

**AMERICAN MATHEMATICAL SOCIETY  
EXECUTIVE COMMITTEE AND BOARD OF TRUSTEES MEETING  
MAY 20-21, 2011**

**MINUTES**

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**AMERICAN MATHEMATICAL SOCIETY  
EXECUTIVE COMMITTEE AND BOARD OF TRUSTEES MEETING  
MAY 20-21, 2011**

**MINUTES**

A joint meeting of the Executive Committee of the Council (EC) and the Board of Trustees (BT) was held Friday - Saturday, May 20-21, 2011, at the Campus Inn Hotel in Ann Arbor, Michigan.

The following members of the EC were present: George E. Andrews, Robert J. Daverman, Eric M. Friedlander, Bryna Kra, and Joseph H. Silverman. Ralph L. Cohen and Craig L. Huneke were unable to attend.

All members of the BT were present: John M. Franks, Eric M. Friedlander, Mark L. Green, Jane M. Hawkins, William H. Jaco, Ronald J. Stern, Karen Vogtmann, and Carol S. Wood.

Zbigniew H. Nitecki (Associate Treasurer Elect) was also present.

Also present were the following AMS staff members: Graeme Fairweather (Executive Editor, Mathematical Reviews), Sergei Gelfand (Publisher), Ellen H. Heiser (Assistant to the Executive Director [and recording secretary]), Elizabeth A. Huber (Associate Executive Director, Publishing), Ellen J. Maycock (Associate Executive Director, Meetings and Professional Services), Donald E. McClure (Executive Director), Emily D. Riley (Chief Financial Officer), and Samuel M. Rankin (Associate Executive Director, Washington Office).

Thomas J. Blythe (Chief Information Officer) was present on Saturday afternoon.

Jayne Silva (Senior Manager) and David Gagnon (Partner) from the auditing firm of KPMG were present for the discussion of item 3.0 on Saturday afternoon.

President Eric Friedlander presided over the EC and ECBT portions of the meeting (items beginning with 0, 1, or 2). Board Chair Karen Vogtmann presided over the BT portion of the meeting (items beginning with 3).

Items in these minutes occur in numerical order, which is not necessarily the order in which they were discussed at the meeting.

<b>0</b>	<b>CALL TO ORDER AND ANNOUNCEMENTS</b>
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**0.1**    **Opening of the Meeting and Introductions.**

President Friedlander called the meeting to order and asked those present to introduce themselves.

**0.2**    **Housekeeping Matters.**

Executive Director McClure mentioned some details about the schedule and arrangements for the events that took place during this meeting.

<b>1I</b>	<b>EXECUTIVE COMMITTEE INFORMATION ITEMS</b>
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**1I.1**    **Secretariat Business by Mail. Att. #1.**

Minutes of Secretariat business by mail during the months December 2010 – May 2011 are attached (#1).

<b>2</b>	<b>EXECUTIVE COMMITTEE AND BOARD OF TRUSTEES ACTION/DISCUSSION ITEMS</b>
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**2.1**    **Report on Mathematical Reviews Editorial Committee (MREC).**

The ECBT was informed that MREC has not met since the last ECBT meeting, and, at this time, there is nothing new to report. The next meeting is scheduled for October 17, 2011 in Ann Arbor.

**2.2**    **Report on Committee on Publications (CPub).**

The ECBT was informed that CPub's most recent meeting was October 22-23, 2010; a report on that meeting is included in the November 2010 ECBT minutes. CPub's 2010 Annual Report was filed with the January 2011 Council and is available here:

<http://www.ams.org/about-us/governance/committees/cpub-rpt-10.pdf>

CPub's next meeting is September 23-24, 2011 in Chicago. An evaluation of all non-primary AMS journals (electronic-only, translation, and distributed journals) will be conducted and presented at this meeting.

Gregory Lawler of the University of Chicago chairs CPub in 2011.

**2.3 Report on Committee on the Profession (CoProf).**

The ECBT was informed that CoProf last met October 23-24, 2010; a report on that meeting is included in the November 2010 ECBT minutes. The 2010 Annual Report on CoProf activities was filed with the January 2011 Council and is available here:

<http://www.ams.org/meetings/CoProfRepCncl2010.pdf>

CoProf's next meeting is September 24-25, 2011 in Chicago. The Society's activities in the area of membership and member services is the topic of the 2011 review. Julius Zelmanowitz of the University of California, Santa Barbara (emeritus) chairs CoProf in 2011.

**2.4 Report on Committee on Meetings and Conferences (COMC). Att. #2.**

The ECBT received the attached report (#2) on the March 26, 2011 COMC meeting. David Farmer of the American Institute of Mathematics chairs COMC in 2011.

**2.5 Report on Committee on Education (COE).**

The ECBT was informed that COE hosted a panel discussion at the Joint Mathematics Meetings in New Orleans, LA on January 9, 2011 entitled "Teaching Elementary Math is not Elementary: How Mathematicians can Help, and Why." Panelists included: Hyman Bass, University of Michigan; Ken Gross, University of Vermont; Johnette Roberts, City of Baker School System; and Kristin Umland, University of New Mexico.

The next COE meeting will be October 28-29, 2011 in Washington, DC. David Wright, Washington University in Saint Louis, chairs COE in 2011.

**2.6 Report on Committee on Science Policy (CSP). Att. #3.**

The ECBT was informed that CSP held a session at the Joint Mathematics Meetings in New Orleans, LA on January 8, 2011. The speaker was Dr. Sastry Pantula, the new Director of the Division of Mathematical Sciences at the National Science Foundation.

