

What Does an AMS Congressional Fellow Do?

I had the honor and pleasure of serving as the 2006–2007 AMS Congressional Fellow. I was one of 32 Science Policy Congressional Fellows in a program run by the American Association for the Advancement of Science (AAAS). Each AAAS Fellowship is funded by a different scientific or engineering society. For example, the American Physical Society funds two fellows each year, the American Institute of Physics funds another, the American Nuclear Society two more, and the American Geophysical Union yet another. The AMS funds the lone fellowship for a mathematician. This is money well spent. The fellowship will pay dividends over the long term (like pure mathematics does), as mathematicians become a regular voice in the policy process in our country.

I served my fellowship with the House of Representatives Committee on Science (renamed Committee on Science and Technology in January 2007), working for the Subcommittee on Research (renamed Subcommittee on Research and Science Education in January 2007). Among the permanent staffers for the Committee are three Ph.D. physicists, all former AAAS Fellows. The Subcommittee has authorization jurisdiction over the National Science Foundation, and the focus of my job was to analyze programs at the NSF, especially those involving education. My fellowship came at an opportune time. Rep. Bart Gordon (D-Tenn), chair of the Committee, introduced a number of bills involving the NSF on January 10, 2007, in the opening days of the 110th Congress. Those bills later became part of the 21st Century Competitiveness Act of 2007, which President Bush signed into law on August 9, 2007, as my fellowship was ending.

Chairman Gordon's legislative agenda for 2007 was in large part to implement the recommendations of an influential National Academies report entitled *Rising Above the Gathering Storm; Energizing and Employing America for a Brighter Economic Future*. This report recommended major increases in national investment in science, technology, engineering, and mathematics. The report was adopted on Capitol Hill by both major political parties as a blueprint for advancing national prosperity, and the current administration's American Competitiveness Initiative picked up on many of the recommendations from the report as well.

The word "competitiveness" is popular on Capitol Hill these days, referring to America's ability to compete with the rapidly advancing third world amid globalization. It is an unfortunate term, in my view. I prefer the word "prosperity", which puts the emphasis on the absolute rather than relative health of our nation.

The 21st Century Competitiveness Act runs several hundred pages. The principal focus in my office was Title 7, a reauthorization of the National Science Foundation. This Title sets policies, priorities, and budgets for the NSF for the next three fiscal years. Although the NSF is a widely admired agency, supported from all corners, the reauthorization legislation was not without controversy. Almost any word in those hundreds of pages can serve as a flashpoint for passionate disagreement. Settling on an annual rate of NSF funding increase of 11% was not easy.

It is important to understand that such increases are merely authorizations, not appropriations. Government agencies are funded in a two-part process. The first part, authorization, is often done several years at a time, but the budget numbers there are merely upper bounds (in theory) for the final numbers. The second part, appropriation, is an annual process (in theory), but appropriated dollars can be smaller than authorized amounts. We can expect annual political fights to appropriate to the NSF the dollars authorized by the 21st Century Competitiveness Act.

My day-to-day tasks around the office included meeting with a variety of interested associations, organizing legislative hearings, publishing hearing reports, drafting talking points, writing scripts for committee mark-ups, composing memos supporting various policy positions, providing support for the bills on the House floor, and assisting with the negotiation of a compromise bill in the House-Senate conference.

Not everything in the final bill was implemented just as the Gathering Storm report envisioned. In particular, the Gathering Storm report recommended that "physical sciences, engineering, mathematics, and information sciences" be areas of special emphasis for government investment. But the legislative language to implement this priority got watered down in several stages. The final bill designates for priority treatment at NSF "physical or natural science, technology, engineering, social sciences, or mathematics, or [areas] that enhance competitiveness, innovation, or safety and security in the United States".

In the end, I came away from the fellowship recognizing the vital role that policy plays for mathematics as well as the important role that mathematics plays in setting policy. If mathematics were just an abstruse study of an unreal world, beautiful but disconnected and irrelevant, then there would be no reason for our government to fund it or our children to learn it. It is imperative that the mathematics community impresses upon policy-makers that mathematics is a tool for solving human problems, for improving the human condition, for advancing national prosperity. Only when this is fully appreciated does supporting mathematics become a critical element of our national competitiveness (or rather, prosperity) policy.

Ask yourself why the administration's FY2007 budget request gave the Division of Mathematical Sciences at NSF a 3.2% increase while the Division of Physics got a 6.6% increase. The answer is that these numbers represented priorities established by policy-makers at that time. Now ask yourself how the mathematics community can influence such priorities. One way is to continue to support the AMS Congressional Fellowship program, so that more people in the business of setting national priorities learn to recognize the value of mathematics and mathematicians.

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