# Advocating for Mathematics

It is hard to imagine how our profession would operate without federal grants. These grants support a wide range of activities in such diverse areas as mathematics research, training of graduate and undergraduate students, interdisciplinary activities, K–12 education, curriculum development, and collaboration with industry. Thanks to federal support for mathematics, we clearly accomplish much more than we could otherwise accomplish.

First-time review panelists are inevitably dismayed to discover that there are more good proposals than money available to fund them. I was warned about this, yet when I joined my first review panel I was still quite shocked at the sheer number of very good ideas, as well as interesting and worthwhile projects that go unsupported. The large numbers of competitive grant applications that cannot be funded due to budget constraints point to the fact that we could accomplish even more with increased federal support for mathematics. Certainly mathematicians as a group would be overwhelmingly in support of such a proposition.

However, mathematicians are not the ones ultimately making the decisions about federal support for mathematics. The decision-making process involves many people, including those at federal agencies such as the National Science Foundation (NSF), their advisory committees, members of the mathematics community, supporters of mathematics in related fields, and finally members of Congress. Although the structure of the dialog each year is heavily influenced by the current political climate, the process itself repeats annually, providing an element of predictability. The downside is that the budget is reworked from scratch annually, so that securing funding for mathematics is a continuous process that can never be taken for granted. In fact, the NSF mathematics budget was lower in 2006 than in 2004, and this occurred during a period when the mathematical sciences had been designated a priority area within the NSF.

As mathematicians, we are trained to apply rational processes based on facts. But that's not how the federal budget process works. Many organizations and interest groups hire lobbyists to influence political outcomes. Within NSF (which provides almost 80% of federal university-based support for basic research in mathematics), mathematics in a sense competes with the other sciences for their share of the resources. Other sciences (chemistry and physics, for example) have dramatically larger lobbying efforts than mathematics has. My point is that the process is quite competitive and we are collectively not taking enough action even while others do.

I hope that you will feel motivated to take some action in support of mathematics! This is a particularly good time since the Bush administration has pledged to increase American competitiveness and an election is coming up soon. What can an individual mathematician do? Here are a few simple suggestions.

1. Contact Sam Rankin at the AMS Washington office (`smr@ams.org`) and ask to be put on the AMS contact list. You will receive informational emails about federal support for mathematics in addition to action alerts asking you to contact Congress.

2. Communicate with members of Congress about federal support for mathematics by letter, phone, fax, or email. If you are responding to an AMS action alert, the alert will contain specific instructions on how to proceed. The process will take much less time than, say, reviewing a grant proposal, with the potential for an even greater benefit to mathematics since you will be playing a role in helping support many more mathematics proposals.

3. Visit one of your members of Congress. This is a good time to explain to members the value of federal support for mathematics. Some lobbying events are organized by AMS in Washington DC, or you can meet with your representative in his or her home office. Are members of Congress as excited as I am about new developments in my research area? Certainly not. But they are likely to be concerned about societal issues related to mathematics, so are receptive to hearing about such ideas as the importance of mathematics in innovation, the importance of a mathematically literate workforce, and the huge influence that mathematics has on science and technology. You may know "good news" stories about how federal funds supported an important and interesting mathematics project on your campus, in which case you should tell them about it! Mathematicians are uniquely qualified to advocate for mathematics in these ways. If we don't do it, who will?

4. My final suggestion is indirect. Think of yourself as an ambassador for mathematics. When nonmathematicians ask you about mathematics, have at the ready a description of a mathematical activity, perhaps one that you are involved in, formulated in a way that is interesting to nonmathematicians. We are better off as more people are exposed to mathematics by mathematicians in a way that gives them an enhanced appreciation for the value of mathematics.

I find advocating for mathematics very gratifying, especially so when we are successful in our objectives during a funding cycle. For me, participating in this process annually is a natural extension of my passion for mathematics. I hope you will join in this ongoing effort in the years to come.

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## A Conference in Gaza

The First International Conference on Mathematical Sciences: Al-Azhar University, Gaza, was held 15–17 May, 2006 (http://www.alazhar-gaza.edu/ICMS/). The main objective of the conference was to get an international scientific gathering at Al-Azhar University in order to overcome the isolation of the Palestinian people and scientific institutions, and to involve the Palestinian researchers in contact with international researchers in their fields. The conference focused on a variety of mathematical topics. I attended this conference accompanied by my wife, who is not a mathematician.

The conference was extremely well organized despite the exceedingly difficult circumstances. Although the organizers did everything possible to facilitate the entry of foreign participants, entering Gaza was an arduous process. Conference organizers urged foreign participants to enter Gaza from Egypt, via the Rafah border crossing. My wife and I waited over twenty-four hours at the border. After waiting thirty-six hours, some participants were finally admitted and others refused entry. Some participants, while not refused entry, had not yet received permission to enter after two days and so returned to their distant homelands, since the conference was in any case coming to a close. Both entrance to and exit from Gaza are under the effective control of Israeli authorities. No reasons were given as to why requests for entry were delayed, refused, or simply never answered.

