From the AMS Secretary

Report of the Executive Director, State of the AMS, 2011

When I report to the Council in April, I try to give a broad overview of highlights of the Society's activities in the preceding year. The current report contains such an overview, and it includes, in addition, some retrospective comments about the impact on the AMS and the mathematics community of global economic conditions since the third quarter of 2008.

The year 2010 was a very busy one for the Society in all of its principal areas of activity. I shall highlight a number of specific accomplishments in publishing, professional programs and services, meetings, and advocacy for the mathematics community.

The Economy

There are at least three ways that the unsettled world economy of the last two and a half years has affected the AMS.

1. Our individual members, predominantly from academic positions in mathematical sciences, have been severely affected by reduced public funding for higher education institutions and by the effects of financial markets on the value of college and university endowments.
2. Research libraries, a principal part of the customer base for AMS journals, books, and *Mathematical Reviews*, have suffered from reduced budgets for acquisitions.
3. The Society's long-term investment portfolio fell by about 30 percent in the fall of 2008, and the portion of the portfolio whose spendable income supports programs and services for the mathematics community fell by 50 percent during the same period.

The state of the economy increased the importance of some of the professional services provided by the AMS, especially employment services. At the Joint Mathematics Meetings, special forums were conducted to provide information about rewarding nonacademic career opportunities and the process of applying for all types of jobs. `MathJobs.org` and EIMS worked to make information about open positions known to job seekers.

The American Association of University Professors (AAUP) reports that average faculty salaries rose only 1.4 percent from 2009–10 to 2010–11 and that average pay actually decreased at 30 percent of colleges and universities. The impact on faculty has been much more severe than on employees in other professions, where increases have averaged more than 2.5 percent during the same time period.

Libraries, already suffering from spiraling journal prices over the past twenty years, have had to adjust to reduced budgets as institutions adapt to decreased revenues.

In support of the libraries and our individual members, the Society froze subscription prices in 2010 at 2009 levels and froze individual dues in 2011 at 2010 levels. We have also worked to help individual libraries reduce their subscription expenditures by converting paper subscriptions to electronic ones. At the same time, we took steps to reduce our own expenses so that we could maintain high levels of support for programs and services.

Two years ago when I made my report to the Council, the state of our own long-term investment portfolio was relatively grim. It had fallen from \$74M at the end of 2007 to \$52M at the end of 2008. The decline had implications for operating revenues. A portion of the long-term portfolio referred to as the Operations Support Fund (OSF) generates spendable income every year that is used for service and outreach programs; the spendable income in any given year is 5 percent of a trailing average of year-end balances in the OSF. The OSF at the end of 2007 was \$40.8M and fell to \$20.1M at the end of 2008. If that lower balance had persisted, it would have eventually turned into a loss of \$1M in annual spendable income.

Fortunately, the long-term portfolio and the OSF have rebounded. At the end of 2010, the long-term portfolio, through additions and strong investment returns in 2009 and 2010, had rebounded to \$79M. The following table reports the OSF balances and the spendable income since 2007.

Year	Year-End OSF Balance	OSF Spendable Income
2007	\$40.8 million	\$0.72 million
2008	\$20.1 million	\$1.04 million
2009	\$35.1 million	\$1.40 million
2010	\$43.6 million	\$1.45 million
2011	TBD	\$1.65 million

Highlights of 2010 Activities

2010 was a year of successes and challenges. Here are some highlights of the Society's programs and services.

Journals

In May 2010 the AMS completed its research journal retro-digitization project. The generosity of a private donor supported digitization of the four primary research journals—*Journal of the AMS*, *Transactions of the AMS*, *Proceedings of the AMS* and *Mathematics of Computation*—back to volume 1, issue 1. The oldest of these journals, *Transactions*, dates from 1900. Over 350,000 pages were scanned and then processed by OCR to create a searchable text layer in the final pdf file of each article. In addition, reference lists were keyed and links to MathSciNet were added. The quality of the files is outstanding.

All of these articles were made freely available to the worldwide mathematics community. This is a great service in support of mathematics research and was applauded by librarians. It was also highlighted in announcements made by the International Mathematical Union at ICM2010.

The four primary research journals published a total of 873 articles in 2010.

In October of 2010 the Committee on Publications completed its quadrennial review of the primary research journals. Many aspects of the journals were analyzed. One interesting feature indicates how truly international journal publishing has become. The following table shows where the authors of articles published in AMS journals in the years 2006–2009 live.

	JAMS	TAMS	PAMS	MathComp
U.S.A.	55.9%	36.1%	31.0%	25.5%
Canada	3.9%	4.0%	4.2%	5.3%
Europe	28.3%	39.7%	35.7%	45.1%
Asia & Asia Pacific	10.0%	16.4%	23.7%	21.0%
Other	1.9%	3.8%	5.4%	3.1%

Author[1] domiciles for articles published in 2006–2009.

Mathematical Reviews

Mathematical Reviews (MR) observed its seventieth anniversary in January 2010.

During 2010 MR added 152,103 new items to the MR database. Of these, over 79,000 included reviews.

The literature covered by MR has grown substantially over the last decade. MR follows over 1,900 journals; 774 of these are so-called cover-to-cover journals, in which every article is deemed to have mathematics research content. In publication year 2000, 56,985 journal articles were published in all of the journals MR follows. By publication year 2009, the number of journal articles had grown to 77,969, an increase of 37 percent.

The new release of MathSciNet in October 2010 incorporated a major technical enhancement. MathSciNet now uses MathJax, which renders mathematical expressions set in LaTeX to be viewed through any common browser. The development of MathJax was supported by the AMS, SIAM, and Design Science. The software is open source and is now being widely adopted and supported by scientific publishers and others interested in communicating math on the Web.