The ECBT received the attached report (#3) on the March 4-5, 2011 CSP meeting. David Manderscheid, University of Nebraska-Lincoln, chairs CSP in 2011.

**2.7 Washington Office Report. Att. #4.**

The ECBT received the attached report (#4) on Washington Office activities.

**2.8 Report on Long Range Planning Committee (LRPC).**

The ECBT was informed that the topic discussed at the May 20, 2011 LRPC meeting was "What should the AMS do in response to mathematics departments under siege?" The LRPC

discussed two current examples and asked that more information be gathered. The LPRC concluded that no blanket action should be taken by the AMS; the facts of each incident must be carefully collected from reliable sources and considered and AMS action taken if deemed appropriate.

**2.9 Report from the President.**

President Friedlander did not present a formal report, but briefly mentioned the following:

- The question of whether the AMS should institute a fellows program will be on the election ballot this fall.
- A Graduate Working Group has been appointed and is working on a proposal for a program of AMS student chapters (see item 2.16 of these minutes).
- The inaugural Mathematical Congress of the Americas (MCA) will take place in Guanajuato, Mexico, August 5-9, 2013.
- There's an ongoing discussion about open-access policies the federal government is considering implementing for publications based on federally funded research (see page 1 of Att. #4 for further details).
- 2013 will be a special year of emphasis on the "Mathematics of Planet Earth" (<http://www.mpe2013.org/>). The AMS may wish to consider whether and how it should be involved.

**2.10 2012 Journal Pages and Prices.**

The ECBT approved the following numbers of pages, and the BT approved the following prices, for 2012 journal subscriptions.

	<b>2012 pages</b>	<b>2012 list prices</b>
<i>Abstracts of Papers Presented to the AMS*</i>	780*	\$ 156
<i>Bulletin of the AMS</i>	768	\$ 498
<i>Conformal Geometry and Dynamics</i>	350	\$ 26
<i>Current Mathematical Publications*</i>	4,932*	\$ 819
<i>Journal of the AMS</i>	1,200	\$ 341
<i>Mathematical Reviews*</i>		
Issue pages	12,962*	
Annual index pages	7,245*	
Total MR pages	20,207*	
MR Products		
Paper		\$ 698
MR Sections		\$ 200
Data Access Fee		\$8,975
MathSciNet		\$2,334
<i>Mathematics of Computation</i>	2,400	\$ 577



	<b>2012 pages</b>	<b>2012 list prices</b>
<i>Memoirs of the AMS</i>	3,200	\$ 772
<i>Notices of the AMS</i>	1,550	\$ 531
<i>Proceedings of the AMS</i>	4,200	\$1,264
<i>Representation Theory</i>	750	\$ 26
<i>St. Petersburg Mathematical Journal*</i>	1,200*	\$2,049
<i>Sugaku Expositions</i>	240	\$ 228
<i>Theory of Probability and Mathematical Statistics*</i>	324*	\$ 783
<i>Transactions of the AMS</i>	6,600	\$2,075
<i>Transactions of the Moscow Mathematical Society*</i>	360*	\$ 554
*the numbers of pages for these journals are not completely within the staff's control, so they are currently the staff's best estimates and were included in the version of the 2011 budget presented at this meeting.		

It was noted that this authorization reflects continuation of a 250 page (50%) temporary increase in pages for *Representation Theory* (to address a large backlog that had accumulated, the ECBT agreed in 2010 to publish 750 pages for 2011, 2012 and 2013).

Since 1996 a 10% discount has been provided to electronic-only subscribers to primary journals (*Bulletin, Journal of the AMS, Mathematics of Computation, Proceedings, and Transactions*). This discount is based on the fact that electronic-only subscriptions can be provided at lower overall costs than the print equivalent. In addition to the obvious reduction in printing costs, the costs associated with fulfillment are also reduced (e.g., postage, claims processing for missing issues). To provide further incentive to subscribers to move from paper to electronic-only this discount will be increased to 12% for 2012 subscriptions. This incentive will be reviewed again prior to setting 2013 prices.

Beginning with 2012 subscriptions, a 5% discount will be offered on electronic-only subscriptions to translation journals (*St. Petersburg, Sugaku, Theory of Probability and Mathematical Statistics, and Transactions of the Moscow Mathematical Society*).

## **2.11 2012 Individual Member Dues.**

The process for setting individual dues for year x starts in November of year x-2 when the ECBT makes a recommendation to the Council. The Council then acts on that recommendation and sends it back to the BT for final ratification.

The January 2011 Council approved the BT's recommendation that the 2012 "Regular Member" dues rate for those in the "high-income" category be set at \$172 (this represents a \$4 increase over the 2011 rate). The income level cutoff remains at \$85,000.

The BT ratified the January 2011 Council's decision.

**2.12 2012 Institutional Member Dues.**

The ECBT approved an average increase of 3% in institutional member dues for 2012.

**2.13 Registration Fees for the January 2012 Joint Mathematics Meetings.**

The ECBT reviewed budget summaries for the January 2012 Boston, Massachusetts Joint Meetings and exhibits. Based on this information, the BT voted to advise the August 2011 Joint Meetings Committee that the member pre-registration fee for this meeting be set at \$228 (2% increase over 2011 fee). [It is noted for the record that the August 2011 Joint Meetings Committee set the member pre-registration fee at \$228.]

