Interview with AMS President Arthur Jaffe

On January 31, 1999, Arthur Jaffe will complete his term as president of the AMS. In this interview with *Notices* deputy editor and senior writer Allyn Jackson, Jaffe reflects on his time as president and describes some of the main issues on which he worked. An interview with president-elect Felix Browder is planned for the March issue of the *Notices*.

Notices: *What were your main accomplishments as AMS president?*

Jaffe: During my term I have strived to increase the visibility of mathematicians in the realm of public science policy. This global goal subsumes many particular issues on which we have made some progress.

Someone wanting to know details about these questions should read my semiannual reports to the AMS Executive Committee and Board of Trustees. Briefly, my three years as an officer fall into three periods. During each year I focused on one major theme, aside from my normal AMS duties. The year as president-elect plunged the AMS into the problems of the mathematics department at the University of Rochester. This experience taught me the importance of working together with other science disciplines to achieve a common goal. The second year led to forming the ad-hoc coalition of science society presidents, with the goal in 1997 to begin to reverse a steady, five-year decline in federal science funding. (Science funding in every federal agency declined during that period, except for the National Institutes of Health.) This effort began at a fortuitous time. In the background of predictions by the American Association for the Advancement of Science of dramatic future declines in science funding by the year 2002, we saw the federal budget come into balance. This has allowed the start of a national pro-science movement in Congress itself, a movement we have helped along, encouraged, and worked with. Eventually it also spread to the executive branch of the government. During my third year we have focused on advocating investigator-initiated basic research. I believe this is the most important question for the future. We need to come to grips with how mathematics funds are spent. Above all, in the future we need to focus more and more on our most valuable resource, people. We need to repeat this point of view whenever we can, both to the agencies and to our representatives.

The starting point of this argument is that mathematics is important for the future of our society. We can base this case on history, but we need to make this point over and over. Mathematics has been the enabling subject for science, engineering, and also for business. It will remain that way in the future. But we need to have a coherent explanation why. The man in the street needs to appreciate mathematics before we get a lasting commitment from the members of Congress and the president. Once we make the case that our scientific future rests on preserving our mathematical strength, we are not finished. We need to ensure our ability to attract the brightest young people into mathematics, and we need to retain them. This means that we should support mathematicians, not just when they begin their studies, but as long as they remain innovative at the forefront of research developments.

In recent years we have seen more and more government funding going into directed programs. For the health of mathematics, we need to refocus attention on people. In order to do this we need a vision that transcends the short-term goals of the funding agencies; we should play a greater role in the formulation of these goals by the agencies.

As a candidate for president I wrote about the importance of advocacy for mathematics. I still believe in this, but I have also learned that it is important not just to advocate mathematics but to advocate science as a whole. This is why I started to work with organizations like the American Chemical Society and the American Physical Society. Starting with their presidents as partners, we put together the ad-hoc coalition as a way to achieve common goals. We spent about a year working on this, and now it has grown to encompass 110 presidents of organizations with 3.5 mil-

Outgoing AMS President Arthur Jaffe.

lion members. These presidents signed statements in support of scientific research. But statements are not enough. We also met with key people in Washington to explain our point of view and to help shape the future.

Just one direct conversation with a member of Congress or with a senator can have a big impact. Members are even busier people than we are, so they do not get to talk to lots of others about science. When you do get to meet a member in person, it is a memorable experience on both sides. Ultimately the future success in funding science and mathematics depends upon mathematicians and scientists in the community making sure that the public realizes that research is important.

Notices: *How in a practical way do you see mathematicians and scientists doing this?*

Jaffe: There are only 535 congressmen and senators. Therefore, if just a couple of people make personal contact with each of these 535 representatives, the problem would be solved by the action of only .05% of the members alluded to above. This is a realistic goal, and it would begin a national grass-roots movement for science. By mathematicians' being a major player in this way, mathematicians will also be at the table when research policies are designed; mathematicians will frame them along with other scientists.

As a small example, look at some events of quite diverse character organized by the Society. First, our two successful congressional briefings (one on data analysis and the other on encryption) drew extraordinarily large audiences exceeding all expectations. Furthermore, they were well received. We should build on these successes.

A second type of event were the Town Meetings organized by the AMS, one at the headquarters office in Providence and one at the office of *Mathematical Reviews* in Ann Arbor. These events brought mathematicians together with other local scientists and with legislators at the national level to discuss the importance of supporting research in science and mathematics. If individuals were to organize such events with other members of their local universities, it could really have a big impact. The AMS is working on developing materials to assist those who would like to do so.

Here is another example. In June of last year, three scientists and three mathematicians went to Washington to talk about the role of basic research with Representative John Porter [R-IL] and Senator Bill Frist [R-TN]. The scientists I took were David Mumford, Edward Witten, and William Lipscomb, a Nobel Prize winner in chemistry. The meeting was set up by the AMS and organized by Sam Rankin, director of the AMS Washington Office. We had a very good meeting with Representative Porter, and we saw him for half an hour as scheduled. We also had a half-hour appointment to speak with Senator Frist, but he ended up spending two or two and a half hours with us. In the end we had an opportunity to help Frist in rewriting parts of an important bill pertaining to science funding. This bill, the Federal Research Investment Act, is cosponsored by Senator John D. Rockefeller [D-WV]. It passed the Senate unanimously on a voice vote in October 1998, and it will be considered in the House of Representatives in 1999.

