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Dr. Bruce Alberts
President
National Academy of Sciences

Dr. Wm. A. Wulf
President
National Academy of Engineering

Kenneth I. Shine, M.D.
President
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Dear Presidents Alberts, Wulf, and Shine:

We had the pleasure of organizing for The National Academies a meeting on December 13-14, 2001 entitled, *Balancing National Security and Open Scientific Communication: Implications of September 11th for the Research University*, that brought together over 100 individuals from the science and technology and security communities to grapple with and sort out the difficult and sensitive issues that the September 11th attacks on New York and Washington present for academic research. (The meeting agenda, roster of planning committee members, and list of registrants attached as Appendices A and B, and C, respectively.) The meeting was structured around three key topics: (1) access to scientific information and materials, (2) flow and tracking of foreign students/scholars/faculty; and (3) needed new fields of study and research. In the report that follows, we provide a brief overview of each of these and identify the key policy questions that we believe would benefit from further study by The National Academies. In his keynote remarks that set an appropriate tone for the meeting, former Senator Gary Hart proffered recommendations of the Hart-Rudman report for consideration. (The Transcript of his remarks is attached as Appendix D.)

In our report to The National Academies presidents that follows, we provide a brief overview of each of the three topics and identify the key policy questions that we believe would benefit from further study by The National Academies.

Overview of Three Key Topics

The presenters of the first session, **Access to Scientific Information and Materials**, focused on how U.S. universities can help maintain American scientific and technological dynamism, innovativeness, and leadership in the post-September 11th environment without compromising national security. Ronald M. Atlas (Dean of the Graduate School at the University of Louisville) stated the problem in simple and compelling terms: “What should we be doing to allow science to proceed in providing the economic and national security efforts that we need, while not supplying terrorists with the information that they might want?”

A sampling of existing practices discussed by the panel participants illustrates the scope of this dilemma. For example, as Charles Vest (President of the Massachusetts Institute of Technology) remarked, American scientific research has benefited immensely from immigrant scientists and from visiting foreign students and scholars, and could therefore be diminished by exclusionary policies. Second, American scientific journals have only rarely withheld articles from publication based on national security concerns. In being asked how far journal publishers are now supposed to go, Dr. Atlas related questions that the press and others have recently posed to the American Society for Microbiology: “Should [we] restrict access and dissemination of relevant information? Are we willing to shut down the Internet communication among scientists? Are we willing to take the methods sections out of our journals so no one can possibly repeat our science?” A third example is the voluntary data- and materials-sharing that has heretofore characterized normal practice among scientists at home and abroad. Dixie Snider (Associate Director for Science at the Centers for Disease Control) observed that data-sharing has been critical to planning “how national, state, local resources can be used more effectively and efficiently for disease and injury prevention and control. . . .”

To what extent can the value of openness, which lies at the heart of these practices, remain the norm? Dr. Vest asserted that universities now “have an obligation to critically test these values and their implications in light of the catastrophic terrorist attacks on our nation.” To that end, he encouraged strengthening the “the sense of community and communication and working together” within the university research environment.

In addition to this normative injunction, Dr. Vest described a taxonomy for evaluating the risks of open access to scientific information and materials. This taxonomy ranges from “serious,” to “more or less modest,” to “minor or non-existent” With regard to scientific information, he suggested that the distinction between “know-how” and “fundamental information” could be useful in making these determinations. Therefore, how to build a nuclear bomb belongs in the “serious” risk category, whereas basic physics belongs in the “minor or non-existent” risk category. In the area of scientific materials, Vest placed dangerous pathogens in the serious risk category, and potentially dangerous chemicals in the modest risk category. In Vest’s view, this taxonomy is not meant to replace the current classification system, which ought to be applied “impartially and objectively,” but to serve as a guideline in lieu of the current

“fuzzily defined sensitive but unclassified category.” Some suggested that we need to explore a system of classification that goes beyond the current bi-polar (i.e. classified or not) governmentally controlled approach to a system that relies upon self-regulation by professional organizations.

