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The Science and Technology Adviser to the U.S. Secretary of State: The History and Evolution of the Role

Erica Pincus

IN 1998, U.S. Secretary of State Madeleine Albright recognized the growing importance of issues related to science and technology (S&T) in foreign policy and commissioned a report from the National Research Council (NRC) of the U.S. National Academies to examine how the Department of State could better meet its responsibilities in this arena.¹ One of the recommendations of the report, completed a year later, was that “the Secretary should select a highly qualified STH [Science, Technology, and Health] Senior Advisor to the Secretary and to the selected undersecretary to provide expert advice, drawing on the resources of the American STH communities, as necessary, on current and emerging issues.”² The first science and technology adviser to the U.S. secretary of state and its supporting office, the Office of the Science and Technology Adviser (STAS), were established in 2000.

This article explores the roles and responsibilities of the science and technology adviser to the secretary since the position was established, along with each adviser’s approach and contributions.

Erica Pincus was a student at the Edmund A. Walsh School of Foreign Service at Georgetown University from 2009 to 2013.

A Brief History of Science Advice at the Department of State

The scientific community has interacted with foreign policy institutions, whether overtly or covertly, since at least World War I, which some called the “Chemist’s War.”³ World War II then marked an important milestone in the integration of science and foreign policy, particularly because of the use of atomic weapons. The U.S. government created new entities, such as the CIA’s Office of Scientific Intelligence in 1949 and the Office of Science Adviser and Special Assistant to the Secretary of State in 1950, to address the intersection of international science and national security.

Yet after its founding, this original Science Adviser’s Office at the Department of State quickly lost its prominence, only regaining it when S&T reclaimed its national security standing as an important Cold War issue in 1957 in response to Sputnik. The Office of Science Adviser and Special Assistant to the Secretary of State officially became a bureau in 1965, with the new name of Office of International Scientific and Technological Affairs. Its director was made deputy assistant secretary for science, a position that would exist until 1997.⁴ In 1974, the bureau was incorporated into the new Bureau of Oceans and International Environmental and Scientific Affairs (OES), established as a result of Congress’s Department of State Appropriations Authorization Act.⁵

Despite the establishment of such science-focused offices and positions, progress was needed. According to Andrew Reynolds, the former deputy science and technology adviser to the secretary of state who supported the first three advisers, “Science and technology had become sub-critical in the 1990s, with too few people with scientific and engineering disciplines [among Department of State personnel] to really understand and inform how international relations, foreign policy, and development policy should be carried forward.”⁶

With the recommendations of the 1999 NRC report, Secretary Albright set up a task force to study the issue, resulting in a 2000 policy statement titled “Science and Diplomacy: Strengthening State for the 21st Century.” This statement indicated that the secretary of state would appoint a science and technology adviser, as authorized by Senate Act 886: Foreign Relations Authorization Act, Fiscal Years 2000 and 2001.⁷ Four advisers have served to date: Norman Neureiter, George Atkinson, Nina Fedoroff, and William Colglazier.⁸

The science and technology adviser position is nonpolitical, and each adviser serves a fixed three-year term. STAS is bureaucratically under an under secretary of state’s purview—for the first three advisers, this was the under secretary for global affairs; for the fourth, it was the under secretary for economic growth, energy, and environment. The adviser has direct access to the secretary of state and other senior officials within the department. Nonetheless, in Neureiter’s words, “You don’t make policy in an institution like this by whispering in the secretary’s ear.”⁹ Rather, the science and technology adviser’s interactions tend to take place with officials in the department’s various bureaus. STAS is supported by a small staff,

which allows for strategic mobility to address a variety of needs in the department without the burden of day-to-day policy responsibilities. STAS complements OES, which holds responsibility for S&T-related foreign policy issues such as climate change, the Arctic, oceans, infectious diseases, space, and official bilateral S&T cooperation.

The Advisers

Norman Neureiter,¹⁰ the first science and technology adviser to the secretary of state (2000–2003), came to the position with experience in both diplomacy and science. He has a PhD in organic chemistry and prior work experience in industry and government, including positions as deputy science attaché in Bonn and Warsaw as a foreign service officer, in the International Affairs Office of the National Science Foundation, and at Texas Instruments. He also served as assistant for international affairs to the president's science adviser in President Richard Nixon's White House Office of Science and Technology.

