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Scientific Drivers for Diplomacy

Rush Holt

WHEN the American Association for the Advancement of Science (AAAS, publisher of *Science & Diplomacy*) formally launched its science diplomacy efforts in 2008 with the creation of the Center for Science Diplomacy, there was concern by some in the scientific community about the appropriateness of attaching the term “diplomacy” to “science.” The argument was that somehow “diplomacy” would dilute or even divert “science.”

This concern was evident in 2009 at the first international conference on science diplomacy, which AAAS cosponsored with the Royal Society in London. The report of the conference, *New Frontiers in Science Diplomacy*,¹ described a wide range of opportunities for science and scientists to interact with and affect diplomacy and diplomats, from the soft power of science to fostering science diplomats. However, in its conclusion, it also warned of “avoiding politicization.”

Nevertheless, over the past seven years the term “science diplomacy” has become more widely used around the world and it is arguably more accepted.

Beyond providing knowledge and applications to benefit human welfare, scientific cooperation is a useful part of diplomacy—scientific cooperation to work on problems across borders and without boundaries, cooperation made possible by the international language and methodology of science, cooperation in examining evidence that allows scientists to get beyond ideologies and form relationships that allow diplomats to defuse politically explosive situations.

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The early emphasis of science diplomacy as a concept, at least here in the United States, was on the role that science and international cooperation could play in support of diplomacy. Given the American tradition of diplomats being scientists and vice versa since its founding by Benjamin Franklin and Thomas Jefferson, there has been science diplomacy throughout U.S. history. More recently, the Cold War provided examples to remind policy makers of the important contributions of scientists and scientific cooperation to U.S. foreign policy priorities. The scientific community supported détente with the Soviet Union through space cooperation (such as the Apollo-Soyuz handshake), kept the Cold War from turning into a hot one with nuclear disarmament agreements, and even helped end the Cold War by way of American and Soviet physicists (the role of Evgeny Velikhov and other physicists as Mikhail Gorbachev's advisors is described in an article by U.S. physicist and arms-control expert Frank von Hippel in *Physics Today*²).

In the late 1970s, normalization of diplomatic ties with the People's Republic of China was incentivized by, among other things, jump-starting scientific cooperation with the United States and with its technologies for modernization.

When President Barack Obama, at the beginning of his first term, wanted to demonstrate a "new beginning" with the Middle East, science and scientific partnerships were an important pillar in his Cairo speech. His administration launched a program that sent, and continues to send, "science envoys," prominent U.S. scientists, around the world to help identify opportunities for partnerships. AAAS has been honored to have five of its past and present board members and leaders, including the current AAAS president, Geri Richmond, as well as the former editor-in-chief of *Science*, Bruce Alberts, serve as envoys.

And the April 2015 framework nuclear deal between the P5+1 countries and Iran once again shows the importance of the role of science and technical experts in these complex diplomatic negotiations. The technical negotiations between U.S. Secretary of Energy Ernest Moniz and the head of the Atomic Energy Organization of Iran, Ali Akbar Salehi, as well as involvement of other nuclear scientists, have been publicly described as key to achieving the framework agreement. *The Telegraph*, a British newspaper, captured this with an article entitled "MIT, A Whiteboard and Nuclear Physics: How the Iran Deal Was Struck."³

Science can clearly aid in foreign policy initiatives. But how does the science community benefit by becoming involved in international relations? The scientific drivers of this new diplomacy need greater recognition, which is the focus of AAAS's conference "Science Diplomacy 2015: Scientific Drivers for Diplomacy."

To say that science is international is almost trite. Scientific methodologies are widespread and scientific resources, personnel and research funding, are distributed across the whole globe. Crossing borders, whether it is data, minds, or equipment, is increasingly necessary to advance scientific knowledge and to find solutions to global challenges.

In the journal *Science*, internationally co-authored papers are now the norm—they represent almost 60 percent of the papers. In 1992, it was slightly less than 20 percent.

In the field of physics, international collaboration is the norm, sometimes on massive scales. This is the case whether physicists are probing the most basic elements of matter with the Large Hadron Collider at CERN or understanding the origins of the universe with the Square Kilometer Array being constructed in Africa and Australia. Fusion energy will have a chance of success only by bringing together minds and resources from around the world. Additionally, global challenges such as climate change and pandemic threats can be addressed only with close international cooperation within the scientific community and between the scientific and policy communities.

