

NORMAN P. NEUREITER

Science and Technology in Foreign Policy

This is a time when the constructive power of science and technology (S&T) can propel humankind to new levels of global well-being, or when their destructive power could bring an era of darkness and suffering. Although decisions by governments and intergovernmental organizations are fundamentally political processes, in a technology-driven world, S&T advice is needed for those political decisions. The S&T advisor, the advisory committee of experts, a select panel, or whatever the unit is must provide the best possible scientific counsel to the political decisionmaker.

That means reaching consensus about the state of the science—for which there is never quite enough data—and then making clear what assumptions underlie any conclusions. Scientists and engineers can choose to go further by recommending a political course of action, but that is taking on a different role, that of lobbyist, activist, or special interest pleader. Of course, every citizen has the

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right to promote a political position, but one must distinguish that from the activity of providing expert scientific or technical advice. To be effective, an advisor must retain credibility as well as integrity.

In a recent discussion with the deputy secretary of state, I said that I would feel that I had truly succeeded in my job as science advisor if he and the secretary would ask themselves with respect to every decision they had to make: What does S&T tell us about this situation? His answer was: Look,

there are a lot of issues that we deal with that don't involve science.

I agree that if the secretary is heading off to meet with the leaders of Pakistan and India to persuade them not to start a major conflict that could end in a nuclear exchange, there is not much last-minute S&T advice to give him as he boards the plane. However, S&T do play a major role in gathering and interpreting the reconnaissance data, assessing technical capabilities, and understanding their deployment of forces. Seismic monitoring helps in assessing their nuclear capabilities, and up-to-date communications are vital for keeping the negotiator fully informed on new developments. Strictly speaking, this is not S&T advice, but drawing on S&T expertise to interpret this information and to ensure that it is accurate and useful is an important contribution to foreign policy.

S&T are equally important at international institutions. A recent National Research Council (NRC) report, Knowledge and Diplomacy, recommended the creation of science advisor positions or advisory offices and advisory procedures at senior levels in the governing bodies of United Nations (UN) orga-

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nizations that have major developmental responsibilities. The report recognizes that moving forward on an agenda of global sustainable development requires an effective source of S&T advice for those that will drive the process. I hope that this report is as influential as the 1999 NRC report on S&T in foreign policy that resulted in my position being created at the Department of State. I support the effort that has already begun to have the NRC do a similar study about how S&T can most effectively serve the U.S. Agency for International Development (AID) in its broad development mission.

I must mention two other institutions in which the National Academies also play a major role. The first is the Inter-Academy Panel, which is made up of about 80 national and regional science academies of the world. It has proven to be a valuable global forum, especially for building national advisory capabilities and providing science advice to governments and international institutions. In 2000, this panel established the 15-member Inter-Academy Council to conduct science policy studies and offer direct science-based advice to intergovernmental organizations on questions with high S&T content. UN Secretary General Kofi Annan has welcomed this new instrument and asked for an urgent study on increasing agricultural productivity in Africa.

New challenges

Although this council will play an important role, I see an opportunity for the S&T community to do even more. I propose a new series of

challenges for the National Academies and particularly for hands-on practitioners. Advice about what path to take is helpful, but the scientists, engineers, and physicians also can play an essential role in implementation. We have to make sure that these organizations are equipped to carry out all that good advice that they are getting. Let me give you a few examples.

The recent World Summit on Sustainable Development (WSSD) in Johannesburg was criticized by some advocates of the poor and of environmental protection for catering to the self-interest of powerful countries and corporations. However, Calestous Juma, a Kenya-born professor at Harvard's Kennedy School, said that the activists missed the point at WSSD. He said that the meeting marked a transition to a new way of thinking about development: away from global agreements and toward national and local actions. In this strategy, partnerships among government, business, and community will be the key to a sustainable future.

Secretary of State Colin Powell, who represented President Bush at Johannesburg, told the delegates that the United States considers science-based decisionmaking to be an essential foundation for sustainable development. But he also talked about the need for good governance, which includes responsible stewardship of the economy and of the environment. When he returned home, Powell told the President's Council of Advisors on Science and Technology (PCAST) that WSSD was a success but emphasized that it was not an end in itself. He praised it as the start of a process based on an

emerging sense of global cooperation in addressing real issues such as clean water, energy, health, agriculture, education, biodiversity, and S&T capacity.

In addressing these issues, the secretary highlighted the powerful new theme of public-private partnerships. He also challenged the PCAST members to help in building the kinds of partnerships that will make the WSSD vision a reality. I am pleased that the National Academies have begun a major new activity on S&T for sustainability, building on their previous excellent report *Our Common Journey*. Also, the National Academy of Engineering (NAE) helped the U.S. engineering community to produce a broadly endorsed statement of support for sustainable development that was released and promoted at the WSSD. This subject of sustainability is a perfect challenge for NAE, because there will be no solutions to problems such as inadequate water quality and energy infrastructure without the help of engineers.

Another example of progress is President Bush's announcement during a recent speech at the UN that the United States will rejoin the UN Education, Science, and Culture Organization (UNESCO). Having supported this move during my two years on the job, I am particularly pleased with this decision. I fully expect that we will find that UNESCO is still afflicted by diffuse programs, weak staff, top-heavy bureaucracy, and other problems that gave us headaches in the past. In fact, some critics of UNESCO argue that the United States should not become a full member but should participate in only a few

select UNESCO activities.