Neureiter was followed by George Atkinson (2003–2007),¹¹ previously the first American Institute of Physics science fellow in the Department of State, on leave from the University of Arizona, where he had long served as a professor of chemistry and optical sciences and was a recipient of a Senior Alexander von Humboldt Award and a Senior Fulbright Fellow Award.

The third adviser (2007–2010), Nina Fedoroff,¹² was a distinguished molecular plant biologist who most recently had been a professor at Pennsylvania State University. She was a member of the U.S. National Academy of Sciences (NAS) and received the 2006 National Medal of Science, among other honors.

William Colglazier,¹³ the most recent adviser (2011–2014), has a PhD in theoretical physics and held many previous positions in both science and policy, including professor of physics, executive officer of the NAS and NRC, and executive director of the Office of International Affairs of the NAS and NRC. He gained earlier experience in Washington when he served as an American Association for the Advancement of Science (AAAS, publisher of *Science & Diplomacy*) congressional science fellow from 1976 to 1977.

The Role and Responsibilities of the Science and Technology Adviser to the Secretary

The Role and Responsibilities, As Recommended

The role and responsibilities of the adviser were influenced not only by the NRC report but also by the earlier 1992 Carnegie Commission on Science, Technology, and Government report *Science and Technology in U.S. International Affairs*.¹⁴ The Carnegie report recommended that the main functions of a potential "Science Counselor to the Secretary of State" be related to advice, policy, coordination, provision of early warnings, cooperation during emergencies, and service as a

liaison. As laid out by the 1999 NRC report, the adviser's role and responsibilities were to "work with senior officials throughout the Department in identifying and addressing important policy and personnel issues and in mobilizing external STH support when necessary,"¹⁵ identify and highlight current and emerging S&T-related issues, develop S&T competence within the department, and serve as a liaison with a variety of S&T-related institutions. Thus, both reports affirmed the role of the adviser to provide advice, address S&T-related policy, and serve as a liaison to the scientific community.

The Official Role, As Established by Secretary Albright

Under Albright, the responsibilities of the science and technology adviser included reaching out to and collaborating with the science community, increasing awareness within the department's senior levels regarding the importance and relevance of S&T-related issues, providing counsel on U.S. foreign policy relating to S&T issues, and working to further develop the S&T literacy of Department of State employees.¹⁶ Secretary Albright's mandate was in line with the recommendations of the aforementioned reports regarding the role of STAS in that they all stress the adviser's responsibilities to develop competency in and—when appropriate—advise on S&T, to increase the S&T presence and promote the awareness of its relevance within the Department of State, and to serve as a liaison to the scientific community.

Adviser's Role and Responsibilities in Practice

The outline of the science and technology adviser's role and responsibilities leaves space for each adviser to emphasize different aspects—whether to build S&T capacity within the Department of State, raise awareness within the department on S&T-related topics, or serve as a liaison between the department and scientific communities. Each adviser also pursued complementary objectives that resulted from his or her approach to the responsibilities, as well as the particular administrative, political, and historical environment—within the Department of State and/or within the United States as a whole—when the adviser entered the position.

Neureiter defined his role as being "a focal point for science in the building, particularly vis-à-vis the external science community."¹⁷ For example, he did a great deal of work with the AAAS Science Diplomacy Fellows program, which sponsors individuals with scientific and technical expertise from outside the government to work for a period of time at agencies such as the Department of State to assist with policy development, program planning, implementation, and evaluation.¹⁸ He established the Embassy Science Fellows Program as well, which "provides U.S. embassies access to the expertise of U.S. Government officers in science and technology fields."¹⁹ Neureiter also sought to achieve both "a more scientifically literate Foreign Service and a continuous influx of shorter-term people from the

professional scientific community—broadly arrayed throughout both the bureaus in the State Department and our embassies abroad.”²⁰

Atkinson worked to promote recognition of the gap that existed between the department’s actual scientific preparedness and the scientific preparedness required of it by the increasingly complex challenges facing modern societies.²¹ One of Atkinson’s priorities was to expand the department’s fellowship opportunities for established scientists and to integrate more scientists into embassies and the department itself. For example, Atkinson created the Jefferson Science Fellowship Program, which brings tenured academics to the Department of State or the U.S. Agency for International Development (USAID) for one-year terms to contribute their expertise on S&T issues to the policy world.