**2.14 Stipend and Expense Allowance for Centennial Fellowship.**

The ECBT approved awarding one Centennial Fellowship for 2012-2013 in the amount of \$80,000, with an expense allowance of \$8,000.

**2.15 Mathematical Congress of the Americas.**

The ECBT was informed that discussions began in fall 2010 about possibly establishing a Mathematical Congress of the Americas (MCA). The goal is to highlight the excellence of the mathematical achievements in the Americas and to foster the scientific integration of all mathematical communities there. Representatives from several interested mathematical societies met during the 2011 Joint Mathematics Meetings to explore the feasibility of the idea. A steering committee was formed and met at the Instituto Nacional de Matemática Pura e Aplicada in Rio de Janeiro in mid May 2011. It had six representatives; one appointed by each of the following organizations: AMS, Canadian Mathematical Society, SIAM, Sociedad Matemática Mexicana, Sociedade Brasileira de Matemática, and Unión Matemática de América Latina y el Caribe. The committee sent out a call for bids to host the 2013 MCA and decided that the inaugural Mathematical Congress of the Americas will take place in Guanajuato, Mexico, August 5-9, 2013. See [www.mca2013.org/](http://www.mca2013.org/) for further details.

**2.16 Interim Report of the Graduate Working Group. Att. #8.**

In February 2011, President Eric Friedlander appointed the Graduate Working Group (GWG), whose purpose is to search for ways that the American Mathematical Society can make meaningful contributions to the professional development of graduate students in the mathematical sciences and for ways to encourage graduate students to participate in the Society. Members of the GWG are Daniel Bates, Colorado State University; Sylvain Cappell, New York University; Kareem Carr, New York University; Diana Davis, Brown University; Eric Friedlander, University of Southern California; Douglas Lind, University of Washington; Ellen Maycock, AMS; Frank Morgan, Williams College; Ken Ono, Emory University; and Joseph Silverman (Chair), Brown University.

Professor Silverman presented the attached (#8) preliminary draft of the proposal by the GWG for a program of AMS Student Chapters.

The concept was very positively received by the ECBT. Various suggestions were made, the most frequent being that the procedures involved in establishing and maintaining a student chapter should be as streamlined as possible in order to avoid creating any unnecessary administrative barriers that might prohibit or discourage a group from forming a chapter. ECBT members were invited to submit any further suggestions directly to Professor Silverman. The plan is for the proposal to be considered next at the fall 2011 meetings of the Committee on the Profession and the Committee on Education. The final proposal will then be considered by the November 2011 ECBT (when the BT will be asked to approve the funding) and then on to the January 2012 Council for final approval.

**2.17 Status of AMS Social Networking Activities. Att. #7.**

In May 2010, a working group of AMS staff was appointed to explore possible uses of social networking by the Society. The Social-Nets Group includes representatives from Public Awareness, Meetings, Publications, Membership and Programs, the Washington Office, and Business and Publications Computing. The group, chaired by Annette Emerson in Public Awareness, was asked to explore ways that social networking can advance the work of the AMS and to identify projects and experiments of well-defined scope and start implementing them. The ECBT received and discussed Att. #7, which describes the status of the group's work and some of their results. The group is now starting to evaluate its experience, to define goals for the different public social networking forums, to start addressing some issues related to social networking policies, and to gauge the success of their efforts.

**2.18 2012 ABC and ECBT Meetings.**

The ECBT approved the following dates and sites for 2012 ABC and ECBT meetings:

ABC	April 5, 2012 (Thursday)	by conference call
ECBT	May 18-19, 2012 (Friday-Saturday)	Providence, Rhode Island
ABC	October 5, 2012 (Friday)	Providence, Rhode Island
ECBT	November 16-17, 2012 (Friday-Saturday)	Providence, Rhode Island

The members of the ABC in 2012 will be: Daverman, Friedlander, Hawkins, Nitecki, and Stern.

<b>2C EXECUTIVE COMMITTEE AND BOARD OF TRUSTEES CONSENT ITEMS</b>
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**2C.1 November 2010 ECBT Meeting.**

The ECBT approved the minutes of the meeting of the Executive Committee and Board of Trustees held November 19-20, 2010, in Providence, Rhode Island. These minutes include:

- ECBT open minutes prepared by the Secretary of the Society (<http://www.ams.org/secretary/ecbt-minutes/ecbt-minutes-1110.pdf>),
- ECBT executive session minutes prepared by the Secretary of the Society

See also item 3C.1.

<b>2I EXECUTIVE COMMITTEE AND BOARD OF TRUSTEES INFORMATION ITEMS</b>
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**2I.1 State of the AMS. Att. #19.**

The Executive Director's annual report to the spring Council is attached (#19).

**2I.2 Changes in Registration Fees for Conferences, Employment Center, Mathjobs Short Course. Att. #9.**

The Executive Director is authorized to make changes in registration fees for conferences, the Employment Center and Short Courses held at the Joint Mathematics Meetings and for MathJobs.org and MathPrograms.org.

Att. #9 reports the changes authorized since the last ECBT meeting.

**2I.3 AMS Presence at the Annual Meeting of SACNAS. Att. #10.**

The AMS provides \$5,000 toward support of the mathematics program at the annual national meeting of the Society for Advancement of Chicanos and Native Americans in Science (SACNAS). Executive Director Don McClure and Public Awareness Officers Annette Emerson and Michael Breen represented the AMS at the most recent meeting held September 30 – October 3, 2010, in Anaheim, California. There was also a session of the game, "Who Wants to be a Mathematician," that was very popular. Att. #10 is a report on the activities related to mathematics at this meeting.