The conference was a success. With very few exceptions, the scientific level was quite good. Palestinians and foreigners were able to get acquainted and to exchange very interesting results. I am very glad that I attended. The conference was so successful that they are already planning the next one. I urge mathematicians to consider attending.

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## Mathematics Is Better Off Without a Fellows Program

The AMS Council has been refreshingly honest about what to expect from its proposed Fellows Program (FP). So honest that I feel embarrassed at the blatant expediency of some of its goals (*Notices*, page 755). Consider, for instance, item 4: "To make mathematicians more competitive ... when they are being compared with colleagues from other disciplines." Isn't it a boon that mathematicians have no avenues for squandering time jockeying for a plethora of resume-padding awards? Does your dean or provost balk at honouring the sort of faculty whom the FP proposes to elevate because s/he does not tout a long list of (mostly supernumerary) awards? If so, he ought to be shamed for turning his back on intellect and becoming a mere tracker of plaques and medallions! Those of you who are empowered to attend Faculty Senate meetings should take on the task of conveying to your deans the culture of unworldliness that, to a great extent, still pervades mathematics.

Why can't we just submit to the norms of our deans and provosts and ratify the FP? Firstly, because it would be a blow to productivity, and it would, perversely enough, eat into the schedules of those who are most likely to have a very positive impact on their disciplines. David Eisenbud elaborates upon this in his essay (*Notices*, pages 757–758). A second issue is that the composition of the Fellowship risks getting skewed towards areas of mathematics that are the most talked-up—not because other areas are less important, but because the said areas have more vociferous proponents. A sample mechanism: readers are invited to look at Item 1 under the initial-implementation plan, and tally various fields/topics represented by the set of Invited Addresses at AMS meetings of recent past…Concerning Ronald Stern's argument: isn't it a bit naive to say that "millions of readers" will be impressed by news of a math honoree and that "there will be discussions over coffee…" (*Notices*, page 760)? The people about whom Stern writes—the NPR-listening local philanthropes, the Berkshire-Hathaway-stakeholder types, the school-board supremos—form a minority that habitually scans the local and university-related news for "talking points" meant to be aired at the socials that he describes! Let alone mathematics; it isn't clear if such people have lent sustained support to any media-friendly, but essentially esoteric, discipline. Are we willing to approve of a potentially divisive (given the split in the Council's vote) programme on the assumption that "newsy" initiatives such as the FP will make the aforesaid individuals rally in support of mathematics?

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## Some Thoughts on Fellows Program

The August 2006 *Notices* introduces a proposal for an AMS Fellows Program. I, a long-time AMS member and Fellow of the American Statistical Association (ASA), would like to make some comments:

(1) I think a Fellows Program can be helpful. It is most useful in dealing with people who know enough to understand what a Fellow is but not enough to be able to accurately evaluate the Fellow's standing from a vita (or from the Fellow's reputation).

(2) I am skeptical about using all Fellows to elect new Fellows. The usual practice is to have a Fellows Committee that goes over the written documentation for each proposed person in great detail.

(3) One must be careful that "grade inflation" does not set in. The ASA, for example, limits the number of new Fellows in any one year to 1/3 of one percent of the total membership.

(4) The AMS needs to be explicit about whether research and public service more closely identified with MAA, SIAM, ACM, IEEE, IMS, ASA, etc., would count toward becoming an AMS Fellow.

(5) There is one problem that all Fellow Programs have that has never been completely solved. It is always an advantage to have friends, colleagues, and acquaintances who are willing

and able to write strong letters of recommendation and provide other documentation.

I look forward with interest to see how this proposal develops.

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## Chinese-American Mathematicians

When I saw the article "An Invisible Minority: Asian Americans in Mathematics", my first reaction was "it's about time somebody else noticed!" When I received my Ph.D. in 1983, I assumed that there were many others like me. I do not know when I was first asked about other Chinese-American mathematicians, but when I thought about it, I realized I knew only one other Chinese-American mathematician of any age, Ben Chow (now at University of California, San Diego) and only one other Asian-American mathematician, Eriko Hironaka (Florida State). Afterwards, I marveled over how long this remained true. Even now, I have met very few Chinese-American mathematicians.

Naturally, everyone with whom I shared this observation and I puzzled over why. I am the son of a mathematician, and, when I was growing up, all of my parents' friends—all Chinese scientists, mathematicians, and engineers—expected their children to excel in academics and go on to become scientists, engineers, and mathematicians. That not a single one that I knew—except Ben Chow—became a mathematician just never made any sense to me. Although the discrimination described by Goel is very real, I do not think it had much significance for most children of professors. If anything, the social isolation I felt growing up drove me even deeper into solitary academic pursuits like mathematics. The other common explanation is that most of my peers preferred to pursue the same ambitions as their non-Chinese friends and did not want to follow the nerdy path taken by their parents. That is certainly true, but you would still expect more than two Chinese-American mathematicians to emerge from this population. I continue to be baffled by why Chinese-American mathematicians are so scarce, but I am happy that this striking phenomenon has been noticed at last. I suggest that more research needs to be done, before we draw any conclusions about why.

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