Fedoroff was the first science and technology adviser to the secretary who also served as the science and technology adviser to the USAID administrator. She saw her role as more policy focused; her main goals were “getting science more front and center into policy and getting the idea that science was probably our best diplomatic foot forward into the mainstream.”²² Since she also served as science adviser to the USAID administrator during her tenure, a related goal that she mentioned was to promote a more effective use of science in development.

Colglazier, the most recent adviser, had five goals upon entering the position: first, to develop a good relationship with the OES bureau; second, to make STAS’s usefulness known within the department so that it would be considered an asset to be maintained and nurtured in the future; third, to pursue his goals and fulfill his responsibilities relating to science engagement and science diplomacy; fourth, to help U.S. institutions (e.g., universities and professional societies) with their international engagements and to serve as an “ambassador” for science; and, fifth, to provide technological foresight and information regarding the ensuing implications for foreign relations.²³ Colglazier met his responsibilities to support the AAAS, Jefferson, and other fellowship programs that bring scientists into the department, and to advance global scientific engagement by making U.S. scientists a larger part of public diplomacy efforts and welcoming international students to the United States to receive an education in science, technology, engineering, or mathematics (STEM).²⁴ In addition, he emphasized the role of innovation, which is notable because the idea of “innovation” and how to create an innovation ecosystem is of increasing interest within the federal government.

Earlier science advisers, such as Neureiter and Atkinson, emphasized S&T capacity building by strengthening existing or creating new mechanisms for bringing outside S&T expertise into the department. While all of the advisers emphasized the importance of engagement with the science community, Neureiter and Colglazier also placed a particularly strong emphasis on building lasting organizational relationships within the department. This was in part because STAS had just been created when Neureiter began his term, and discussions had occurred regarding whether or not to fill the position again before Colglazier

was appointed. As a result, each of them had to focus on engagement within the department to promote STAS's importance and necessity. Fedoroff seemed to focus more on the liaison aspect, emphasizing her role as a science representative at the department and helping advance policy issues.

The Qualifications and Approach of Each Adviser

According to the 1999 NRC report, "The Senior Advisor should have strong STH credentials through education and/or experience and should be familiar with the governmental, industrial, and academic STH infrastructure of the nation. The Senior Advisor should also have considerable international experience and the capability to integrate STH developments and foreign policy concerns within the Department's policy process."²⁵ Each of the four advisers did possess strong credentials in S&T, and had varying amounts of diplomacy experience. They each came to the position from a different background, with different skills and experiences, and as a result they had a unique perspective that shaped the framework used to approach their work.

While there is no one set of skills or expertise that necessarily makes for an ideal science adviser, certain characteristics may contribute to his or her success. According to Fedoroff, such characteristics include strong interpersonal skills, an ability to learn new material quickly, and international experience. Andrew Reynolds, who supported the first three advisers, cited the importance of interpersonal skills as well, stating, "The thing about the State Department and the environment of consensus building is you have to have good people skills [and] good social skills...it calls for suppressing the ego as much as you can and letting others take credit."²⁶ Neureiter mentioned the importance of being able to adapt to working inside a large bureaucracy such as the Department of State, because "you *have* to work with the bureaus, you *have* to work with the regional desks, you *have* to work with the embassies overseas...remember, they're in charge of foreign policy, you're not. But you can make an important contribution to their policy decisions when there are scientific or technical aspects to those decisions."

Overall, it is clear that the science and technology adviser to the secretary must be proactive. Colglazier noted this characteristic in one of his predecessors, Neureiter, who told him, "If you're going to wait around for people to ask you for advice, you can go in late and go home early." Neureiter also emphasized the need for the adviser to be humble enough to recognize that S&T is rarely the dominant factor at play in foreign policy decisions. He said that "while science and technology underlie many of the issues facing Secretary [of State John] Kerry today, in the big issues on war and peace that he's concerned with right now, you have to dig pretty deep to see the science in them and you are not going to determine the outcome, but there are still *lots of ways* to make a contribution." Neureiter described an ideal science adviser as someone who can think about issues broadly, has familiarity

across a range of sciences and technologies, and has many contacts in the science and engineering communities. He felt that the adviser should be someone who is recognized by and comfortable working with the scientific community, who also has some experience working in a large bureaucracy, and who, as noted, “approaches the job with some humility.”

