

6 Research Universities and National Security: Can Traditional Values Survive?

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This chapter discusses the specific impact the events of September 11, 2001 have had on research universities and of stresses and conflicts that have been raised. A real clash is possible over whether the responses that seem to be required by the threats of terrorism will conflict directly with the values that the universities feel are important to them and to their contributions in the fight against terrorism. The danger of overreacting is quite real, and in fact, I believe is already happening.

These “traditional values” actually go back only 30 years or so. But they are the values the research universities have come to accept as essential for high-quality education and research. The threats to these values are not new. We have seen many in the last few years. They include concerns about the impact of financial rewards on faculty, ethical issues posed by research, whether information is freely exchanged when important financial rewards are to be achieved, and the role of earmarks and of universities lobbying for them. But in this chapter I am focusing only on security-related threats to values. They predate September 11, but they are obviously much more pressing now.

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The Values

I am concerned about four principal values: commitment to openness, resistance to classified research, maintaining open relationships between universities and industry (including foreign industry) and, of course, relations with foreign students.

The issue that has caused the greatest problem in recent years involves the commitment to openness and the free exchange of information that the universities believe to be central to their research quality and productivity. The issue grows out of the threat of proliferation of weapons technology to rogue states, that is, states that might challenge our military dominance and counter it in destructive ways. The primary venue has been the International Traffic in Arms Regulations (ITAR), a set of rules that control the export of items that are on the munitions list. The U.S. Department of State administers ITAR and implements the licensing process. If a project falls under ITAR, a license is required before any information can be shared with foreign nationals, including students and scientists.

The field most affected by ITAR so far has been the space sciences because of their close tie to ballistic missile technology. (But the language of the ITAR would allow it to be extended over any area of science and technology.) A major change affecting the space sciences occurred a couple of years ago when communications satellites were moved from the export control of the U.S. Department of Commerce (concerned with trade issues) to the U.S. Department of State (concerned with munitions control).

This move was a product of two egregious incidents in which American satellite companies were helping the Chinese to explain why they had two failures. In the process, the companies were accused of passing on information that was covered by the munitions list, without a license. One of the companies involved has just recently settled the case and paid a very substantial fine, mainly to get it off their books because of its effect on the rest of their business.

Fundamental research is specifically excluded from coverage of ITAR. Fundamental research is defined as basic or applied research, the results of which will be published without any restriction. There is considerable ambiguity about what fits that definition. For example, is it no longer fundamental research if a sponsor puts a brief hold

on publication or pre-publication in order to review the research for possible patentability? As I understand it, the State Department essentially says that any restriction of any kind on publication removes it from the fundamental research exclusion. For this and other reasons, it is often hard to tell in advance whether something is covered or not.

Even for fundamental research, another provision called “defense services” can negate the research exclusion. That is defined as providing assistance to foreign persons in the use of defense articles (i.e. anything on the munitions list). That includes “design, development, engineering, manufacture, operation, demilitarization, destruction, processing, or use of defense articles.”¹ In other words, everything.

ITAR is comprehensive, complex, time-consuming, and often inconsistent. It often requires legal interpretation. Note that none of this has to do with whether information is classified or not. Unclassified information is also covered. Furthermore, it is important to note that anyone accused or convicted of violating ITAR is subject not just to fines, but to imprisonment.

So the issues become very personal and individuals in these fields are often quite aware of that. This has caused considerable unrest in the space sciences. Proposed contracts have been delayed and questions about foreign graduate student participation have been raised. Potential foreign collaborators have said they prefer not to work with Americans. Discussions at scientific meetings have been constrained or aborted. At times, meetings held in the United States have had to stop while foreign nationals were asked to leave the room and return later. Projects involving universities and industry collaboration have been delayed or canceled. Universities with limited staffs often simply do not have the capability to deal with these issues. ITAR has at times contributed to a climate of fear that has led faculty to withdraw rather than continue with proposed projects.

I recount the history of this subject because it shows what has happened in the past, before we became concerned with September 11 and its aftermath. The situation is just slightly better now than it was a few weeks ago. The universities, in general, and the Association of American Universities in particular, have made strong representations to the Administration about the problems caused by the ITAR, and the Administration has responded. After more than two years of in-

ternal negotiation, some amendments to ITAR have been added which have calmed the situation somewhat.