During his talk, Dr. Vest remarked that: “Openness and meritocracy are what have made our universities great and we must continue that spirit and philosophy in our national endeavors.” The ideas behind this statement are critical to addressing the problems eloquently discussed in this panel; these core values should inform the “hard choices” that universities will inevitably have to make regarding access to scientific information and materials.

A recurring theme of the first panel, raised initially by Robert R. Rich (President of the Federation of American Societies for Experimental Biology and Executive Associate Dean and Professor of Medicine, Microbiology, & Immunology, Emory University, School of Medicine) was that we must take care that the remedies we undertake in the aftermath of 9/11 do not debilitate the good that exists at our research universities.

This sentiment was equally applicable to the second session on the **Flow and Tracking of Students/Scholars/Faculty**. James W. Ziglar (Commissioner, U.S. Immigration and Naturalization Service) expressed his concern that overly burdensome and invasive tracking procedures could deter very talented and harmless foreign students and scholars from coming here in the first place, and/or of turning against the U.S. those who are initially well-disposed, because of the treatment they receive while in the U.S. “Serious” students and scholars should not have to worry about being watched while they are here.

Robert M. Bryant (President and CEO, National Insurance Crime Bureau, and former Deputy Director, Federal Bureau of Investigation) also urged that post September 11th remedies be carefully gauged: “[I]f you try to protect everything from nuclear weapons design to food recipes you protect nothing.” He suggested that Presidential Decision Directive 75, Counterintelligence for the 21st Century, could usefully inform our thinking in the area of student and scholar tracking, particularly, its recommendation for the “full integration of public and private sectors within the national strategy, in other words a public-private partnership [that would] identify criteria of what is important to protect.”

David Ward (President, American Council on Education) expressed regret about the potential harm of “the shout shows on TV.” These particular media outlets, in his view, are sensationalizing Congress’s views of university involvement in September 11th. In his dealings with Congress, Dr. Ward has seen “deep sympathy and understanding of the internationalization of higher education.” For Dr. Ward, the core of the tracking problem is not substantive but procedural: “We need higher education, INS, and the State Department to sit down and be managerially responsible and simply have a finite, minimalist tracking system [that gives the Congress and the] public confidence.”

The new tracking system, SEVIS (the Student and Exchange Visitor Information System), is mandated to go into effect by the end of 2002. The tracking of foreign students and scholars is not new, but over the last decade, INS programs have been overwhelmed by increasing numbers of legal immigrants and visitors, and by concerns over illegal immigrants. The major innovation with SEVIS is that it will be computerized. Thus one challenge is to blend the software and systems of different agencies and universities to make tracking more effective without making it cumbersome and onerous. Another concern is who will pay for SEVIS; both Ziglar and Ward hope that Congress will appropriate sufficient funds to get the system started, and that subsequent fees to maintain the system will be small and added on to current visa fees.

Commissioner Ziglar observed that large tracking systems are not the only means for collecting and digesting data; as citizens we can be responsible by “being vigilant about our own security and about our country[‘s security].” He wondered how it was that the instructors at the flight schools did not become suspicious when some of their students sought to learn how to steer a plane, but not how to take off or land. He saw this not as a lapse in cognition, but in civic awareness. Elizabeth Rindskopf Parker (General Counsel, University of Wisconsin) echoed these thoughts in her call for “more civics engagement across the board” that would help individuals connect themselves more readily into the larger civic environment.

The idea of teaching “Civics 101” at the university level was a suggestion posed in the conference’s third session, **Defining Needed New Areas of Study and Research**. At this panel, the presenters discussed several promising areas to apply to counter-terrorism, including bioterrorism. Also discussed were biomedical research, pathogenics, genomics, super-computing, artificial intelligence, cyber-security, and several elements of the social sciences including history, politics, and cultural studies. Indeed, Dan Mote (President, University of Maryland) remarked that the university inventoried its faculty members and found over 150 with research interests that were directly relevant to, if not directly on, issues of terrorism and counter-terrorism.