According to Atkinson, four skills are needed to be a successful science and technology adviser: first, experience as a practicing scientist or engineer; second, skills as a mentor or teacher; third, the ability to listen, offer credible information, and be willing to be wrong; and fourth, the ability to convince people that you can be trusted with a candid conversation. Fedoroff also highlighted the benefits of having an adviser with a strong science reputation, particularly someone who can carry the “mantle of American science” abroad, thus utilizing that science reputation as a diplomatic tool. Colglazier expressed a slightly different perspective, stating that the ideal adviser need not necessarily be the most distinguished scientist but rather a good scientist who has connections and an understanding of bureaucracy. He noted that it is especially advantageous for the adviser to have experience in the Department of State in order to understand its culture and navigate its bureaucracy.

Impacts

STAS can point to numerous and diverse accomplishments. For example, all of the advisers performed outreach by delivering speeches to the science community, university students, and others. They also contributed to the growth of fellowship programs that bring scientific expertise to the department, thereby helping launch programs such as the NeXXt Scholars Program.²⁷ Neureiter helped establish and then served as the first U.S. co-chair of the Indo-U.S. Science and Technology Forum. In addition to creating the Jefferson Science Fellowship Program, Atkinson initiated the Global Dialogues on Emerging Science and Technology, a series of science and engineering conferences and bilateral dialogues relating to fundamental issues of common interest.²⁸

Fedoroff organized a summit that brought together more than one hundred university leaders to discuss how U.S. universities can be more effectively used in international development. Colglazier created the Networks of Diasporas in Engineering and Science (NODES), which convenes and supports communities of scientists and engineers that have settled in new locations, away from their ancestral homeland.²⁹ He has also worked with the Bureau of Educational and Cultural Affairs to increase U.S. embassies’ awareness of scientists traveling abroad and how they can be part of public diplomacy efforts.

Perhaps foremost of the STAS impact since it was launched in 2000 is, as stated by Reynolds, the heightened visibility of science as a critical element in foreign policy and the increased capacity of the department to execute science-related

initiatives in international affairs. He noted that simply having a scientifically literate representative from the Department of State can make a strong impression on other agencies: “We have these talented people who can sit down in the interagency and be really conversant and clear-minded about where we need to take a particular S&T issue or element in foreign policy.” Neureiter remarked, “I honestly think there’s been an enormous increase in the appreciation of science in State. For example, it has been a very useful instrument for building cooperative relationships with other countries; it has played an important role in dealing with threats after 9/11; it has strengthened State’s capacity in the global fight against HIV/AIDS and viral outbreaks such as SARS or bird flu; and it has contributed to assessing the economic power and potential of other countries.”

The Future of STAS

S&T and its role in international affairs have developed greatly since 2000, and that trajectory is set to continue. Recommendations by the interviewees for how STAS can continue to succeed include the following:

- increasing the diffusion of personnel with scientific and technical expertise within the Foreign Service, including having more scientists and engineers join the Foreign Service;
- coordinating more closely with the White House Office of Science and Technology Policy;
- using interagency committees to do more strategic thinking and planning regarding science, technology, and engineering (perhaps by regularizing the now-periodic meetings of senior science advisers of the executive branch);
- continuing to recruit the next generation of scientists and engineers to enter the Department of State;
- inviting the science and technology adviser to the Office of Policy Planning meetings, which would demonstrate an increased value of S&T at the department, both symbolically and in practice, because of the high decision-making power of the Office of Policy Planning;
- increasing the STAS budget in order to address its resource constraints and perhaps allow it to conduct some of its own studies;
- promoting greater collaboration between OES and STAS; and
- giving the science and technology adviser the rank equivalent to that of assistant secretary.

With U.S. foreign policy confronted by challenges that are increasingly related to S&T, the science and technology adviser to the secretary of state is playing an essential role in helping the Department of State meet those challenges, today and in the future. **SD**

Endnotes

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