Late in 2010 MR completed an agreement with ProQuest to incorporate bibliographic information about Ph.D. theses in the MR database. The entries in the MR database have links to the theses per se in the ProQuest database. Over 59,000 theses were added when the first delivery of data was received from ProQuest.

Books

The AMS now has over 3,000 books in print, including classical works, research monographs, textbooks, and books of general interest.

In 2010 a number of outstanding titles were published, including the second edition of *Partial Differential Equations* by Lawrence C. Evans. Two new titles were added to the AMS Pure and Applied Mathematics Texts series founded by Paul J. Sally Jr. A total of one hundred new books were published in 2010.

Two significant developments are currently in progress. Over 2,000 AMS books have been scanned by Google and have cleared a contractual review to assure that the AMS has the necessary rights and permissions to publish them electronically. They are being released selectively as Google eBooks. Second, preparations are being made to license Contemporary Mathematics as an electronic subscription publication starting in 2012. We will then plan to prepare the entire Contemporary Mathematics backlist, more than 500 volumes, as an electronic bundle.

Meetings

The year started with the Joint Mathematics Meetings in San Francisco. Over 5,300 individuals registered for JMM2010.

In addition, the Society held eight Sectional Meetings, a joint meeting in June with the Sociedad Matemática Mexicana, and a joint meeting in December with the Sociedad de Matemática de Chile. A highlight of the fall sectional meeting at UCLA was the Einstein Lecture presented by Terence Tao. The mathematics department at UCLA did a great job of publicizing Tao's lecture, "The Cosmic Distance Ladder". The lecture attracted over 900 attendees. The Meetings Department also managed arrangements for three weeks of Mathematics Research Communities at Snowbird, Utah.

Programs for Early-Career Mathematicians

The 2010 Mathematics Research Communities (MRC) summer conferences were held at the Snowbird Resort in Utah, June 12–July 2. The three week-long conferences drew 120 early-career mathematicians. The principle aim of MRC

[1] *For multiauthor papers, the domicile of the corresponding author was used.*

MRC 2010 Conference on Birational Geometry and Moduli Spaces.

is to foster the formation of networks of mathematical scientists at the beginning of their careers.

Each MRC is organized by senior researchers around a topic of shared interest. One of the 2010 topics, for example, was "Birational Geometry and Moduli Spaces". Postdocs and advanced graduate students are invited to apply for the program and are selected based on evaluation of their applications by senior organizers.

The main components of the MRC program are a one-week summer conference, a Special Session at the Joint Mathematics Meetings the following January, a mechanism to foster continuing Internet-based communications, and ongoing mentoring from senior colleagues. The initial summer conference is the cornerstone of the program. Within the broad goals of stimulating communication of each participant's interests and forging connections, the format of each summer conference is left up to the organizers.

In 2010 the NSF funding for Mathematics Research Communities was renewed for three more years, 2011 to 2013.

The AMS continued to provide travel grants for graduate students to attend JMM2010 and JMM2011. This special program has continued to grow substantially and is made possible by a private donor. In 2010 approximately eighty students were supported to travel to San Francisco. In January 2011 over one hundred students were supported to attend JMM in New Orleans. In addition, the donor provided additional support in 2010 that has made it possible to expand the program to support travel to the AMS sectional meetings.

New funding was received in November from the Simons Foundation to support research travel grants for early-career mathematicians. The program has been launched to make the first grants in 2011. Each grant recipient will be funded for two years and will have up to $2,000 per year to reimburse research-related travel. Funding has been granted to support sixty new recipients in each of the three years 2011 to 2013. Both the AMS and the Simons Foundation feel that the travel grant program fills a gap between the AMS travel grants for graduate students and the Simons Foundation Collaboration Grants for mathematicians who are several years past their Ph.Ds.

Public Awareness and Advocacy for Mathematics

JMM2010 in San Francisco was the venue for the first national Who Wants to Be a Mathematician game. The national game was supported largely by private donations. The champion, Evan O'Dorney of Danville, California, went on to distinguish himself in the International Mathematics Olympiad in summer 2010 by placing second in the individual rankings.

The 2010 Arnold Ross Lecture was presented by Thomas C. Hales, Mellon Professor of Mathematics at the University of Pittsburgh. Hales's presentation, titled "Can Computers Do Math?", was about packing problems, giving their history and why they are important in modern mathematics, and their applications. The purpose of this series of lectures for talented high school mathematics students is to stimulate their interest in mathematics beyond the traditional classroom and to show them the tremendous opportunities for careers in mathematics—as mathematics teachers and as researchers in government, industry, and university programs. The lectures are intended to illustrate some recent development in mathematical research.

The 2009–10 AMS-sponsored Congressional Fellow was Katherine Crowley of Washington and Lee University, who served in the office of Senator Al Franken of Minnesota. The American Mathematical Society, in conjunction with the American Association for the Advancement of Science (AAAS), sponsors a Congressional Fellow each year who spends the year working on the staff of a member of Congress or a congressional committee, working as a special legislative assistant in legislative and policy areas requiring scientific and technical input. The program includes an orientation on congressional and executive branch operations and a year-long seminar series on issues involving science, technology, and public policy.

On October 12, 2010, the AMS hosted a briefing on Capitol Hill entitled "The Gulf Oil Spill: How Can We Protect Our Beaches in the Future?" Andrea Bertozzi, professor of mathematics at UCLA, delivered the address to congressional representatives. Bertozzi talked about how scientific modeling and basic research in mathematics are helping us to understand the impact of this major environmental problem. Her research examines the dynamics of oil-sand-water mixtures in an effort to provide more efficient clean-up and protection methods for oil spills like the one that occurred in the Gulf of Mexico in 2010.

—Don McClure
Executive Director