This is a critical year for a global agreement on climate change. The Intergovernmental Panel on Climate Change has been a model for global coordination of reviewing the science that is critical to the policy decisions on a new framework. At times, the science has led to diplomatic friction. But ultimately, this will lead to international understanding and agreement. Leading up to the official Conference of the Parties in December, an international scientific conference will be held this summer in Paris that will be an opportunity for the scientific community to raise and discuss the issues—causes, impacts, and what the science suggests about remedies—shaping the post-2015 climate governance framework.

The recent epidemics of Ebola in several west African countries, dengue in the tropical and subtropical regions including the Caribbean, and MERS in the Arabian Peninsula and the Republic of Korea—and, of course, the global threat of pandemic influenza—all underscore the international cooperation needed to fight infectious diseases. This is important not only in monitoring and medical interventions but also for research into pathogen biology, diagnostics, and treatments.

And the area of infectious diseases isn't the only area that requires better cooperation. President Obama announced last year a national strategy to combat antibiotic resistance, which threatens the health and economic wellbeing of the country. Last month, the national action plan was released and international collaboration was one of its major pillars. During the recent AAAS Annual Meeting in San Jose, California, Dame Sally Davies, the UK's chief medical officer, warned of the global threat posed by antimicrobial resistance, second only to climate change, she said, and the need for a global response. Such a response needs to include research and development into new antibiotics and diagnostics and a better understanding of the evolution and mechanisms of resistance.

Technology has made crossing borders easier: from the revolutions in global communication and information sharing to faster and cheaper transportation modes of people and goods. This certainly has benefited and continues to benefit international scientific cooperation. Yet at the same time, while crossing borders is

less limited by technology than ever before, the governance over cross-border activities is becoming more important as a rate-limiting step. In other words, diplomacy and the policies and regulations governing how people, information, and things cross and interact across borders are ever more important to advancing science and addressing global challenges.

For example, the embargo between the United States and Cuba has interfered with science cooperation since it was imposed more than fifty years ago. Scientists face barriers to attending conferences and conducting research. While such activities are not impossible, as demonstrated by several AAAS-led delegations to Cuba over the past two decades, these restrictions have also resulted in limits to cooperation on a variety of important scientific areas that could benefit both countries. Infectious diseases and hurricanes have not paused at the border to honor the embargo. And if we are to tackle these major issues, we will need scientists from both countries working on them...together. Now, with the intent to normalize relationships between the two countries, scientific exchange and scientists who have experience will be on the forefront of carrying this normalizing forward. The policy changes recently announced by President Obama and President Raúl Castro will enable much easier communication and travel.

Scientific collaborations and partnerships develop for many reasons: to access expertise, facilities, or the local environment in another country, or to pursue shared interests in a particular scientific problem. I gave the example above that the majority of *Science* papers are now internationally co-authored. Across all the Science Citation Index journals, international co-authorships have risen by more than 50 percent from 16 percent in 1997 to 25 percent in 2012. Those trends are increasing. While the increase in international collaborations is promising, to truly knit together a global scientific community that can cooperate to advance science and address global challenges, there needs to be organized support for emerging scientific communities, countries that are in the process of building indigenous science capacity.

In science diplomacy, for example, AAAS has partnered with The World Academy of Sciences, or TWAS, which focuses on the developing world, to hold an annual weeklong course for scientists, administrators, and policy makers from developing countries to help them better understand the important role of science and scientists in international policies. The course has worked well and should be replicated in various parts of the world.

The ongoing globalization of science reinforces the need to bring more scientists into discussions of international policies. Policies can promote or hinder collaboration. The scientific community must play a role in advocating for policies that remove barriers and connect scientists. Fortunately, many in the scientific community are already working together to do just that. **SD**

Endnotes

1. *New Frontiers in Science Diplomacy* (London: Royal Society and the American Association for the Advancement of Science, 2010), <http://royalsociety.org/policy/publications/2010/new-frontiers-science-diplomacy>.
2. Frank von Hippel, "Gorbachev's Unofficial Arms-Control Advisers," *Physics Today* 66, no. 9 (September 2013): 41.
3. Richard Spencer, "MIT, A Whiteboard and Nuclear Physics: How the Iran Deal Was Struck," *The Telegraph*, April 4, 2015, <http://www.telegraph.co.uk/news/worldnews/middleeast/iran/11516061/MIT-a-whiteboard-and-nuclear-physics-how-the-iran-deal-was-struck.html>.

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