SACNAS has shown itself to be highly effective at nurturing talented undergraduates from within their target communities to successful completion of graduate degrees in science and mathematics. AMS's continuing support for and presence at the SACNAS national meetings has enabled it to build strong ties within this community of scholars committed to excellence.

**2I.4 Report on Awards from the Epsilon Fund for Young Scholars Program. Att. #11.**

In 1999, the Epsilon Fund was created by the Society to provide support for the Young Scholars Program. The Program awards grants, which support student scholarships and program operating costs, to selected summer programs for mathematically talented high school students. This year, the Young Scholars Awards Committee evaluated twelve applications for support from the Epsilon Fund, and recommended funding ten of them. The members of the Committee

are: Irwin Kra (Chair), Rafe Mazzeo, Brian Hunt and Zvezdelina Stankova. A list of the programs funded for summer 2011 is attached (#11).

**2I.5 Report on AAAS Meeting. Att. #12.**

A report on the AMS-supported activities at the 2011 annual meeting of the American Association for the Advancement of Science (AAAS) is attached (#12).

**2I.6 2011-2012 AMS Centennial Fellowship.**

The AMS Centennial Fellowship Committee has announced that Andrew S. Toms (Purdue University) is the winner of the 2011 Fellowship competition. Toms has accepted the award. The amount of this fellowship for 2011-2012 will be \$79,000, with an additional expense allowance of \$7,900.

**2I.7 AAAS-AMS Mass Media Fellowship.**

The AMS will sponsor Melanie DeVries as its 2011 Mass Media Fellow. Melanie is a graduate student in mathematics at the University of Nebraska-Lincoln and will work at the KUNC-FM Radio (community radio for Northern Colorado) this summer.

The Mass Media Fellowship program is organized by the American Association for the Advancement of Science (AAAS) and is intended to strengthen the connections between science and the media, to improve public understanding of science, and to sharpen the ability of the fellows to communicate complex scientific issues to non-specialists. It is a 10-week summer program that places graduate and post-graduate level science, engineering and mathematics students at media organizations nationwide.

An announcement of the AMS Mass Media Fellow for 2011 will be made in the *Notices* and posted on the AMS website.

**2I.8 Congressional Fellow.**

The AMS, in conjunction with the American Association for the Advancement of Science (AAAS), will again sponsor a Congressional Fellow from September 2011 through August 2012.

The Fellow will spend a 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 fellowship is designed to provide a unique public policy learning experience, to demonstrate the value of science-government interaction, and to bring a technical background and external perspective to the decision-making process in the Congress.

Applications invited from individuals in the mathematical sciences are currently being reviewed and a selection will be made shortly. An announcement of the AMS Congressional Fellow for 2011-12 will be announced in the *Notices* and posted on the AMS website.

**2I.9 Report on MSRI Workshop on the Future of Mathematics Journals. Att. #20.**

In February a workshop on the future of mathematics journals, organized by the AMS, the London Mathematical Society, SIAM and Mathematical Sciences Publishers, took place at the Mathematical Science Research Institute (MSRI). Participants included mathematicians, publishers, editors, librarians, persons involved in current discussions about public access to sponsored research, and other interested individuals. A final report on the workshop is attached (#20).

**2I.10 Report on Treating [www.ams.org](http://www.ams.org) as a Publication. Att. #21.**

The AMS website is one of the Society's most important resources for communication with the mathematics community, the membership, and the public at large. Recently, steps have been taken to treat [ams.org](http://www.ams.org) as a publication. A memorandum describing the overall plan is attached (#21). The plan includes establishing a high-level editorial advisory committee, proposing periodic review by the Committee on Publications of [ams.org](http://www.ams.org) as a "member publication," and creating a new staff position of managing editor for the web.

<b>3 BOARD OF TRUSTEES ACTION/DISCUSSION ITEMS</b>
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**3.0 Meeting with Auditors. Att. #30.**

Every four years the entire Board meets with the auditors (in place of the usual Audit Committee meeting with the auditors).

A draft of the audited 2010 financial statements had been provided separately prior to this meeting; copies were distributed at the meeting as well.

David Gagnon (Partner) and Jayme Silva (Senior Manager) from the auditing firm of KPMG delivered an oral report on the 2010 audit. Staff members were then excused from the meeting, and the BT met privately with Mr. Gagnon and Mr. Silva (see the BT closed executive session minutes prepared by the Secretary of the Board for a report on this private session).

The BT voted to accept the draft audited financial statements for 2010 and delegated to management final resolution of minor edits and issuance of the final statements. The final statements are attached (#30).

### **3.1 Financial Review.**

#### **3.1.1 Discussion of Fiscal Reports.**

The BT received and discussed various fiscal reports. Approval of the 2012 budget will be requested at the November 2011 ECBT meeting.

#### **3.1.2 Capital Expenditures – 2010 and 2011 Capital Purchase Plans.**

Capital purchases in 2010 totaled approximately \$328,681, compared to a budgeted amount of \$1,529,500. The purchases were under budget primarily due to the delay in the association management software (Personify) project implementation.

The 2011 capital budget totals \$1,525,750 and includes the purchase and implementation costs of the new association management software system (Personify) at \$1,209,500. In addition, some Mathematical Reviews building improvement projects, such as upgrades in lighting fixtures, were delayed until 2011.

#### **3.1.3 Capital Expenditures - Approval of Specific Purchases.**

This item is reserved for requests for authorization to make specific capital purchases costing \$100,000 or more. There were no such requests at this meeting.