This would save money and allow the United States to avoid addressing problems within UNESCO. However, I just cannot accept the idea that the world's leading power would fail to enter into a body that is dedicated to global advances in education, science, and culture. We must try to exert real leadership in making UNESCO an effective force for good. We need an excellent U.S. national committee, with strong representation from the S&T community. We must get good people into the organization to assist in continuing reforms and optimizing its programs.

Let me mention another area where the collective voices of the Academies must be heard. The dominant theme in Washington today is the war on terrorism, and the Academies have stepped forward to show how S&T can serve to counter this frightful scourge. But some responses to the threat of terrorism are disturbing. Some people have overreacted in calling for the government to pull up the drawbridge, fill in the moat, and bolt the gates to keep out those who would do us harm.

The problem is that we don't know for sure who poses a threat, do we? Roughly half a million foreign students are enrolled in U.S. universities. Half of our engineering and physical science graduate students are from abroad. Creating impediments for all of these students does not serve the national interest. Yet, new visa processes have resulted in longer waits for approval and for more denials. Foreign scientists and engineers who want to attend international conferences held in the United States

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are often finding it impossible to obtain a visa in time to attend. A former research colleague of mine just wrote to me that his top post-doc candidate this year from India finally gave up on his U.S. visa application and went to France. The recent Space Policy Summit and World Space Congress in Houston were deprived of a number of important delegates who did not get their visas in time to attend—a major embarrassment to us as an open society.

I do not want to minimize the danger of terrorism, but we should be able to protect the public without undermining S&T education and research. We are not defending a castle. We are defending a society whose very essence has been built on a foundation of openness and individual freedom. The S&T community needs to work with government officials to help achieve a balance between security and openness. To understand the importance of foreign-born scientists and engineers in the United States, we should remember a

World War II joke about a high-level White House meeting concerning the atomic bomb. In the middle of one session, one of the members said, "Gentlemen, why are we wasting our time? Why don't we just speak Hungarian?"

Much of the strength of this nation has been in its diversity. The United States has benefited immeasurably from its policy of providing refuge and opportunity to people who have suffered from tyranny or deprivation abroad. Last year 70 percent of the pages in the *Journal of Physical Review* came from foreign authors. The United States is not the source of all S&T progress, and the country must not cut itself off from what is done elsewhere.

Cooperation works

Finally, I am a great believer in S&T cooperation as a bridge to friendly elements in hostile countries, as well as an effective means of strengthening ties with our friends, particularly in developing countries. Certainly, the sustained dialogue that members of the Academies had with Soviet physicists was an important part of what kept us from blowing each other up during the long years of Cold War tensions.

To me, one of the great dangers of the terrorist threat is that it zealots could escalate it into a broad confrontation of Islam with the West. S&T cooperation provides us with a concrete means for building selective bridges to the Islamic world, which can help to avoid such a clash. A recent public opinion poll in Muslim countries found that although U.S. foreign policy and cultural values were not

highly regarded, the nation's S&T achievements earned the highest respect and admiration. For example, 95 percent of those polled in Iran had a favorable view of U.S. S&T. By comparison, a poll conducted in France found only 56 percent positive about U.S. S&T. We need to have the good sense to build on our strengths.

Although cooperation sounds simple, it is not. Even with a federal budget of more than a trillion dollars, including \$112 billion for research and development (R&D), no U.S. government agencies have an easy or convenient mechanism for supporting international cooperation in S&T. That has not stopped many resourceful people from finding ways to cooperate, with each agency doing what it can based on its unique mission, legislation, and funding capacity. In my view, this is not a satisfactory way of dealing with this subject—one of great potential value to our foreign policy and international relations, but also to our scientific community in helping them to know the researchers and the R&D

programs that are active elsewhere in the world.

Political scientist Eugene Skolnikoff of the Massachusetts Institute of Technology, who worked half time at the White House Office of Science and Technology Policy (OSTP) during the Carter administration, recently told me that during that period OSTP developed a proposal to establish a new government institution expressly for the purpose of funding S&T cooperation with other countries. The Office of Management and Budget, the House and Senate authorization committees, and the House Appropriations Committee approved a \$10 million first-year budget. But in the end, a small but determined opposition in the Senate killed the bill, and a grand idea died.

What a shame. What a loss from our still anemic quiver of active foreign policy tools. After two years at the State Department, I feel even more strongly that we need such a program. We could more quickly and effectively respond to the visits from science ministers of many countries that

have committed money to building their own S&T capacity and seek only a chance to cooperate with U.S. institutions. We could even make a small grant to the fledgling Arab Science and Technology Foundation based in Sharjah in the United Arab Emirates, aiding its attempt to build a more effective research community in the Arab world.

It could help us with Eastern European countries, to which the United States provided some help in S&T after the fall of the Berlin Wall but little since. Enhanced cooperation can likely be achieved without the creation of a new agency. Slight changes in spending guidelines and dedicated funding at the National Science Foundation, the National Institutes of Health, and other agencies that support S&T research could do the job. But whatever the solution, I am convinced we need better instruments for putting real meat on the bones of our international S&T relationships. Indeed, this might be a good issue for the Academies to examine in greater detail.