

A Time of Opportunity at NSF

The Division of Mathematical Sciences (DMS) at the National Science Foundation (NSF) relies on the perspective and fresh thinking of temporary program directors, or “rotators”, to help manage its programs and grant proposals. These rotators are recruited from the universities for one- or two-year terms. According to Bob Eisenstein, who heads the Directorate for Mathematical and Physical Sciences (MPS), good rotators are always in short supply and are needed to apply this fall for positions that will become vacant the following fall. The term of Philippe Tondeur as director of DMS will end in July 2002, when a new director will be needed.

The presence of active researchers as DMS program directors has grown more important. The NSF budgeting process begins with a thought exercise of imagining cut-backs of roughly 20 percent; directors are then asked how they would build that amount back by funding the most exciting new ideas. The presence of rotators, fresh from their own research programs, contributes to the success of this process.

Rotators typically manage research programs that include but are not confined to their specialty. Of current DMS program directors, thirteen are rotators and eight are permanent staff, many of whom are former rotators. To fill each position, DMS finds that it has to contact about twenty people—a substantial effort.

Are the DMS rotators worth this effort? I would argue that the answer is yes. Permanent staffers are, of course, essential. These are the people who provide continuity, understand NSF structure, contribute to NSF’s scientific and intellectual mission, and see new ideas through. Rotators, however, are NSF’s eyes and ears into the research community. Only when program directors are intellectually involved in mathematics does NSF have the insight to pursue the most promising directions.

There is no doubt that the rotator’s job is demanding. DMS receives about 2,000 proposals a year and supports close to 70 percent of the nation’s mathematics research at universities. (This figure has increased with the decline in support from the Department of Defense.) Each program director handles about one hundred proposals a year, choosing reviewers, sending proposals for review, deciding on awards, documenting decisions, and writing well-documented (and diplomatic) refusal statements.

This heavy workload is one reason it is difficult to recruit top-caliber rotators, but the more common reason is that people do not want to interrupt their research at what may be the height of their careers. Most rotators find some time for their own work (NSF provides personal time, which some save to use in the summer), but determination is required to sustain research momentum.

Even so, most rotators value their time in Washington. Some find their own research is enriched by evaluating proposals and planning new initiatives. Others broaden their understanding of their field and help to define the future of mathematics. Still others find that making new professional contacts and evaluating programs outside their specialty is excellent preparation for a chairship or other senior position. And almost no one takes a pay cut to come to NSF; after cost-of-living grants, some people actually experience salary increases.

For some, the broader rewards are especially meaningful. They see how the mathematics community is viewed in Washington and have a chance to correct misperceptions. They learn empathy for those submitting proposals and find chances to build bridges between the research community and a bureaucracy of daunting size. We all hear complaints about the funding process; the rotators, with roots in the research community, can explain the system from the inside and press for changes when needed.

The time is propitious for fresh thinking about our discipline. For the past four years Bob Eisenstein has identified increased investment in mathematics as the highest priority for MPS, bringing steady budget increases to the “poor cousin” of science and engineering. This year mathematics has received more substantial budget increases than most areas of NSF, rising by more than 16 percent to \$141.5 million. And NSF director Rita Colwell has strongly endorsed a foundation-wide “focus” on mathematical sciences to strengthen fundamental mathematics, the connections between mathematics and other disciplines, and mathematics education.

While it is true that the current increase builds on a low base and must be seen partly as a counterbalance to the large mathematics cuts in other agencies, it does bring new opportunities to NSF. Bob Eisenstein notes that NSF hopes to “remake” mathematics by improving its infrastructure, increasing the number of students, and enlarging grant sizes and duration. Fundamental mathematics and statistics, as well as the education of young mathematical scientists, will remain the core of DMS activities; at the same time some of the increase will go to emerging multidisciplinary fields, such as mathematical biology, information science, and string theory. At this time of new energy, good rotators will play a critical role in directing that energy toward fields of high momentum and promise.

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