### **3.2 Spendable Income, Operations Support Fund and Other Related Items. Att. #13.**

The Society uses its long-term investments for several purposes, and for that reason it divides its investments into various funds. The following five standing items deal with those funds – additions, transfers and spending.

The description of the way in which the AMS uses its long-term investment portfolio is summarized in the diagram in Att. #13, which has labels showing how the five parts of Item 3.2 are connected to the process.

#### **3.2.1 Addition to Operations Support Fund (OSF). RILEY.**

At its November meeting, the Board approved the staff recommendation that the amount owed to operations (which arises as a result of spendable income netted against contributions to endowment and Board designated funds) from the long-term investment portfolio at December 31, 2010 would remain there and be officially added to the OSF. The total so added at December 31, 2010 to the OSF was \$1,873,135.

At December 31, 2010 the Society's current assets totaled approximately \$21,052,290 and its current liabilities totaled approximately \$16,613,005 resulting in a current ratio of 1.3 to 1, and an adjusted current ratio (deferred revenue removed from both the numerator and denominator) of approximately 2.2 to 1. These ratios are about the same as those at the end of

2009. In the past, the Society has targeted a ratio of 1 to 1 for current assets to current liabilities and at least 1.5 to 1 for an adjusted current ratio.

Each year, the operating portfolio, current ratio, and other factors are evaluated to determine if additions can be made to the OSF. The last addition was \$2,000,000, approved to be added to the OSF at the May 2009 ECBT meeting. At the end of 2010, the current ratio would continue to exceed the Society's target of 1 to 1, even if \$2,000,000 was transferred from current assets and added to the OSF. The operating portfolio (money market funds, certificates of deposit and intermediate investments consisting mainly of domestic bond mutual funds) will remain well-funded throughout 2011 and will be more than capable of meeting the cash flow needs of the Society. Even though significant capital purchases will be made in 2011, a portion of the larger capital projects have already been paid. After review of the operating portfolio and cash flow needs, it is apparent that there is excess funding in the portfolio that can be contributed to the OSF.

The BT approved Chief Financial Officer Riley's recommendation that \$2,000,000 be added to the OSF in 2011.

### **3.2.2 Rebalancing of Economic Stabilization and Operations Support Funds.**

Under the policy adopted by the May 2006 Board of Trustees, at the end of each fiscal year the allocated values of the Economic Stabilization Fund (ESF) and the Operations Support Fund (OSF) are rebalanced such that the ESF always equals the target balance.

The amount and direction of the rebalancing required at each year end is principally dependent upon the return on the long-term investment portfolio in any year. This return was approximately 15.4% for 2010; accordingly, the ESF transferred approximately \$2,893,000 to the OSF at the end of 2010.

### **3.2.3 Allocation of Operations Support Fund (OSF) Spendable Income.**

The May 2001 Board of Trustees approved the following:

*Income from reserves should be allocated to each year's budget to service and outreach programs of the Society (without specifying exactly which programs). The total amount should be approved by the May ECBT, when revenue projections for the following year are made.*

The spendable income from the OSF for 2011 and 2012, determined according to the guidelines approved by the BT is \$1,645,100 and \$1,744,100 respectively. The 2011 amount had been previously approved.

It should be noted that the balances in the OSF for the base years are not normalized for additions and withdrawals for the purpose of calculating the spendable income (as is done for the true endowment funds).



The BT approved Chief Financial Officer Riley's recommendation that \$1,744,100 be designated as OSF spendable income for 2012.

### **3.2.4 Appropriation of Spendable Income from Unrestricted Endowment.**

The May 2001 Board of Trustees approved the following:

*Each year, the budgeting process will include recommendations for allocating spendable income from the Unrestricted Endowment for specific projects. The allocated income will be treated as revenue for operations, offsetting (part of) the expenses. These recommendations will be brought to the Board for approval at its November meeting in the normal budgeting process. The goal will not be to use all the income from such funds each year, but rather to use some of the income every year for the support of mathematical research and scholarship. Using such income should be a regular part of our operations rather than an exceptional situation.*

The 2012 preliminary revenue budget includes the full amount of 2012 spendable income from unrestricted true endowment funds under the assumption that appropriate projects will be designated to receive the income. The amounts budgeted for 2011 and 2012 are \$266,400 and \$260,300 respectively. The BT will vote on the use of the spendable income in 2012 by specific projects at its November 2011 meeting.

### **3.2.5 Report on Changes in Appropriated Spendable Income.**

The Executive Director has the authority to transfer spendable income that will not be used on an approved project to another approved project, in case additional support is needed. There were no such transfers to report at this time. However, the BT was alerted that \$60,000 that had been designated for the Young Scholars Camp Conference would probably not be used until 2012 due to the extra time needed to complete the formation of an organizing committee and plan the conference.

### **3.3 Audit Committee. Att. #26.**

The Audit Committee met on May 20, 2011 and discussed (among other things) the possible adoption of the attached conflict of interest form (Att. #26). The motivation is to enable the AMS to respond positively to questions regarding conflict-of-interest policies on IRS Form 990.

The BT approved the Audit Committee's recommendation to adopt the procedure titled "IRS Conflict of Interest Annual Update" as shown on pages 2-3 of Att. #26. Members of the Board of Trustees, the Executive Director, Chief Financial Officer, and any other person with Board-designated powers will be required to sign this form annually.

