deadline for this new effort is late October, but some are predicting that the work will not be completed until the end of the year.

Nominally in charge of this study is a senior interagency group headed by William Schneider, Jr., Under Secretary of State for Security Assistance, Science and Technology, but the work is being done by a steering committee chaired by Gus Weiss of the NSC. Scientific communication issues are being handled by a working group headed by Louis Montoulli of OSTP. Montoulli, who is the third OSTP official to be put in charge of these matters since the office first got involved, told a meeting of the American Physical Society last month that his group will look into "written, oral, electronic, and visual data transfer . . . trade fairs, exhibits, air shows, and the patent process." He said he will seek input from the scientific community during the summer.

The White House is meant to be drafting broad policy for the Administration, but in the meantime, several departments are drawing up their own rules.

**Department of Defense**. A directive issued on 29 December last year by then-Deputy Secretary of Defense Frank Carlucci laid out broad guidelines for DOD policy on technology transfer and established two committees to settle intradepartmental disputes on specific issues and cases. The committees are chaired by Richard Perle, Assistant Secretary for International Security Policy, and his deputy, Stephen Bryen. Both are known as hard-liners on technology transfer matters. Bryen's committee meets monthly and Perle's meets quarterly. Together, they form a two-tier appeals mechanism, but the arrangement is highly restrictive because a unanimous vote is required to approve any proposed technology transfer. A single vote can therefore restrict release of a technology or of sensitive information.

Carlucci's directive was meant to provide only a stopgap arrangement, however. More detailed policy and procedures are currently being hammered out by a department-wide committee under the chairmanship of Edith Martin, Deputy Under Secretary for Research and Advanced Technology. Martin says she expects her committee to finish its work by the end of September; it will make its recommendations to Fred Ikle, Under Secretary for Policy.

Martin's committee has five subgroups looking into the following areas: contractual controls on the release of information from DOD-sponsored research; visa controls (DOD wants to ensure that its views are heard in the State Department's deliberations—see below); restrictions on release of information at scientific conferences; restrictions on research publications; and how to identify areas of technology that are militarily sensitive. "What we are looking for," says Martin, "are those things that are palatable . . . our intent is to find that minimal set of things that will help slow the flow."

It is no secret that there have been conflicts within DOD over technology transfer policy, particularly between Perle's office and the Office of Research and Engineering, of which Martin is a part. This has led to differences in interpreting the policy, and the resulting confusion has been compounded by overzealous enforcement by contract officers in the armed services. Martin says that her committee is trying to cut through the confusion by arriving at a DOD-wide consensus on what should be done. "Perhaps in the past there has been [conflict]," she says, "but I would certainly say that isn't the case today."

**Department of State**. Last month, Under Secretary of State William Schneider announced at a press conference that henceforth visas would be denied or restricted "where there is reason to believe that an alien is seeking to come to the United States to acquire controlled strategic technology illegally." Although the policy is aimed chiefly at visitors from Soviet bloc countries posing as businessmen, Schneider said that it would also apply to scientists on exchange visits. An official in Schneider's office noted, for example, that the State Department might seek to place restrictions on a scientist's access to parts of a university campus. It would not be the first time that such restrictions have been imposed, but the universities have always strongly resisted them. The State Department is essentially serving notice that it does not intend to back off in the face of the opposition.

**Department of Energy**. Early in April, the Department of Energy (DOE) published draft regulations designed to control the release of unclassified nuclear information that might potentially be used to design a nuclear explosive or that could compromise the security of an installation housing critical nuclear materials. The regulations, which are required by legislation that Congress approved last year at DOE's request, identify a broad range of information whose release could subject an offender to a civil fine of up to $100,000 and criminal prosecution.

The proposed regulations have drawn a heated response from Stanford University. Vice Provost Gerald Lieberman argues that as drafted, they have "unlimited potential to chill research, teaching, and the general interchange of information." Restrictions on dissemination of previously classified material are "so inclusive as to permit application to all those basic and advanced courses in the fields of physics, electrical engineering, materials science, and the like that teach the basic information discovered and classified before the early 1950's and since declassified," he says.

DOE has extended the period for comments on the proposal until 3 June before deciding whether to put the regulations in final form.—**C.N.**

tion on scientific communication bears a potential cost in slowing scientific advancement. The real problem is to determine what should be controlled and how it should be done.

• *What should be controlled.* The Corson panel recommended that controls be imposed on scientific communication only in areas that meet four criteria simultaneously: the technology is developing rapidly; it has "identifiable direct military applications" or dual civilian-military uses; its acquisition by the Soviet Union would confer significant near-term military benefit; and the information cannot be obtained from other friendly nations. Although the criteria have met with broad acceptance, even within DOD, they leave plenty of scope for interpretation. Some in the academic community have complained, for example, that they could be used to restrict more than the panel intended. A recent report by a committee at the Massachusetts Institute of Technology said, for example, that if the Corson panel's own qualifications are ignored, the criteria "could be read as restrictive imperatives."