In addition to suggestions of relevant subject areas were the strategies for pursuing anti-terrorism research. For example, Anthony S. Fauci, (Director, National Institute of Allergy and Infectious Diseases) discussed NIH’s accelerated bioterrorism research, which will devote additional resources to basic research on pathogens and genomics. Modest resources will be targeted at diagnostics and antibiotics and antivirals. Dr. Fauci also mentioned the importance of directing funding toward an expansion of research capacity, stating that there is going to be more of “a marriage of research agenda with the facilities” needed to carry out research. Tara O’Toole (Director, Center for Civilian Biodefense Studies, Johns Hopkins University) suggested a Manhattan Project-type endeavor in bio-terrorism that “can make enough progress in our understanding and capacity . . . to effectively render biological weapons obsolete, at least as weapons of mass destruction.” Nils Hasselmo (President, Association of American Universities) discussed the need to find better ways to translate the results of research into applications useful against terrorism. Rita R. Colwell (Director, National Science Foundation) talked

about thinking multi-disciplinarily in order to utilize existing technologies for new purposes. Several of the panelists also spoke of the need to develop more interdisciplinary programming in order to nurture innovative thinking across subject areas to help fight the war on terrorism.

While the purpose of this third session was to consider new educational form and content, Dr. Hasselmo cautioned that “the worst thing we could do would be to start a lot of crash programs to the detriment of the ongoing research effort. . . . [As] it was said earlier today, do no harm.”

Recommendations for Further Study by The National Academies

The question of paramount importance can be best stated as follows: In the post-September 11th environment, how can the nation meet its security needs and maintain and develop science and technology for a better, healthy, and efficient society without destroying academic freedom of inquiry and communication? In order to answer this question, we believe there needs to be further study of the following twelve questions, which are briefly described below.

1. What information, if any, should be regulated? Which materials, if any, should be regulated? Who should regulate them, and how?

It is rarely feasible or desirable to restrict access to scientific information, knowledge, and education. Some categories of information, such as protocols for constructing and deploying weapons of mass destruction, however, should be restricted. With respect to scientific materials, restrictions are both feasible and desirable for a number of reasons including but not limited to terrorism. Defining the various categories of information and materials, the appropriate level of access/restriction, and the appropriate body to regulate such information and materials need to be carefully considered. Inter-agency coordination at the federal level must be carefully considered as well.

2. Who should make the decision as to what scientific information and materials are dangerous?

The science community and national security community each come to this question with quite different perspectives and need to work together in making determinations regarding dangerous materials.

3. How might it be possible to internationalize norms regarding access to and exchange of scientific materials and information?

In this era of ever increasing globalization it is appropriate for the U.S. to work with other countries to develop an international statement, along with associated protocols,

defining acceptable behavior for access and exchange of scientific materials and information.

4. To what extent are current non-classified mechanisms used to restrict access to data (e.g., patient confidentiality, proprietary data) useful in the post September 11th context?

A review of current government, industry, and academic policies that restrict access to data might identify better models for handling unclassified, yet sensitive materials.

5. Does information regarding chemical or biological agents require special security measures?

Many chemical and biological agents are readily available, as is information that can be used to convert some commonplace laboratory agents into weapons of destruction. A review of the CDC list of select agents should be conducted with an eye to differentiation between the actual risk (that some agents might become weapons and also importantly, that some areas of critical research will become too difficult to pursue as a result of restrictions) versus the benefits (preventing weaponization and facilitating research on pathogenic organisms and emerging infections). A similar review of chemical agents, along the lines of classifications articulated by Dr. Vest, may be needed as well.

6. Under what circumstances, if any, should publication policies be altered?

Given that some information published in scientific journals can be put to inappropriate use, editors of scientific journals and scientific societies may need to reevaluate current policies and reach a new consensus on publication. A review of the government's past declassification policies should be undertaken to determine if government publications have made available publicly potentially dangerous scientific and technical information.

7. If access to knowledge is a right in a democracy, what civic responsibilities come with it?

The United States is a democratic republic. In order to ensure the rights provided by our democracy, we must perform the duties required by our republic. The academic community sits in a privileged position as both the producer and user of scientific information and materials and needs to clearly define its civic responsibilities.

