Science and Technology: A Bridge Between Cultures and Nations

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George Atkinson came to the U.S. Department of State in August 1981 as a Senior Fellow for Science, Technology, and Diplomacy, sponsored by the American Institute of Physics. In 2003, then-Secretary of State Colin Powell named him to become the second Science and Technology Adviser to the Secretary of State. He remains a professor of chemistry and optical sciences at the University of Arizona (on leave).

Science and technology advances have immediate and enormous influence on global and national economies and international relations, and nations are largely shaped by their expertise in and access to science and technology. Those who create technology have a different set of options for the future than those who must purchase their technology. Scientific research increasingly defines material futures by identifying many potential technological opportunities and the challenges to social and governmental institutions in converting those opportunities into real-life advantages.

The scientific advances of our time are different than those of the 20th century because they have an immediate and often enormous influence on the global economy and therefore a direct influence on international relations. Many, if not most, nations have lifestyles, economies, and societal structures largely influenced by their expertise in science and technology and secondarily by their access to science and technology.

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An international aeronautics fair in Bremen, Germany. Successful innovation depends increasingly on global science and technology cooperation.

Many of the major science and technology advances of our time also offer remarkable new opportunities and challenges to our social institutions and ethical principles. In an increasingly global world, accurate scientific information must inform foreign policy and foreign policy must promote justified science goals. Since these opportunities have global impact, successful innovation will increasingly depend on global science and technology cooperation.

Courtesy of the State Department

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The international role of science and technology is continuously changing. Throughout most of the 19th century and at the outset of the 20th, Europe was the dominant power in scientific research and technology development. Beginning in the mid-20th century and at the outset of the 21st century, the United States has evolved into the dominant global power in scientific research and technology development.

History teaches us that leadership in science and technology is transitory. The fundamentally collaborative nature of science, coupled with the trend toward international partnerships, will ensure that science leadership is much more evenly distributed among nations in the future.

Why are science and technology so important in worldwide conversation today beyond their economic importance? Because they also involve cultural changes, and we as nations have not always paid enough attention to them. The fundamental concepts that most scientists and engineers extract from their education are the same that foster and sustain democratic societies—the meritocracy of ideas that transcend borders and cultures; transparency, in the form of publication of results; and the importance of public education, which begins any discussion concerning innovation.

Science-based decision making is the way of the future. We are likely to have few choices. We cannot legislate changes in the weather, in engineering principles, or in infectious diseases. So we must be able to assure ourselves and publicly reassure our constituents that we have started with information that is well justified, and be willing to share that information without regard to national borders.

The science and technology enterprise must come with the assurance of political and economic stability because innovation can operate only when long-term goals can be realized. If we remember that science is best done collaboratively, we will have a much better vision of how to improve it. In the global science and technology enterprise of the future, it will be best if we all succeed together. ■