The Science and Technology–Bereft Department of State

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In the spring of 1997, the assistant secretary of state for Oceans, International Environmental, and Scientific Affairs (OES) (*1*) triaged the last remnants of the Department's enfeebled science and technology (S&T) division with the intention of concentrating OES resources on global environmental initiatives. Now little more than a year later, State's senior management is seeking advice on how to regenerate and focus an S&T presence in the department. The task is substantial and far greater than can be resolved with a minor programmatic and policy graft. Instead, it requires a systemic S&T transformation that can take place only with protracted commitment by top foreign policy leaders.

Consider just some of the policy challenges the State Department officers manage daily: North Korea's nuclear development and missile proliferation; nuclear testing by India and Pakistan; space launch technology-transfer and trade issues with China, Russia, and Ukraine; intellectual property rights negotiations; global climate change debates; dangers of biological and chemical terrorism; and Internet encryption technology. Tomorrow's list will undoubtedly be different. The commonality is the presence of key S&T components for which the State Department needs technologically literate policy managers, sound policy analysis, and the ability to formulate and articulate credibly foreign policy positions. The State Department, as a primary player and arbiter in the interagency policy process, must have—and be perceived as having—the requisite technological expertise.

Global U.S. Research and Innovation

The State Department's current attempt to establish purpose and priorities for its S&T efforts should be informed by an understanding of the dynamics of the nation's research and innovation enterprise. Research and the marketing, manufacture, and development of high technology are now global in scope. U.S. firms are seeking alliances with foreign competitors and placing research laboratories abroad. U.S. innovation opportunities increasingly require access to foreign resources and markets and compatibility with policies of other countries (*2*).

The challenge for the Department of State is to focus its currently impaired S&T efforts on these matters so as to support and strengthen the nation's research and innovation enterprise and enhance the nation's ability to generate and use new knowledge. Primary focus should be the concerns of research communities and technology-intensive sectors for which government actions may be of great consequence. Examples include exchange of scientific data across national borders; trade in genetically engineered products; spectrum allocation for competing radio astronomy, communications satellites, and the global positioning system (GPS); fraud, terrorism, privacy, intellectual property piracy, and other factors affecting Internet expansion; and international computer hardware and software standards.

A New S&T Bureau

To this end, the Department of State should create a new S&T bureau partnered with the existing Economic and Business Affairs Bureau (EB) under the direction of the undersecretary for Economic Affairs. This placement would recognize the growing intersection of economic policy and technology policy and would expedite close working ties with two relevant White House bodies: the National Science and Technology Council responsible for R&D policy and the National Economic Council mandated to oversee Technology Policy.

Creation of a new S&T bureau would not necessarily expand the responsibilities of the budget-strapped department, but would aggregate and focus related S&T policy management and resources that now are dispersed throughout the department. For example, management of civilian and commercial space issues, including commercial remote sensing policy, now adrift in the "Oceans" division of OES, should be joined in the new bureau with telecommunications and aviation policy issues now managed in EB. Oversight and coordination of major S&T agreements managed in the now defunct "Science" division of OES also would reside there and coordinate with associated bilateral and regional economic and foreign policy aims. The new bureau's core staffing could be enhanced by temporary personnel transfers from the mission agencies—DOE, DOD, NIH, NASA, NSF, NIST, and so forth—as well as from AAAS fellows for the Department.

Thus constituted, a new S&T bureau would have the mandate and weight to position the Department of State as supporting U.S. efforts on high-technology globally.

A New S&T Advisory Board

The department should partner this focus with an effort to inform the department as a whole about new scientific developments and new technology. The keystone should be a new S&T Advisory Board, modeled after the Department of Defense's Defense Science Board, that would provide an independent source of professional S&T expertise to inform policy management throughout the State Department. The board should reside in the office of the secretary of state—perhaps in association with the Secretary's Policy Planning Council—to give it senior access and to ensure its involvement in all aspects of our technology-infused foreign policy, including political, economic, military security, and global issues.

The board should be composed of individuals who know well the nature and needs of the nation's research and innovation enterprise and who would be tasked to provide advice and analysis on S&T policy issues and management, as well as to forecast foreign policy issues emanating from S&T advance. For in-depth analytical tasks, the board could draw on such entities as the RAND Corporation's Science and Technology Policy Institute (*3*), the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine.

The board should maintain close ties with the President's Council of Advisors on Science and Technology, the NSF National Science Board, Department of Commerce high-tech sector advisory boards, and similar bodies throughout the government. In addition, board members should help promote departmental ties with research and innovation communities: high-tech industry, research universities, and state governments. These are potentially valuable resources and important domestic constituencies.

S&T Literacy

Finally, basic S&T literacy for all State Department personnel is fundamental. Similarly, department leadership should

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provide the Foreign Service Institute, the primary training arm for the department, with the technology and mandate to offer continuing education and distance learning on S&T for personnel. A clear signal early would be the inclusion in the entrance examination of questions testing a basic understanding of fundamental scientific concepts and the nature of scientific inquiry.

