

# 37 The Impact of Terrorism on Academic R&D

**Representative Sherwood L. Boehlert**

I am sure that all of you, like me, are still reeling—emotionally and intellectually—from the attacks on the World Trade Center and the Pentagon. In every sense, from the personal to the national, it is hard to know exactly how to respond. In some ways, the passage of time has made what happened seem only more unreal and bewildering. But I think it is safe to say, that in the coming months, as in previous times of crisis, our nation will turn to its colleges and universities for help. Colleges and universities are inherently implicated in our response to September 11. We look to our universities for leadership, for ideas, for information, for education and training, and, if worst comes to worst, for soldiers.

While we say that the world changed on September 11, it is really our knowledge of the world, our sense of the world, and not the world itself that changed on that fateful day. After all, terrorists were at work before the 11th, the Taliban was in power before the 11<sup>th</sup>, and our security vulnerabilities existed before the 11<sup>th</sup>. It is our awareness of these and so many other aspects of life that is so different now. Only the ways we put that new awareness and knowledge to use will change the actual world in the aftermath of the attacks.

Academia, as a leading generator, analyzer, repository, and purveyor of human knowledge and insight, will necessarily have an impact on whether and how our world actually changes. I hope and expect that academia in general and the State University of New York (SUNY) system in particular are up to that task. It may require some new under-

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takings, but mostly it will simply require more intensive and better-focused attention on existing efforts, as well as greater engagement with the rest of American society. I do not believe that the attacks on September 11 signal a need for any fundamental change in the structure or nature of our academic institutions. I am thinking here, particularly, of the openness of our colleges and universities—openness to both ideas and people.

I have already seen articles in *The New York Times* and *The Chronicle of Higher Education* raising the specter of new restrictions on student visas, although I have not heard much talk of this yet in Congress. Obviously, the United States has to screen all visa applicants more thoroughly, needs to keep better track of those who enter our country, and, in particular, needs to crack down on those with expired visas. But we must not imperil the openness of our universities, which are magnets for students around the world, many of whom choose to settle in the United States and contribute to the advancement of our society. Foreign students who remain here are absolutely critical elements of our science and technology work force, and those who return home often increase the goodwill toward the United States in their home countries.

Some people may view limiting visas as “erring on the side of caution,” but it is just as easy to argue that “caution” demands openness, given how much we rely on students who come here from overseas. Indeed, I believe we need to look critically at every proposal that curtails the general openness and freedom of American society in the wake of September 11. As a member of the House Intelligence Committee, I know that changes are needed, but these changes need to be targeted and limited.

Fundamental changes in the nature of academia are probably unwarranted, but what about changes in the research and development agenda? Do we need to redirect government or academic research and development (R&D) in the wake of the attacks? Along with the scientific community, the House Science Committee, which I chair, has just begun to analyze that question. I know that the National Academy of Sciences and numerous other entities in Washington and around the country are also looking at how the scientific community should respond to the attacks. But we must be careful, especially now, about rushing to conclusions.

My basic view is that, while there are a few areas that need additional focus, the general thrust of R&D need not change. I do see, however, some areas in which research has probably been inadequate. First

among these appears to be computer security. While the terrorists involved in the September 11 events did not engage in cyber attacks (indeed they made full use of the Internet in carrying out the everyday activities, like purchasing airline tickets, on which their plot depended), our general vulnerability to terrorism should make us look again at our ability to protect the computer systems on which we all increasingly rely.

The experts tell us that we have a long way to go to make our systems secure. One reason for that is that research on computer security, particularly on security for civilian systems, is inadequately funded in academia, government, and industry. The computer science resources that attract the best computer scientists and engineers are simply elsewhere. That situation has been exacerbated by battles over who should fund what kinds of research. On the one hand are the security agencies (particularly the secretive National Security Agency) and on the other hand are the civilian R&D agencies. The Science Committee will soon hold a hearing to explore these issues more fully. Our conclusions will be reflected in the Information Technology bill we were already drafting on September 11, which will authorize and improve coordination of computer science programs across the federal R&D agencies.

The federal government must also put additional resources into improving the technical capabilities of our law enforcement agencies. We need research that will enable us to gather better intelligence to foil terrorist plots and other crimes before they are implemented. I am quite familiar with this work because some of it is going on at the National Institute of Justice (NIJ) lab, which is working with the Air Force's Rome Lab at the former Griffiss Air Force Base in my district. The NIJ center was doing a great deal of work with the Secret Service and the Federal Bureau of Investigation offices that were located in the World Trade Center complex. They head a federal, state, and local government partnership called the New York Electronic Crimes Task Force. Their building—Building Seven—was among those that collapsed, but thankfully, everyone in the Task Force got out safely. Within days of the tragedy, our NIJ center in Rome as well as other New York assets helped to get the Task Force up and running again. (When I was in New York City to tour "Ground Zero," we were told that access to the Building Seven area is being strictly limited and that all the materials from Building Seven—metal, paper, concrete—are being kept separate from the rest of the Trade Center debris at the Fresh Kill Landfill for security reasons.)

There are probably some narrower areas of research that also need more attention. For example, the Science Committee is working on a

bill to authorize the Environmental Protection Agency (EPA) to fund research to assess and improve the security of our drinking water systems. This idea came to us from the water utilities; the sewage authorities are interested in similar research on their facilities. Unlike the other areas I discussed, none of this is likely to be particularly fundamental or basic research, but it is still vitally important, and universities will no doubt have a role to play in it.

Other research projects may emerge as we scrutinize what happened in New York and Washington, DC. We plan to hold a hearing later in October to examine what research is needed to better protect our physical infrastructure—buildings, power plants, the electric grid, etc. My staff and I are working with Governor Tom Ridge and his Homeland Security Team on this.