DOD has compiled a list of sensitive technologies, called the Militarily Critical Technology List (MCTL), whose export it wants to restrict. The list is far too extensive to be used for determining the areas of scientific communication to be restricted, however; according to one DOD official, it is the size of a Manhattan telephone book and is "really a list of modern technology." The DOD–University Forum has proposed that a committee be set up by DOD, consisting of scientists and engineers from government, the universities, and industry, "to review research and development in the universities on the basis of the MCTL, the criteria of the Corson Report, and the burden imposed on the vitality of research and engineering development," and determine which areas are truly sensitive. The forum also recommends that this broad-based committee be an appeals body from which a researcher whose project has been designated sensitive—and thus subject to restriction—can obtain an expeditious review.

Appeals are currently referred to an internal DOD panel chaired by Stephen Bryen, a deputy assistant secretary for security policy and a hard-liner on technology transfer issues. A single veto in the panel can block a proposed transfer.

The ATS report recommends a process likely to be far more unpalatable to the scientific community. It suggests that DOD itself should draw up statements on what unclassified information should be restricted in some 20 areas of technology that the Central Intelligence Agency has already identified as prime Soviet targets. The report suggests, moreover, that DOD should base its determination on criteria that are much broader than those of the Corson panel.

• *What controls should be imposed.* Because virtually all the research likely to fall in the sensitive category will be funded by the federal government, principally DOD, there is growing consensus that constraints on scientific communication can best be handled by contractual agreements between the researcher and the funding agency. One of the chief problems at present is that researchers are generally unaware of any obligation to restrict access to information, and controls have been imposed—sometimes capriciously—after the work is under way. The DOD–University Forum is emphatic that all obligations should be negotiated in advance and spelled out in contracts, so that researchers can decide whether to accept a project under the conditions laid down.

The forum statement suggests two controls that could be applied to research deemed sensitive: No national from a designated country (a Soviet bloc nation or China) will be assigned as a direct participant—including as a long-term visiting scholar—in the project without prior approval, and publications should be sent to the funding agency for review 60 days before submission for publication. The review would be advis-

## Swiss Research Questioned

The University of Geneva has recently notified the National Cancer Institute that Karl Illmensee, a researcher at the Swiss institution and an NCI grant recipient, is under investigation for alleged irregularities in the reporting of research data. According to Colette Freeman of NCI, the institute is withholding the renewal of Illmensee's $70,000 research grant, pending the outcome of the investigation.

The inquiry was launched at the behest of individuals who work in Illmensee's laboratory, says Marcel Guenin, vice-rector of the University of Geneva. The irregularities they reported involve alterations made in experimental protocols after the experiments were completed. According to Guenin, Illmensee concedes making the changes but has offered explanations for them. Nevertheless, after completing a preliminary internal investigation, the University of Geneva is forming a committee, to be composed of five or six scientists of international repute, to further investigate the charges.

Illmensee is primarily known as an embryologist and developmental scientist. The experiments that are being questioned were performed in 1982. They involve the transplantation of nuclei from cancer cells into fertilized eggs whose own nuclei had been removed. The eggs can then be transplanted into foster mothers to develop. The results have not been published, although Illmensee had presented them at a scientific meeting.

The investigation may not be limited to the 1982 experiments, however. According to Guenin, Illmensee has requested that the committee review his other work, which has now come under a cloud.

The questioned experiments are similar in design to experiments reported by Illmensee and Peter Hoppe of the Jackson Laboratory in the January 1981 issue of *Cell* (*Science*, 23 January 1981, p. 375). The *Cell* paper described the transplantation of mouse embryo cells into enucleated eggs, from which normal mice developed. Although similar nuclear transplants into amphibian eggs had been achieved some 30 years previously, success had not been reported before with mammalian eggs.

The *Cell* paper received a great deal of attention because the ability to do such nuclear transplantation paves the way for the cloning of mammals, that is, for generating multiple, genetically identical copies of an individual. However, attempts to reproduce the *Cell* results and those of other enucleation experiments performed by Illmensee have proved difficult, according to Clement Markert, an embryologist at Yale University.

Hoppe, when contacted at the Jackson Laboratory, declined to comment on the Geneva investigation. Barbara Sanford, the laboratory director, says an investigation is planned into the work performed by Illmensee when he was a visiting professor at the Bar Harbor facility.—**JEAN L. MARX**

ory. "The right and responsibility for publication rests with the university or the principal investigator," the statement says.

Current procedures, spelled out in a memorandum last September by DOD Under Secretary for Research and Engineering Richard DeLauer, require that all new DOD research contracts contain a clause requiring researchers to submit their papers to DOD when they submit them for publication.

