

# Presidential Views: Interview with James Glimm

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 James G. Glimm, who began a two-year term as president on February 1, 2007. The interview was conducted in fall 2006 by *Notices* senior writer and deputy editor Allyn Jackson. Glimm is a Distinguished Professor of Applied Mathematics and Statistics at Stony Brook University.

An interview with past-president James G. Arthur appeared in the February 2007 issue of the *Notices*.

*Notices:* How do you see your role as AMS president?

**Glimm:** The AMS has a very rich committee structure, and the committees properly want to have authority to make their own decisions and recommendations. The most direct influence that the president has is through appointments to committees. The single most important thing the president does is to make quality appointments to all of the committees that the AMS runs. But beyond that, we all have opinions, and the president, in a leadership role, can articulate points of view that, if they turn out to be shared by other people, will help shape events.

I am concerned about preserving the breadth of the AMS to serve all of its constituencies. Mathematics is a growing enterprise, and some of the activities of the AMS should grow to keep up with that. We have good relations with other parts of the mathematical sciences, in particular SIAM [Society for Industrial and Applied Mathematics] and the statistics societies. But different subjects gravitate to one place or another, and we want to make sure we keep our doors open, and perhaps our activities have to expand to do that. So I don't think we want to keep our activities fixed in size, but rather they should be able to expand if there is activity to support our expanding and if the quality remains high.

*Notices:* You have been very active in SIAM. How do you view cooperation between the AMS and other organizations like SIAM?

**Glimm:** Science in general across all subjects is changing quite dramatically in its organization, and much more cooperation is needed among societies, among research groups, among institutions, among research teams, and so on. The AMS has to be part of that and cooperate with its natural colleagues.

Federal policymakers do not perceive big differences between different parts of mathematics—and in fact if they did, it would be only to our detriment, because it would be seen as rivalry, which is not healthy to the conduct of research. We want to continue to present a unified picture to Congress and to the federal policymakers, so arriving at that with SIAM and with the statistics associations is quite essential for having an effective policy.

At another level, I think that there are many areas where we can cooperate with other societies by participating in one another's meetings. Each suggestion like that has to be evaluated on its merits and succeed on its merits, but I think there are probably cases where that would be helpful for everybody.

*Notices:* What about cooperation with the MAA [Mathematical Association of America]?

**Glimm:** I am very interested in the education issue, although I don't have any prior involvement with it. Mathematics education is a huge issue, vastly important to the country. It breaks up into three ranges: graduate, undergraduate, and kindergarten through twelfth grade. I am not sure that there are particular problems in the graduate area. In any case, if there are, addressing them would not involve cooperation with other societies. At the K-12 level the problems go way beyond the math community, because they involve high school teachers, boards of education, parents, and others. The solutions probably will



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involve aspects that deal with all of those different communities. Mathematicians will have a contributory but essential role. But within that limitation, I think there are important things mathematicians can do, so we have to cooperate quite broadly with other people who are trying to solve the same problems and certainly cooperate with the MAA in the process.

The mission of the MAA is in undergraduate education. However, this is an area where the AMS also has a responsibility. At many schools the AMS members are the leading faculty, and they are teaching undergraduates, so they have direct responsibility for their own students. I have been talking to many people who are involved in this issue, and it turns out that everyone thinks that *they* don't have a problem but maybe someone else does. But deans and students, when surveyed, do think there is a problem in this area. So I think you could say that, at the very least, there is a disconnect between different people with a direct interest in undergraduate mathematics education. It would be good to look into that and see where those differences in perception arise.

**Notices:** *How do you see the role of the AMS internationally?*

**Glimm:** The whole world has certainly become globalized, and mathematics has been in the forefront of that. It's been international for decades. I think most mathematicians primarily feel loyalty to mathematics as an international force, and I think we should welcome that point of view. The International Congress is a very strong activity with a lot of vitality. But I don't have any particular agenda. I think that things are going well as far as international cooperation is concerned. We have special relations with our two neighbors, Canada and Mexico, and that's a good thing.

**Notices:** *One major challenge facing the AMS is attracting young mathematicians to join. Why aren't young people joining, and what can be done to attract them?*

**Glimm:** I'm not sure about the answer to that. In general, people will join when they see an advantage in the AMS being part of their professional life. I have to become better informed about what is being tried and what could be tried.

