

# Presidential Views: Interview with Eric Friedlander

Every other year, when a new AMS president takes office, the *Notices* publishes interviews with the outgoing and incoming presidents. What follows is an edited version of an interview with Eric M. Friedlander, whose two-year term as president begins on February 1, 2011. Friedlander is Dean's Professor of Mathematics at the University of Southern California. The interview was conducted in fall 2010 by *Notices* senior writer and deputy editor Allyn Jackson.

An interview with past president George Andrews appeared in the February 2011 issue of the *Notices*.

**Notices:** *Today young mathematicians, and in fact professionals in many different areas, are not joining professional societies in the numbers that they used to. Can you comment on this?*

**Friedlander:** In the past few months, topics related to this issue have been concerning me, and I am trying to suggest some changes that might help the AMS in this regard. At the moment the AMS has many Nominee Members—graduate students who receive free membership. A lot of them don't even know they are members. They are often puzzled by the arrival of the *Notices* and the *Bulletin* in their mailboxes. This Nominee Program should do more to sustain our pipeline. We have a working group that is examining the program and will suggest some changes.

I think the most important thing that's on the table, but that hasn't been approved and will require some funding, is putting into place a program of student chapters. SIAM [Society for Industrial and Applied Mathematics] already has such a program. The idea would be that a graduate program could apply to start a student chapter, and the AMS would provide a small amount of funding to invite speakers and maybe for student travel. This would be, of course, an expenditure by the AMS, but I think it would be well worth it. We could also identify students in graduate programs to represent some of the things the AMS is interested in. So, for example, rather than reaching students through mass mailings or relying on them to look at certain blogs, we would have contacts who could encourage other students to participate in various activities. They might provide a way to digest and personalize some of the information that is available about how to apply for jobs, how to write a thesis, where to submit papers, things like that. So part of the answer is to engage the newest generation directly in activities that are in their own interest and to do it through the AMS.

**Notices:** *Publishing and communication in mathematics, and in the sciences more generally, is changing rapidly. What do you see as the main issues in publishing that the AMS needs to address?*

**Friedlander:** Most of the financial activity of the AMS is involved with publishing. *Math Reviews* is the AMS's most vital publication, and it seems to be thriving. It is the one that produces the most revenue and also costs the most. There is also the AMS book program, which is good but is not one of the big players—the AMS is not doing things like producing calculus books. We're about to institute e-books, and it is not so evident what is the future of books versus e-books, especially in a subject like mathematics. But there is a future for mathematics books in print, and I think the AMS will try hard to play a significant role in that future. Continuing the AMS book program requires a lot of participation by members. For example, I am on the editorial boards for two of the AMS book series, and that takes time.

This brings me to journals. The AMS has anticipated, or feared, a loss of journal subscriptions for many years. And that never really happened. Journal subscriptions have been fairly stable, despite the changes in journal publishing brought about by electronic communications. It costs almost as much to produce an electronic journal as a print journal. The AMS will continue to produce journals in a traditional way, at least for the foreseeable future. But it is harder to see what that future is. There are at least two things that can change. One is the possibility of introducing a more interactive aspect to journal publication, so that readers can comment on articles—sort of like a blog for each



Photograph by Tom Stio Photography.

Eric Friedlander

article. That's not something that's happening now in journals. A second influence on the future is mathematicians' concern about the cost of journals. There is quite a bit of disquiet prompted by lack of funds in university library budgets. Some mathematicians are starting up journals on their own, and others are moving journals from one publisher to another to keep prices down. The AMS is one of the less expensive publishers, probably the least expensive of the mainstream publishers. But I can see that many journals might not thrive in the future, and with financial pressures, the result will be a couple of very large publishers bundling many journals. Some of us view bundling as an unfair marketing trick: You bundle journals that are good with journals that are not as good, and the university has to buy the whole bundle.

**Notices:** *How well is mathematics research funded in the United States? What role can the AMS play in ensuring that funding is adequate?*

**Friedlander:** It's very hard to find the right frame of reference to answer this question. The United States does have some funding for mathematical research, which I think is extremely important. Crass as it may seem, I think many people go into mathematics because there is the chance of some funding and some recognition, and they continue because of this recognition and funding. The National Science Foundation [NSF] is essentially the only government agency that does large-scale funding in mathematics, and the AMS has very little influence with the NSF. The individual mathematics program directors, who deal directly with mathematicians, are accessible and seem to have their funding priorities similar to ours. But the political pressure at the top of the NSF creates some disconnect. So many of us aren't very pleased with the directions of funding, but there is very little it seems we can do to influence it.

**Notices:** *What directions are you talking about specifically?*

**Friedlander:** One thing some of us tried to achieve was to increase the number of grants and make them smaller. Others argued that a) this was expensive, b) it looked bad compared to the other sciences to say that mathematics could be funded cheaply, and c) the mathematics that is really excellent should be fully funded, whatever "fully funded" meant. Many from the mathematical community wanted a more widespread funding mechanism, but the NSF said this wasn't going to be the case. Possibly the NSF reacted constructively, by creating more NSF institutes to support more people in that way, rather than directly funding principal investigators. Outside the NSF, a recent positive development is the new small grants program launched by the Simons Foundation [see "New Program at the Simons Foundation", *Notices*, November 2010, page 1324].

Also, one feels that the NSF is putting more emphasis on applications of mathematics and interdisciplinarity and is always seeking new ways to spend its money. Perhaps mathematics is somewhat conservative, in that many of us like to go off on our own and just do mathematics, maybe with a couple of other people. We are not working on some new, hot program. I am really speaking here more from the point of view of the mathematical community than from the point of view of the AMS. There is a great sense that we are very fortunate that the NSF supports us. There is also a great sense that we need a lot more money.