Part of this bill pertains to the Government Performance and Results Act [GPRA]. GPRA mandates that all federal departments and agencies must set forth specific goals, together with time lines for achieving them and ways of measuring whether the goals have been achieved. While justification of performance mandated by this bill across all of government has many virtues, its application to basic research poses many difficulties, because it has the potential to drive all agencies toward quite short-term goals. Senator Frist is very concerned about this. One part of his bill directed the Office of Management and Budget and the Office of Science and Technology Policy to commission a study by the National Academy of Sciences to come up with a way to devise metrics to decide whether research is successful. Now this study has become part of the appropriations bill for the National Science Foundation. This study must be performed extraordinarily thoughtfully and well. I believe that different metrics need to be developed for long-term research in order to judge its success differently from the way we view more immediate, directed projects. We have to think this through carefully, for if the scientific community puts its stamp of approval on an ill-devised plan, then we will be in a worse situation than before. This brings the responsibility for the framing of metrics back from the government and places it in the scientific community, where the process belongs.

Notices: *Could you describe what serendipity went into being able to meet with someone like Senator Frist?*

Jaffe: This is an excellent example of how apparently unrelated incidents led to our contributing to key legislation. Our June meeting culminated a year during which we worked together with members of Frist's staff on other questions. We first met these staff members, Tom Wood and Elizabeth Prostic, through staff members of Senator Joseph Lieberman [D-CT]. In helping one senator's office to set up a roundtable on education, we became acquainted with staff in the other office; both senators are members of the science caucus. Eventually, after some other meetings, Elizabeth Prostic helped us to ensure a private meeting with Frist. This is just one example of many things that we have done in Washington where chance meetings of one sort led to unexpected contacts of another sort.

Notices: *Will you continue these kinds of activities in Washington after your term as AMS president ends?*

Jaffe: The next president will have his own agenda. But Felix Browder and I see eye to eye on many matters, so I expect to remain active through the Committee on Science Policy.

Notices: *Are there some matters that you feel are important that you were not able to address during your presidency?*

Jaffe: There are many things. No AMS president can focus on more than a couple of important issues, and there are many such issues throughout mathematics. One example is the future of electronic publishing. It is extremely important for the future of mathematics to ensure that the transition to electronic publishing is handled well. Of course, the AMS is at the present time a leading player in electronic publishing, especially with MathSciNet and the electronic journals it publishes. We would like to stay at the forefront.

Another central issue is how mathematics is funded—not just how big the budgets are, but how mathematics is viewed by agencies. The relation between research and education is also a key issue. These things will be discussed and framed for years to come.

Mathematics has to attract the brightest young people in the country, as should being a mathematician. We need to address the job problem. A small step to simplify procedures is under discussion at the moment, to attempt to agree on a common initial date of acceptance of first job offers[1]. Another problem in the job market is the lack of long-range consistency in supporting good research. Having consistency and tradition is extremely important in ensuring that there is a flow of excellent people who decide that they are going to spend their lives in mathematics.

[1] *See the item "Departments Coordinate Job Offer Deadlines" in the "For Your Information" section of this issue of the* Notices.

Another important and unresolved question revolves around discussions on how to make Society membership more meaningful to the community. I have appointed a Task Force on Membership, chaired by Salah Baouendi, to look into this question and to make recommendations. The Task Force is collecting data and will work together with the AMS staff. Persons with ideas can transmit them directly to Salah or to Jim Maxwell at the Providence headquarters. The Task Force is only beginning to work, so its recommendations will probably wait for their discussion and implementation until Felix is president.

Notices: *As president you have devoted a lot of time to making individual personal contacts. And yet the structure of the AMS, with its large number of committees and with the Council comprising about forty members, does not facilitate that kind of approach. Do you think a change is needed in the structure of the AMS?*

Jaffe: It's important that there are different ways for members to be involved in the AMS. However, I do think the AMS has too many committees; we have over one hundred. I am responsible for many of these appointments, and by virtue of being president I serve on something like fourteen committees and chair six. I find this structure unwieldy, and it certainly wastes time. But there were two reasons that I made a conscious decision not to try to make any changes in this realm. The committee structure of the AMS had just been reformed by the Council, so it was too soon to look at it again. Also, dealing with the committee structure would be another full-time project, and that wasn't where I wanted to put my energy.

The major change in the structure of the AMS in recent years was the formation of the five policy committees: the Committee on Science Policy, the Committee on Education, the Committee on Publications, the Committee on Meetings and Conferences, and the Committee on the Profession. There are some problems with the policy committees, but I think they are working much better now than when I began as president—they've had some time to understand how to work and what their roles are. Clearly, on certain policy committees there is tension between the committee's charge and what decisions are made in Providence by the AMS staff. These are complicated questions, and I am not sure they were thought through with sufficient care when the policy committees were set up.

Notices: *Do you have any advice for your successor, Felix Browder?*

Jaffe: My only advice for Felix is to focus on a few issues. I was preceded by a distinguished president, Cathleen Morawetz, and I will be followed by another. He will ensure that the AMS continues to play a meaningful role for the mathematics community.