**Notices:** *Meetings and publications are central activities of the AMS. What can be done to ensure that these activities remain vital and relevant to members?*

**Glimm:** That's absolutely the most central issue, I think, because if the center doesn't work, the rest is not going to work either. I think that the meetings should grow in size. I understand that everyone wants a small meeting, and I am reminded that everyone wants a small house with

a large number of large rooms. The small meeting model is predicated on the idea that one's friends would be there. But the Society has gotten very big, and to serve the breadth of mathematics and to have everyone's friends there probably will require some increase in the meeting size. The failure to do that will simply be to restrict inwards the scope of mathematics, which I don't think would be very healthy. Parts of the Joint Meetings have grown; they have become much more of a professional activity in the sense that nonresearch issues, such as education and policy, are on the agenda. I think that's good, and we should be pleased about that, but as those activities expand, I think the research program should expand also. By doing that we can increase the opportunities for young people to participate and attend the meetings. I hope they would then decide to join the Society also.

**Notices:** *And what about publications?*

**Glimm:** The AMS is presently considering an expansion in the number of journal pages. Because the private-sector journals have increased publication, to have a reasonable influence on the market it is argued that we should try to keep our share somewhat constant. I think it is a good idea. We want to maintain quality, but I think that that is possible because there are simply more people doing mathematics, and they are doing it in an increased number of areas. To keep a static publication policy is probably not in the interest of anybody.

These discussions are responding to the same forces, which is that mathematics is simply a bigger activity. If you try to fit a bigger activity into a box that doesn't expand, then something gets crushed, and that's undesirable. So in order to represent the breadth of opportunities that are really natural to mathematics, meetings and publications should grow at a moderate rate. It's always necessary to assure that you preserve quality while you do that, but I think a modest growth in a range of Society activities would be good.

**Notices:** *Do you think the AMS should start new journals?*

**Glimm:** New journals come up from time to time. I think the most successful journals are not started by a decision at the top. They are started by a dedicated group of people who see a need for something, and they fight for their case. There are many ways for a journal to flounder, and you don't want to get started on one that is going to flounder. But if a proposal for a new journal is strong and cogent and well argued, then the Publications Committee can consider it. I wouldn't rule that out, but as the president I wouldn't want to start a search for areas where new journals could be started. It is a fact that starting a successful new journal is very difficult at the present

time, because libraries have trouble paying for their current subscription base.

**Notices:** *In your election statement you wrote: "Fundamental advances in mathematical reasoning have seldom been as pervasively important to society as they are today, and at the same time they are more at risk of being compromised." Can you expand on this? What exactly is at risk?*

**Glimm:** A lot of this is tied to computation and the way that computation is replacing experiments in many cases. Not only are the physicists using mathematical reasoning, which they have done since the days of Isaac Newton, but with the computer they are actually solving equations and using them to build things. They are relying on mathematical models, as opposed to trial and error. The Edisonian style of invention is not the same driving force as it was one hundred years ago. Analytic models are the workaday method of engineering, and you see this across many industries. So the role of mathematics is certainly increasing. Even outside the engineering and physical sciences, entire new areas are becoming mathematized. Economics and finance is an example, and biology is another example, where twenty years ago the mathematicians wouldn't have gotten in the front door. Now they often have a leading intellectual role in making decisions in those areas and guiding the direction. The human genome project is wildly successful, and strong mathematical modeling and analysis were part of both of the teams that competed to complete the project. The importance of mathematics to society is unquestioned. This has been well documented: for instance, in the promotional materials created by the AMS, the "Mathematical Moments", which are on the bulletin boards of math departments around the world and have been translated into many languages.

The second part of the question was, What is at risk? Actually, mathematics is in danger of drowning in its own success, because as it succeeds, people are trying to capture, control, and direct it. This is probably more true for the applied than for the pure mathematician, but there are certainly forces that would take away the freedom to control our research agenda. These forces are very pervasive, and they are subtle; they sort of lap up like rising water, so you don't notice it from year to year, and people even welcome it because it comes with good news attached as well as bad. But it is definitely a danger. I think it is worth some thought.

**Notices:** *Where do you see these forces operating?*

**Glimm:** They operate across the board. I think to a large extent mathematicians have been on the periphery, so they probably do not see them. But where they do operate, there is a cooperation

between the federal funding agencies and university administrations across the entire structure of science. These changes for the most part have not reached the mathematical community at the present time, but they certainly are coming rather close, so it's not too early to start thinking about these issues.

**Notices:** *You said that mathematicians could lose the freedom to set their own research agenda. How would that happen?*

**Glimm:** It hasn't happened in pure mathematics, but in the more applied sciences you can see this happening. As science gets more expensive, it can be conducted only with the permission of the federal agencies that fund the science, and they have their own ways of deciding what they want to support and what they don't. In general, other people in the system tend to swim along with the tide.