In the past, the federal government has used the Export Administration Act to restrict communication of unclassified information that it deems sensitive. But it is an unwieldy instrument, carrying potential heavy criminal penalties, whose use can have an extremely chilling effect on scientific communication. Several groups have thus been lobbying Congress to exempt scientific research from the act. But such appeals have received little attention so far in the skirmishing over controls on commercial technology. "In the political scheme of things, this issue is like a stray cat or dog, nobody is paying it much attention," says Allan Adler, co-director of the Center for National Security Studies. On 18 May, however, the House Foreign Affairs Committee did agree to add a provision to the act stating simply that "It is the policy of the United States to sustain a vigorous scientific enterprise. To do so requires protecting the ability of scientists and other scholars to communicate freely their research findings by means of publication, teaching, conferences, and other forms of scholarly exchange." The committee's report is likely to be more explicit in stating that the Export Administration Act should not be used to restrict scientific communication.

Whatever controls are finally imposed, they are unlikely to gain universal acceptance. Stanford University president Donald Kennedy, who co-chairs the DOD–University Forum, says, for example, that "Our success [in keeping restrictions to a minimum] depends on whether a few hard-liners in the Administration get their way." Asked, however, whether Stanford would accept a research grant with restrictions on access by foreigners—as the forum suggested—Kennedy replied, "Probably not."

Nevertheless, Kennedy and others are looking forward to some coherent rules so that the universities can at least have a basis on which to decide whether or not to accept the government's money.

—COLIN NORMAN

# Universities Find Funding Shortcut

## *Catholic U. and Columbia hired a public relations firm to help get a piece of DOE's budget for new facilities*

The Speaker of the House, Thomas P. (Tip) O'Neill, Jr., received a call recently from his archbishop, Humberto Cardinal Medeiros of Boston. As a result, Catholic University in Washington, D.C., may soon get a new $13.9-million research facility, courtesy of the Department of Energy (DOE).

In a highly unusual move, the House voted on 12 May to remove $5 million from the budget of the National Center for Advanced Materials (NCAM) at the Lawrence Berkeley Laboratory and directed that the money be spent instead on a vitreous state research lab at Catholic U. The vote, which came as an amendment to a DOE authorization bill, was the result of an impressive lobbying campaign by some of the nation's bishops.

Catholic was not the only university to indulge in some successful pork barrel politics. Columbia University also raided DOE's authorization bill for a $5-million downpayment on a $32-million chemistry building. In this case, the House decreed that the funds be taken out of a variety of basic research programs in DOE.

What makes both these moves unusual is that neither facility has been reviewed by DOE or by the House Committee on Science and Technology, which authorizes DOE's budget. The proposals bypassed the usual peer review and authorization process and were sent straight to the House floor, where they arrived with a good deal of political momentum.

The proposals "came out of left field," says one DOE official, who complains that the department had no chance to determine whether they should have a high priority claim on the federal budget. "I would have no way of knowing whether these proposals are more meritorious than others," he said. "This could be a very bad precedent."

Although the proposals were not formally linked, both universities hired the same public relations firm, Schlossberg-Cassidy and Associates, to help lobby for their proposals. Schlossberg-Cassidy recently helped Tufts University snare a contract from the Department of Agriculture to house a new $32-million human nutrition research center.

The Catholic University proposal began to move on a fast track about 2 months ago. Although the university is not generally noted for its research prowess, its Vitreous State Laboratory, established in 1968, has a good national reputation. But it is spread out over three buildings and space is extremely limited. Theodore Litovitz, the lab's director, says he began discussing the need for a new facility with Catholic U.'s new president, Father William Byron, soon after Byron arrived last September. Byron apparently decided to seek funding for the facility when he read about the federal government's plans to spend $264 million to build NCAM. The NCAM proposal, which has been widely touted by George Keyworth II, President Reagan's science adviser, was added to DOE's budget request at the last moment, just before it went to Congress. According to Litovitz, the proposal and the publicity about how it was put together "certainly made Father Byron aware of the availability of DOE funds for materials science." Byron, who was in Europe last week and could not be reached for comment, went to Schlossberg-Cassidy.

Kenneth Schlossberg says a decision was made to seek funds in the DOE budget, but the authorization bill "came through committee before many people were aware of it." Help was then sought from Catholic U.'s board of trustees. Cardinal Medeiros, who recently left the board, contacted O'Neill, and Archbishop Philip Hannan of New Orleans contacted Representative Lindy Boggs (D–La.), who occupies a key spot on the appropriations subcommittee that deals with DOE's research budget.

O'Neill sent a letter, dated 28 April, to Science and Technology Committee chairman Don Fuqua (D–Fla.), saying he hoped Fuqua could find some money in