### **3.4 Investment Committee.**

The Investment Committee met on May 20, 2011 and reviewed the following matters (none of which required any action by the BT at this time):

- Current portfolio returns vs. benchmarks for 2008, 2009, 2010, 2011 year-to-date
- Asset allocation
- Spending rate and spendable income
- Investment Committee self-evaluation
- Report on alternative investments from Vanguard Institutional Asset Management
- Long-term investment policy

### **3.5 Cash Management and the Operating Portfolio. Att. #14.**

The BT received the attached report (#14) summarizing the Society's cash management policies and short-term investment performance during 2010.

### **3.6 Report on the Epicor Project.**

Chief Information Officer Thomas Blythe reported there has been significant progress in the status of the Epicor suite of financial software implementation since November. The Fiscal Department is currently using the following modules: Epicor Enterprise General Ledger, Purchasing, Accounts Payable and Accounts Receivable modules; Star Projects and Star Web TimeRecorder; Advanced Allocations; FRx – Report Package; and *Doc-Link* document management software.

Additional training on "Active Planner," the budgeting module, took place in November; department and project plan sheet templates were created; and the continued goal is to use it for the 2012 budget. Configuration blueprints were created for all of the modules implemented to-date. The Business Intelligence module has been installed and configured; training took place in April. Additionally, several of the priority items on our "punch-list," an integral component of our revised agreement, have been completed.

The "Royalties" module will be implemented in the second quarter of 2011; author royalties for 2011 will be generated using the former system; that data will be used to validate testing of the new module. Finally, implementation of and the completion of the remaining, lower priority, punch list items are scheduled for the second quarter of 2011.

### **3.7 Report on the Personify Project. Att. #15.**

Chief Information Officer Thomas Blythe reported that progress continues on the implementation of the Personify association management software from TMA Resources and the project remains within its original budget. Since the ECBT meeting in November 2010, staff has finalized and approved a list of modifications that TMA Resources will develop, approved

detailed designs of more the half of those modifications, completed the first round of converting data from our existing database to Personify, and created the initial implementation schedule. A detailed project report is attached (#15).

### **3.8 Monitoring the Submission of Proposals.**

The AMS has substantial support from the Infrastructure Program in the Division of Mathematical Sciences at NSF. NSF occasionally reminds staff that when AMS has multiple proposals pending, AMS is effectively competing against itself. Further, AMS sometimes gets requests to endorse, to advocate for the funding of, and even to submit, proposals that do not originate within the AMS per se.

The BT requested that the Executive Director prepare a formal proposal for the November 2011 ECBT meeting regarding a procedure for involving the Board in decisions about the Society's priorities for grant funding when choices need to be made.

### **3.9 Retirement Plan Administration. Att. #23.**

In 2009, the Federal Department of Labor clarified certain regulations regarding administration and oversight of 403(b) retirement plans. As a result, the Society needs to establish a Retirement Plan Investment Committee with responsibilities for (i) designing and monitoring the menu of investment options made available to employees and (ii) certain other duties related to administration of the plan.

The AMS operates two defined contribution retirement plans: a 403(a) plan for employer contributions and a 403(b) plan for employee contributions. Both of these plans are governed by the Employee Retirement Income Security Act (ERISA). Under ERISA, plan administrators are considered fiduciaries with regard to the plans. Att. #23 outlines the standards that a fiduciary must meet and best practices for meeting those responsibilities. The members of a newly established Retirement Plan Investment Committee will become fiduciaries with regard to the plans.

The BT established a Retirement Plan Investment Committee by approving the following three motions:

1. The Director of Human Resources (presently Tammy King Walsh), the Chief Financial Officer (presently Emily D. Riley), the Associate Treasurer (presently John Franks) and the fifth year elected member of the Board of Trustees (presently Carol Wood) shall be appointed to serve as the Retirement Plan Investment Committee in connection with the Plans.
2. The Director of Human Resources (presently Tammy King Walsh) shall be appointed to serve as the Chair of the Retirement Plan Investment Committee.

3. The Employer indemnify and hold harmless each member of its Board of Trustees and the Retirement Plan Investment Committee from liability and expenses arising from his/her official capacity with respect to said Plans, except to the extent that his/her conduct amounts to willful misconduct or gross negligence.

**3.10 Annual Reports on Divisions. Att. #24.**

Section VI (Report on Projects and Activities) of the 2010 Operating Plan was made available to BT (and EC) members separately prior to the meeting. This final section provides a brief overview of the division, reporting on the status of certain activities that were planned for 2010 and summarizing budgetary implications.

In addition, Division Directors consulted with their liaison trustee(s) by conference call and then prepared the attached reports highlighting 2010 activities (Att. #24). The attachment also includes the current Trustee liaison assignments.

Now that the 2010 Operating Plan is complete, a copy of it is attached to the paper record copies of these minutes (Att. #31).

**3.11 Meeting of the Mathematical Reviews Corporation.**

In 1983, when the building that currently houses Mathematical Reviews was purchased, a Michigan non-profit corporation was formed in order to obtain exemption from local property taxes in Ann Arbor and from sales and use taxes in Michigan. In order to maintain these exemptions, the corporation ("Mathematical Reviews") must be maintained by holding an annual meeting at which the Officers and Directors of the corporation are elected.

The AMS Board of Trustees meeting was therefore temporarily adjourned, and the AMS Trustees convened as the Board of Directors of the Mathematical Reviews Corporation.