8. How can the application of export controls to S&T materials/processes be rationalized?

Prior to the September 11th attacks, universities were working with federal agencies to clarify their roles and responsibilities under the International Traffic in Arms

Regulations. The new national security environment makes such an undertaking even more critical.

9. How can the interested groups—universities, intelligence and security agencies—productively work together on these issues?

Since the Vietnam conflict, the university and national security communities have not collaborated effectively. The post September 11th environment requires that these two communities define and strengthen a working relationship that will promote and protect both national security and open scientific communication.

10. How can we strengthen the social/behavioral sciences and the humanities in order to better understand the roots of and responses to terrorism?

Developing a better understanding of the underlying causes of terrorism will promote better policy responses that in turn may prevent future tragic incidents. Social and behavioral sciences as well as the humanities can contribute to this understanding and should be encouraged to identify the appropriate mechanisms that could strengthen needed areas of study.

11. How should the scientific community engage the public in these issues?

The public has very mixed feelings about, and limited understanding of, the role of the university community in national security. Recent misunderstandings have arisen over the status of foreign students and scholars at universities, laboratory safeguards and practices for securing access to materials, and university/government policies regarding the open dissemination of academic research. The scientific community should identify ways to inform and engage the public on these issues.

12. Are there key areas of scientific research where an infusion of federal funds could make a significant difference in national security?

From a national security perspective, we need to define the major fields of research that could yield the most significant and direct benefit to overall security. The academic research community and federal research agencies should consider the research proposals suggested by Drs. Fauci, O'Toole, Mote, and Colwell.

Other Important Areas

In addition to the issues raised above, a number of other questions/concerns were raised. We believe these issues lend themselves to further exploration by other organizations or done jointly by The National Academies with other organizations. They include:

1. Civics Lesson

Throughout the meeting deliberations a number of speakers and participants commented on the public's general lack of understanding about the fundamentals of a democracy, the purpose, requirements, and limitations of the Justice Department, FBI, and CIA. It was suggested that the public (and many in the scientific community) would benefit greatly from renewed attention focused on the fundamentals of our nation's constitution and system of government and on the meaning and responsibilities of citizenship.

2. Blue Ribbon Panel on University-National Security Balance

Concerns over the publics' lack of understanding about general university/government policies regarding the conduct of research and dissemination of information led to calls for the establishment of a blue ribbon panel or commission comprised of politicians and industry representatives that would affirm the core value of open academic communication and help the university community communicate with the public and our national leaders about the policies and practices that universities follow to protect our national security interests.

3. Further Exploration or endorsement of Hart-Rudman Recommendations

The Hart-Rudman report indicated that second only to a weapon of mass destruction detonating in an American city, the authors could think of nothing more dangerous than a failure to manage properly science, technology, and education for the common good over the next quarter century. The report made a number of recommendations specific to the science and technology enterprise. Further exploration of these recommendations, and perhaps endorsement of them by the academic enterprise, would provide them with more visibility.

Final Words

As you note, we did not suggest mechanisms for carrying-out further exploration of these policy questions. We do suggest, however, that a next step in the process might be to have the Academy staff review these topics and suggest the appropriate Academy venue (division, unit) and mechanism (workshop, study) for future work.

The tragedies of September 11th provide The National Academies with a unique opportunity to establish a strong and enduring relationship between the national security and the university research communities and with the opportunity to articulate to our citizens the importance to this country of an open system of scientific communication. Because so many are working on these issues, and because policy is being made so quickly, we urge The National Academies to move forward on these issues in an expedited fashion. We welcome the opportunity to brief you and the co-chairs of the Committee on Counter-Terrorism further on the December 2001 meeting and on our recommendations.

Most sincerely,

Nils Hasselmo, co-chair
Richard Celeste
David Korn
Elizabeth Rindskopf Parker

Robert Rich, co-chair
France Cordova
Chuan Liu
Richard Merrill

Attachments:

- A. Agenda
- B. Roster of Planning Committee Members
- C. List of Registrants
- D. Transcript of keynote address