In addition, the focus of some of our nation's research may shift. Existing research on identification techniques must get a higher priority (especially biometrics—the use of iris patterns, heartbeat patterns, or other aspects of the human body to ensure that people are not using false identities). Research in the social sciences and the humanities, including research on the causes of terrorism and the reaction to it, will certainly be more relevant now than ever before. Research that would help us prevent or respond to chemical, biological, or nuclear attacks by terrorists will also have renewed significance. As has been noted often, the September 11 attacks were not exactly high-tech. The terrorists turned the instruments of everyday American life against us. We need careful analysis to piece together how the terrorists accomplished that, and, to the extent possible, to prevent its recurrence. But that is, by and large, not the stuff of a wholly new federal or academic R&D agenda.

The rest of my remarks will address some things I would like SUNY and the nation to focus on that have not been directly affected by recent events, namely the bulk of our R&D and education programs.

The good news is that federal R&D spending was doing fairly well in the congressional appropriations process before September 11, and that is unlikely to change as the process concludes. (As FY 2002 begins, we have yet to complete action on a single spending bill. This is understandable in view of the events, since September is usually the month for working out the details in the appropriations process.) For example, the FY 2001 spending level for the National Science Foundation (NSF) was about \$4.4 billion. The President—misguidedly, I believe, but without prejudice—recommended essentially level funding for FY 2002. But the House intervened and provided more than \$4.8 bil-

lion, and the Senate almost \$4.7 billion. Now that the White House and congressional leaders have tentatively agreed to raise overall federal spending for FY 2002, I expect NSF to end up with a sizable spending increase for the new fiscal year. More resources will be devoted to R&D, as Director of the Office of Management and Budget Mitch Daniels has agreed.

Federal increases should only bolster New York's efforts to build up more centers of excellence in New York State. Governor George Pataki, State Senator Joseph Bruno, and SUNY chancellor Robert King are looking for ways to bring together our state's public and private universities and colleges with industry to create such research centers. The Governor's high-tech initiative for \$1 billion deserves credit and praise. Senator Bruno's Gen\*NY\*sis (Generating Employment through New York Science) Program does too. Both focus on one of New York State's greatest assets—the SUNY system. The Pataki/Bruno/King team is moving in the right direction at an accelerated pace.

Our economic competitors are doing the same thing, with gusto. As our national economy falters, New York needs such centers now more than ever in order to be competitive. In 1998, New York State ranked eighth among states in receipt of federal research and development funds—a respectable ranking, but hardly up to our potential, given our academic and industrial base. In terms of dollars, New York received less than one-quarter of what top-ranked California received. That has got to change. And our rivals are hardly resting on their laurels. The State of California, for example, is planning to invest \$400 million over four years in new multi-disciplinary Institutes for Science and Innovation located on University of California campuses.

The entire New York State congressional delegation is committed to ensuring that New York gets its fair share of federal funds. We have already had several meetings with chancellor King in Washington. New York's presence in the nation's Capitol has a much higher profile since September 11. But when it comes to securing federal funds for the necessary programs in any state, members of the scientific community are the ones who truly hold the keys to our success. Our efforts before federal agencies and our congressional colleagues can be successful only if we are advocating for credible, high-quality plans that have been well thought out in advance. Among other things, these plans must ensure that our work to expand New York's R&D enterprise only strengthens the educational mission of our colleges and universities. None of the R&D we conduct on security or anything else will matter, in the long

run, unless it helps train students in new fields. None of our R&D goals will be met, in the long run, unless we do a better job of preparing teachers and producing more capable students in science and math.

Finally, I want to discuss education in general. Recent events have done nothing to deter the President and Congress from carrying out their commitment to improve American education, particularly pre-college education in all fields, not just science and math. President Bush has made education one of his signature issues. Negotiations continue to increase funding levels for education programs and to enact a major rewrite of the Elementary and Secondary Education Act. Congress should be able to pass that legislation by the end of October, which should gradually result in better prepared students arriving on our campuses.

Progress is also being made on the National Mathematics and Science Partnerships Act (H.R. 1858), a bill targeted specifically at improving pre-college science and math education. This bill would create new NSF programs to encourage institutions of higher education as well as businesses to devote more of their energy and resources to improving pre-college education in these fields. The bill would also create new federal scholarships to encourage top science, math, and engineering majors to become science and math teachers. I introduced this bill, which builds on proposals from President Bush and Members of Congress on both sides of the aisle. It passed the House without opposition and is garnering bipartisan support in the Senate, where it was introduced by Senator Jay Rockefeller (D-WV). Money for two programs in the bill—partnerships between universities, colleges, businesses, and school districts and the scholarship program I mentioned above—are already included in the House spending bill for NSF. We are on our way to seeing these programs implemented. I hope to see SUNY campuses participate actively in these programs once they are in place. We have consulted with the chancellor and his team every step of the way in the development of this legislative initiative. All of our institutions of higher education must redouble their efforts to improve science and math education at the K-12 level. The full range of SUNY institutions—community colleges, four-year colleges, and university centers—all have a role, regardless of whether they have education departments.

I should note that Senator Joseph Lieberman (D-CT) and I also plan to introduce a bill to put more federal resources into improving science, math, and engineering education at the undergraduate level. In fact, we had a press conference on the bill scheduled for September 11.

The events of September 11 have forced us to alter our agenda in ways large and small. But fundamentally, our nation's R&D and education needs remain basically what they were before the attacks. For now, at least, the resources available to meet those needs remain about the same as well.

We need to draw on, and shore up, the strengths of our major institutions, such as SUNY, not just to prevent future attacks, but to ensure that our nation remains a beacon of freedom, openness, opportunity, innovation, and prosperity. These traits may make our nation a more appealing target for terrorists, but they are also what makes our nation the great one it is and worth defending.