The Board of Directors of the Mathematical Reviews Corporation elected the following officers:

President of the Corporation:	Karen Vogtmann
Treasurer of the Corporation:	Jane M. Hawkins
Secretary of the Corporation:	Ronald J. Stern
Directors of the Corporation:	John M. Franks
	Eric M. Friedlander
	Mark L. Green
	William H. Jaco
	Carol S. Wood

The meeting of the Board of Directors of the Mathematical Reviews Corporation then adjourned and the meeting of the AMS Board of Trustees reconvened.

<b>3C BOARD OF TRUSTEES CONSENT ITEMS</b>
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**3C.1 November 2010 BT Closed Executive Session Meeting.**

The BT approved the minutes of the closed executive session meeting of the Board of Trustees held November 20, 2010, in Providence, Rhode Island, which had been distributed separately.

**3C.2 Procedures for the Appeals for Discounted Subscriptions.**

The BT approved the use of the following guidelines for 2012:

- Minimum price for MR Data Access Fee (DAF) of \$200 applicable to institutions in countries found in the two poorest World Bank country listing. Staff can provide this level of discount even if the country does not have a national DAF.
- The discounted price for MR DAF for domestic institutions would not be lower than the greater of 40% of a list price DAF or 40% of the institution's mathematical sciences serials budget, not to exceed regular list price for a DAF.
- The discounted price for MR DAF for non-domestic institutions not included in the first category above would not be lower than 40% of a DAF. To the extent possible, information about serials budgets would also be collected, and, if desired, staff would provide information on publishing activity at the institution.
- For MR derived products, allowable prices would be regular list price for paper and no less than lowest published price for MathSciNet.
- For other AMS journals, the lowest allowable price would be marginal cost, applicable to the most desperate cases.
- Participation is restricted to academic institutions.

**3C.3 Resolutions for Retirees.**

The BT approved the following proclamations for employees who retired in 2011:

*Be it resolved that the Trustees accept the retirement of Patrick D. Ion with deep appreciation for his faithful service over a period of 30 years. The Board expresses its profound gratitude for this long record of faithful service. It is through the dedication and service of its employees that the Society is able to effectively serve its members and the greater mathematical community. The Trustees offer Patrick their special thanks and heartfelt good wishes for a happy and well-deserved retirement.*

*Be it resolved that the Trustees accept the retirement of Alden J. Simons with deep appreciation for his faithful service over a period of 20 years. The Board expresses its profound gratitude for this long record of faithful*

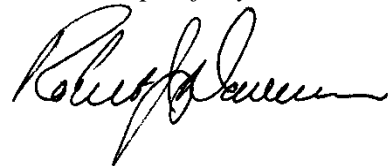
*service. It is through the dedication and service of its employees that the Society is able to effectively serve its members and the greater mathematical community. The Trustees offer Alden their special thanks and heartfelt good wishes for a happy and well-deserved retirement.*

<b>3I BOARD OF TRUSTEES INFORMATION ITEMS</b>
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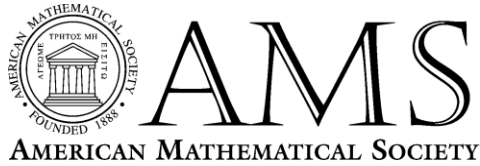
**3I.1 Change in Fringe Benefits.**

The November 1996 BT authorized the Executive Director to approve changes in benefit plans (except for those changes which would significantly enhance or degrade the Society's financial health or relations with its employees) and asked that these changes be reported to the BT when appropriate. No changes have been made since the last ECBT meeting.

*Respectfully submitted,*



*Robert J. Daverman, Secretary  
Knoxville, Tennessee  
August 19, 2011*



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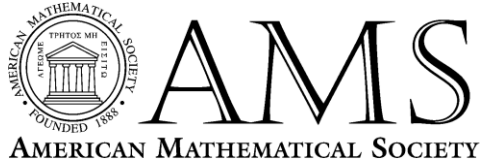
**SECRETARIAT  
Business by Mail  
December 1, 2010**

**MINUTES  
from the Ballot dated November 1, 2010**

There were five votes cast by Georgia Benkart, Robert Daverman, Michel Lapidus, Matthew Miller and Steven Weintraub.

1. Approved electing to membership the individuals named on the list dated October 20, 2010.
2. Approved holding an Eastern Sectional Meeting on September 22-23, 2012, at Rochester Institute of Technology in Rochester NY.
3. Approved holding a meeting of the Western Section of the AMS at the University of California, Riverside, on November 2-3, 2013.
4. Approved the minutes of the Secretariat Business by Mail from the ballot dated October 1, 2010.

Robert J. Daverman



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**SECRETARIAT  
Business by Mail  
January 3, 2011**

**MINUTES  
from the Ballot dated December 1, 2010**

There were five votes cast by Georgia Benkart, Robert Daverman, Michel Lapidus, Matthew Miller and Steven Weintraub.

1. Approved electing to membership the individuals named on the list dated November 20, 2010.
2. Approved holding an Eastern Sectional Meeting of the American Mathematical Society at Boston College, in Boston MA, on the weekend of April 6-7, 2013.
3. Approved holding an AMS Council meeting on 28 April 2012 in Chicago, Illinois.
4. Approved holding a Central Section Meeting at the University of Akron in Akron, Ohio, on October 20-21, 2012.
5. Approved Fundacao Getulio Vargas, Ctro de Matematics Aplcatica, Rio de Janiero, Brazil, for institutional membership.
6. Approved the minutes of the Secretariat Business by Mail from the ballot dated November 1, 2010.