A major change is that public domain information can now be shared with foreign nationals from the North Atlantic Treaty Organization (NATO) and a few NATO-aligned countries without requiring a license. That is a substantial step forward. It greatly eases relations with our largest space collaborator, the European Space Agency, and with some other countries, particularly Japan. But some significant problems remain. Often, a seemingly sensible modification does not quite turn out as expected. For example, one of the amendments specifies that any information can be shared with universities or government research laboratories in NATO countries. That is fine, but it does not specify whether the partners have to pledge not to pass the information on to others from “unallowed” countries. That is left open.

Similarly, another amendment says you can deal with foreign students on these issues if they come from NATO or allied countries. But, in our universities today, we have many other nationalities represented. Does that mean that universities are asked to exclude certain foreign students from some projects and allow them in others? I believe that is absolutely unacceptable, but that is the direction in which we are moving.

Perhaps the most important part of the change brought on by these amendments was that the preamble restated a Presidential directive from the Reagan years (NSDD 189) that explicitly stated that fundamental research is in the national interest and all such information should be freely and openly disseminated. Information that has military or other security rationales should simply be classified.

As I noted above, the space sciences have been the focus so far, but the munitions list refers to any subjects that have military application and specifically mentions biological and chemical agents. I fear that it is only a matter of time before ITAR will be extended to those as well. My perception is that the climate in the government on these issues is such that, outside the science agencies, the concerns of universities are not well respected. There is considerable receptivity at the White House and perhaps at the level of agency leadership for these concerns, but not at the working levels of the government, particularly in the Defense and State Departments. Their responsibility

is a very different one. They may understand why the universities are dismayed, but the State Department's responsibility is non-proliferation and the Defense Department's is military systems. They do not accord much importance to the costs to the universities that may be involved nor much credence to the longer-range costs to national security that will result.

What Has Not Changed For the Research Universities?

One major continuing factor is the national nature of the scientific and technological enterprise. The majority of decisions about science and technology (S&T) are still made in a national context in which policies affecting S&T are determined in a domestic political and budgetary process. The research universities are, and will continue to be, dependent on the government. Moreover, the government has many ways to influence S&T, even though the private sector today gives much more funding support to research and development (R&D) than in the past. Regulations, subsidies, patent policy, trade agreements, standards, tariffs, and taxes are on a long list of subjects that influence S&T beyond simply funding. At the same time, the nation's dependence on technology to undergird economic health and security remains a significant fact of life.

A host of bedrock attributes of science and technology are also unchanging, often ignored, and often misunderstood. Some are clichés and some not so obvious.

First, all technologies are dual-use. There is no such thing as a technology that cannot be used for evil or malign purposes. Some are closer to weapons, but all of them have that capability. We have to recognize that the S&T enterprise inevitably produces more technology-based threats.

Second, the direction of technological development tends toward reducing the cost of performing a given function, thus contributing to the acquisition of dangerous technological capability by poorer countries or non-state actors.

Third, technological knowledge inevitably spreads. Diffusion can be delayed, but not prevented. The availability of a technology is only one part of a complex process that determines the potential for

misuse; and eventually all technologies will be available to those with the resources to use them.

Last, often the most significant applications of a new technology are far from the original purpose for which the technology was developed. You cannot predict precisely in advance how technology will develop or what synergisms among technologies will produce new applications.

What Has Changed For the Research Universities?

The most obvious change is the growth of large systems on which the economy and society have come to depend. Large systems mean large vulnerabilities. You can protect a system, reduce its vulnerability, and create redundancy, but you cannot remove vulnerability entirely. Society is simply too large and complex.

Another change is that the broader elements of science and technology necessary for our nation's security now cover a much wider range of subjects.

Yet another development is the expansion of the dimensions of size, distance, and power in the applications of technology. That obviously contributes to the phenomenon of globalization that characterizes the modern world.

Finally, a closer relationship between the laboratory and the marketplace (or application) means that more technologies are science-based. This makes scientific information itself a greater concern in terms of its potential for misuse.