Similarly, department leadership should offer the Foreign Service Institute, the primary training arm for the department, with the technology and mandate to provide continuing education and distance learning on S&T for personnel. Foreign Service officers must have a knowledge base on which to build when needed. Otherwise this elite corps will be ill-equipped to conceptualize and understand forces transforming international relations and modern diplomacy and bereft of requisite intellectual tools to represent U.S. foreign policy interests.

Should the State Department fail to muster the requisite intellectual and organizational strength to influence and implement policy on S&T-infused international challenges, this primary foreign policy instrument will gradually lose its relevance to major U.S. interests around the world. At best, current departmental responsibilities gradually will be absorbed and managed by other U.S. governmental agencies, nongovernmental bodies, and private industry. At worst, the technologically empowered—foreign nations or nonstate actors—with objectives counter to ours may prevail, and our nation's economic, security, and other interests will suffer accordingly. Without doubt, in the post–Cold War world a Department of State bereft of S&T competence will be increasingly irrelevant to our nation's international interests.

References

1. E. Claussen and P. Kennedy, "Proposed reorganization of OES" internal State Department memo, 11 April 1997. Eileen Claussen, a non-career officer, departed the State Department in July 1997.
2. L. M. Branscomb and J. H. Keller, *Investing in Innovation* (MIT Press, Cambridge, MA, 1998), p. 479.
3. Formerly the Critical Technologies Institute, the RAND Corporation's Science and Technology Policy Institute is mandated to serve the White House Office of Science and Technology Policy (OSTP) and federal government agencies at OSTP discretion.

POLICY FORUM: SCIENCE AND GOVERNMENT

Put Science and Technology Back into Foreign Policy

J. Thomas Ratchford

Science and Technology (S&T) strongly affect foreign policy, and vice versa. Although both are low-saliency topics in the public mind, the importance of this relation has been long recognized. Presidents have noted the relationship. Secretaries of State have established committees and personnel policies designed to enhance it. Reports, often based on exceptionally competent studies and analyses, have been issued by respected and influential groups. Congress thought it had solved the problem of integrating S&T and foreign policy with the carefully crafted Title V of the Foreign Relations Act of FY 1979. Not only have these well-intentioned efforts come to naught, but we are regressing. Today the United States is in an unenviable position. Among the world's leading nations, its process for developing foreign policy is the least well coordinated with advances in S&T and the policies affecting them.

Elegant organizational constructs and unfunded legislative mandates for the Department of State cannot work. The commonsense approach is to give the federal research and development (R&D) agencies the policy direction and resources to do for State much of what it has not been able to do for itself. Only this will catalyze the necessary two-way interchange between science and engineering on the one hand and foreign-policy development on the other. Specifically the federal R&D agencies should (i) provide personnel to State for overseas posts; (ii) aggressively address the analytic needs associated with S&T in foreign policy, including effects of global policies on S&T; (iii) coordinate and enhance federal agency reporting on foreign S&T through regional condominium arrangements; and (iv) complement recruiting the best research talent internationally with much greater funding to send outstanding U.S. researchers to foreign centers of excellence.

The National Science Foundation (NSF) is the logical agency to coordinate this effort and to provide the analytic capability. Resources should be made available to the Foundation, but most funding must come from the other R&D agencies. People are the most important ingredient in this recipe, and the personnel systems in the R&D agencies, unlike that of the Foreign Service, provide a reward structure compatible with getting and retaining excellent scientific and engineering talent that is also competent to deal with complex policy issues.

Now is the time to make these changes. Long-standing budgetary constraints preclude the State Department from vigorous action, even if the will to act were there. The initiative must come from elsewhere: the scientific and engineering communities, the White House, and the Congress. Leaders from all these groups recognize that in the post–Cold War era, S&T and foreign policy have more, not fewer, interrelationships. The AAAS Board has identified international S&T as one of five areas deserving special attention in the development of a new science policy. Office of Science and Technology Policy (OSTP) Director Neal Lane has a long track record of support for international S&T cooperation. OSTP Associate Director for National Security and International Affairs, Kerri-Ann Jones, has quietly worked within the Administration to deal with the problem. F. James Sensenbrenner Jr., Chairman of the House Science Committee, has not been shy in focusing his attention and that of his committee on international S&T issues such as those related to megascience. The ranking Democrat on the Science Committee, George E. Brown Jr., has stated that "disjointed" is the most polite term he could think of in describing the U.S. approach to international S&T cooperation, and supported long-range planning for international S&T activities. The National Science Policy Study of the U.S. House of Representatives, chaired by Science Committee Vice Chairman Vernon Ehlers, showed its interest in the topic by devoting one of its seven hearings to international science. Ehlers noted in the 25 March hearing that the American people should better understand the importance of international S&T, including both the scientific benefits to American researchers and the important spillover effects on U.S. foreign policy.

Scientists and engineers are problem solvers. The fact that S&T are not properly integrated with foreign policy is a big problem. Both Congress and the White House seem interested in dealing with it. The federal R&D agencies can provide a solution. It is time to stop analyzing and to get the job done.

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