**Notices:** *Raising public awareness of mathematics is an important goal of the AMS. Perhaps things have improved a bit, with movies like A Beautiful Mind and TV shows like NUMB3RS. How well do you think the general public understands the field?*

**Friedlander:** A mathematician told me the following anecdote. A college student had to take the average of 1.2 and 1.2. He got out his calculator and plugged in 1.2 plus 1.2 and divided by 2, and got 1.8. He didn't believe the mathematician that the average of 1.2 and 1.2 is 1.2. So finally the mathematician showed the student how to use the calculator by putting in parentheses. And then of course the student was convinced.

I'm not sure the general public does have much basic sense for numbers and mathematics. One thing that disturbs me is that some mathematicians despair of conveying any sense of mathematics, which is very sad. I think essentially everyone can get some sense of what mathematics is and how to use it and what it is important for. The AMS can do some good by raising the visibility of mathematics and helping in education. The AMS does reach out to a broad audience, for example, on its website, which is improving and has some information about what is happening in mathematics. I think the best thing the AMS does by far is the *Notices*. It could easily be in all doctors' and dentists' offices.

**Notices:** *Really?*

**Friedlander:** It could be. The *Notices* is great. Maybe I am biased because my wife Susan is a long-term participant in the *Notices*, although she is now the editor of the *Bulletin* and less involved in the *Notices*. The AMS also produces educational materials such as Mathematical Moments, it has a Washington presence, it has people in its Public Awareness Office trying to put out the word about prizes, the Math Olympiad, things like that. All these things help. But I think the general lack of numeracy in society is an overwhelming problem.

**Notices:** *This brings us to mathematics education, which in the United States is a big, complicated enterprise with lots of players. How do you see the role of the AMS here?*

**Friedlander:** I just came back from a meeting of the Committee on Education. It was the first time

I had attended. I don't know enough to know who is playing on which side of the "Math Wars". I am really an innocent, and I was trying to understand some of the controversy. I made a presentation at the meeting saying that I would like the AMS, quite possibly through a working subgroup of the Committee on Education, to increase attention toward graduate education. That is the aspect of education I know best, and I think it is certainly an aspect the AMS could address better than other organizations. I am not saying the AMS should withdraw or put less effort into K-12 education, but I would like to direct some AMS effort into Ph.D. programs especially, and also Master's programs. This ties in with our first topic of graduate student mentors. There are things the AMS can do to help graduate programs and help training of Ph.D. and master's degree students. It is past time the AMS got more involved in such matters.

*Notices: What other specific projects do you want to work on as president of the AMS?*

**Friedlander:** We have for some years been talking about having more prizes. I don't have data on this, but many of us feel strongly that mathematicians are not very generous to each other in terms of giving out prizes, compared to other sciences. The AMS has increased the number of prizes somewhat, but we could do more to recognize good mathematics.

Related to this is the AMS Fellows program, which would recognize outstanding achievement in mathematics by naming a certain number of members as Fellows. SIAM has launched a fellows program, and various prestigious mathematicians—including former AMS president Jim Glimm—immediately became fellows of SIAM and were greatly recognized by their universities. An AMS Fellows program would stimulate the same kind of recognition within our universities and garner some credit for mathematics, and we would be honoring the good performance and quality of a select group—though not too select—of mathematicians. I think to recognize and boost mathematics any way we can is very important. Giving out prizes is one way, but that reaches a very small group; the Fellows program would reach a larger group. I suspect the Fellows program will be enacted soon, and I will be glad to help it go forward.

Another issue I am interested in—though I don't know how to confront it—is the global economic situation and its impact on the job market for mathematicians. The AMS is trying to help in some ways, but it is not clear exactly what it can or should do. The AMS has been trying to help young mathematicians get good employment, not necessarily in academia but in places that utilize their mathematical knowledge and talents. The problem is very high on our list of priorities, but it's an overwhelming problem that is far too big for the AMS to solve.

I would like to make one last comment. It's difficult to know how to state this exactly. I would like to think the AMS's first, primary role is to support and promote research mathematics. We have discussed many things today, and this is the first time research mathematics has even been mentioned. I am very interested in somehow raising the involvement of the AMS in research mathematics. This translates into prizes, it translates into more involvement in publications, it translates into the AMS Web presence. For example, I and others made suggestions for changes to the AMS website, to emphasize aspects that are at a higher mathematical level. This is a good thing. The AMS should have research mathematics as its central focus.

## About the Cover

### Martin Gardner 1914 - 2010

The cover accompanies the memorial article for Martin Gardner in this issue. According to the records available from the Stanford archive of Gardner's papers (which you can locate by running "Stanford archives Martin Gardner" through Google), his principal correspondent was Don Knuth (followed by Solomon Golomb), so when we contemplated using one of Gardner's letters as the basis of the cover we asked Knuth what he could suggest. He very generously spent quite a bit of time and effort in producing the image we have used. Knuth tells us:

I doubt that I received more mail from Martin than anybody else. Possibly Stan Isaacs listed me more often in the database, when he did the first pass over Martin's papers, because he knows me and we see each other fairly often. He didn't have time to index everything.

Anyway, I do have copies of more than 100 letters that I wrote to Martin since 1970, and most of them start with "Thanks for your letter"! Looking through the files just now, I found one from him dated "8 Jan 76", when he was in full stride, and I think ... it perfectly reveals his working style and, in addition, refers to many other people.

When you see it, you'll know why I forwarded a copy of it at the time to John McCarthy and Patrick Suppes and also to Karel de Leeuw (who as you probably know was shockingly murdered two-and-a-half years later).

We are extremely grateful to Knuth for his efforts, and also to Martin's son Jim Gardner for help in locating photographs of his father for our use in the memorial article as well as for permission to reproduce the cover image.

—Bill Casselman  
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