Within the universities, much has changed. Most research universities are prospering, with more resources, increased endowments, and greater public support. At the same time, internationalization is becoming a much more common pattern among research universities. They are educating more foreign students, and carrying out many more foreign programs. There are a great variety of collaborations with people and institutions abroad and more contact with foreign corporations. At the very time we are concerned about threats from abroad, universities are actually expanding their international activity.

Obviously, part of the internationalization has been the growth of the numbers of foreign students and foreign scholars at American universities. The latest figure is close to 550,000 students, an increase

of 35 percent in 15 years. Sixty percent of these are in science and engineering, including the health fields. More than 50 percent of engineering doctorates and 25 percent of science doctorates are awarded to foreign nationals. Of course, foreign students and scholars contribute to the quality and the output of research. In fact, in some departments in the universities, there would be no educational or research function without foreign students. And foreign students tend to pay full tuition, which is not unnoticed. In addition, industry in the United States has come to depend on them. Foreign students, scholars, and researchers are vital to the advancement of science and technology in the United States and vital to our economy.

The universities have been largely free to determine their own policies toward foreign students and scholars. The federal government has control of the process only through visas. But, the Immigration and Naturalization Service cannot find three million people on student visas who they think have overstayed their welcome.

Another striking development in the universities is the closer ties to the private sector. This is not a new development, but it is growing.

Putting all of this together, I think we may have serious trouble ahead, and time is short. Obviously, the universities are moving in one direction, toward greater internationalization while jealously guarding the essential openness of the campus. At the same time our national concerns about proliferation, movement of information, and access of foreign students are intensifying in the opposite direction.

How Should We Respond?

This question is not easy to answer. It is imperative that the universities understand what the issues are, how they believe they should respond to them, how far they should go in accepting certain restrictions, and how they should work with government on these matters. I think it would be most unfortunate to wake up one day and, without warning, find legislation mandating restrictions on universities and foreign students.

Four prime areas need a response. One is the subject of openness, which must not be compromised. We may have concerns about the movement of information outside of the country or to people we wish did not have it. But that is not a problem that can be “solved.”

We may, however, need to have new rules making it harder for certain information to be easily published. An example would be a handbook for designing weapons of simple kinds. These rules could be designed by the universities themselves, or by some kind of mandate, or preferably, worked out jointly by the universities and government. We are on a slippery slope here, but it may be necessary. We are never going to solve this problem completely, but we must at the same time be careful not to overreact.

The second issue is the relationship of our universities to foreign universities and corporations. Because of the close relations, there easily could be substantial concern that universities are providing too much information and too much access to foreign corporations. We went through this in the early 1990s with a very different set of issues. We wondered then if we were giving too much information and access to Japan. In the 1980s, it was with the Soviet Union on a different set of grounds. We must be careful to resist any formal restrictions that would force discrimination within the university community as to whom we can and cannot talk to concerning unclassified, open information.

A third area requiring response will be requests for the universities to use their capabilities for work that is related to terrorism. In the past, we had classified work done on campus to which only some people had access. If it is necessary to use the capabilities of the universities, as I am sure it will be, then any work that has to be secured through classification ought to be done away from the educational enterprise, off campus. It should not involve students, and perhaps only some of the faculty. To create a situation on the campuses where there were two categories of knowledge and two categories of access would be a most unwise step.

Lastly, the presence of foreign students adds a final area that will be threatened. One dimension will be an attempt to impose contractual restrictions barring foreign students from non-NATO countries from working on government-funded R&D. Such proposals have already been made, and clearly have to be resisted.

Another dimension is that of excluding individuals from a wide range of countries altogether. Denying entry to nationals from particular countries is a federal government responsibility through the visa process, not a university responsibility.

A third dimension will be requests to universities to monitor and report on foreign students. That is a difficult one and quite distasteful. I personally think that universities should not accept that responsibility on their own. If they are subpoenaed and it is a legal requirement, then they have to accede. Routine monitoring as to whether students are there and registered and whether they are following the course that they registered for is not a problem. But more extensive monitoring would be.

Conclusion

Can traditional values survive? I say they can, but it is a qualified yes, with considerable uncertainty. The dangers to the nation's security are obvious and very real to all of us. If we are not careful, it would not be hard to damage the resource the universities represent. This resource is critical for the strength, vitality, *and* the security of our nation.

Endnote

1. International Traffic in Arms Regulations (22 CFR 120-130), March 2001, § 120.9