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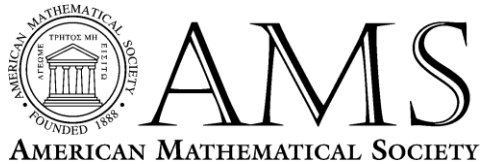
**SECRETARIAT  
Business by Mail  
February 1, 2011**

**MINUTES  
from the Ballot dated January 3, 2011**

There were five votes cast by Georgia Benkart, Robert Daverman, Michel Lapidus, Matthew Miller and Steven Weintraub.

1. Approved electing to membership the individuals named on the list dated December 20, 2010.
2. Approved holding a joint meeting between the AMS and the Israel Mathematics Union on June 9-12, 2014 in Tel-Aviv.
3. Approved labeling the Conference on Applied Mathematics, Modeling and Computational Science as being done in cooperation with the AMS. The conference will be held July 24-29, 2011, in Waterloo, Canada. Although the meeting is set for only a little more than 5 months away, the organizers assure that the AMS can have input into the scientific program of the meeting.
4. Approved the minutes of the Secretariat Business by Mail from the ballot dated December 1, 2010.

Robert J. Daverman



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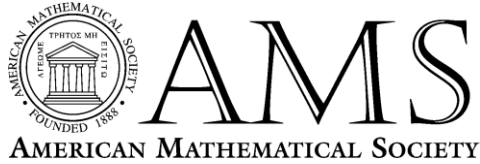
**SECRETARIAT  
Business by Mail  
March 1, 2011**

**MINUTES  
from the Ballot dated February 1, 2011**

There were five votes cast by Georgia Benkart, Robert Daverman, Michel Lapidus, Matthew Miller and Steven Weintraub.

1. Approved electing to membership the individuals named on the list dated January 20, 2011.
2. Approved holding a meeting of the Western Section of the AMS at the University of Arizona in Tucson, Arizona, on October 27-28, 2012.
3. Approved holding an AMS Central Section Meeting at Washington University in St Louis on Oct 18-20, 2013.
4. Approved the minutes of the Secretariat Business by Mail from the ballot dated January 3, 2011.

Robert J. Daverman



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**SECRETARIAT  
Business by Mail  
April 1, 2011**

**MINUTES  
from the Ballot dated March 1, 2011**

There were five votes cast by Georgia Benkart, Robert Daverman, Michel Lapidus, Matthew Miller and Steven Weintraub.

1. Approved electing to membership the individuals named on the list dated February 20, 2011.
2. Approved the minutes of the Secretariat Business by Mail from the ballot dated February 3, 2011.

Robert J. Daverman



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**SECRETARIAT  
Business by Mail  
May 2, 2011**

**MINUTES  
from the Ballot dated April 1, 2011**

There were five votes cast by Georgia Benkart, Robert Daverman, Michel Lapidus, Matthew Miller and Steven Weintraub.

1. Approved electing to membership the individuals named on the list dated March 20, 2011.
2. Approved holding a joint international meeting between the AMS and the Portuguese Mathematical Society on June 11-14, 2015, at the University of Porto in Porto, Portugal.
3. Approved three new 2011 International Institutional AMS members to the next mail agenda for approval: Univ Politecnica de Madrid, Madrid, Spain; Univ Nacional de Educacion a Distancia, Madrid, Spain; and Univ Rey Juan Carlos, Madrid, Spain.
4. Approved the minutes of the Secretariat Business by Mail from the ballot dated March 1, 2011.

Robert J. Daverman

## AMS Committee on Meetings and Conferences

### Highlights of 2011 Meeting

The Committee on Meetings and Conferences (CoMC) held its annual meeting on March 26, 2011, at the Hilton Chicago O'Hare Airport. David Farmer, chair, presided over the meeting

#### Introductory items

The meeting began with a round of introductions. Time was then devoted to discussing the components that play roles in AMS meetings: the Secretariat, the Meetings and Conferences Department, and CoMC. The history of some decisions made by CoMC was reviewed. Secretary Robert Daverman, Associate Secretaries Georgia Benkart, Matthew Miller, and Steven Weintraub, and AMS staff members AED Ellen Maycock and Director of Meetings and Conferences Penny Pina answered questions posed by CoMC members.

#### Reports

- **Secretariat.** Robert Daverman reported on the March 25, 2011, Secretariat meeting.
  - **Upcoming Joint International Meetings:**
    - South Africa, November 30 – December 3, 2011 (considered as the 2012 meeting), in Port Elizabeth.
    - Romania, June 27-30, 2013, in Alba Iulia.
    - Israel, June 16-19, 2014, in Tel Aviv.
    - Portugal, June 11-14, 2015, in Porto.
  - **2011-2012 Einstein Lectures.** In 2010, it was decided to have no Einstein Lecture in 2011. The Secretariat approved holding the 2012 Lecture at George Washington University. Gunther Uhlmann has accepted an invitation to give the 2012 Einstein Lecture.
  - **2011-2012 Erdős Lectures.** The 2011 Erdős Memorial Lecture will be held at the University of Nebraska, in Lincoln, NE, on October 15, 2011, and the lecturer will be Emmanuel Candes. The 2012 Erdős Lecture will be held during the Sectional Meeting at the University of Arizona, October 27-28, 2012. Ken Ono has accepted an invitation to give this lecture.
- **Review of the AMS Scientific Program at the Joint Mathematics Meetings.** The subcommittee that carried out this review was composed of Daljit Ahluwalia and David Farmer (chair). The subcommittee gathered information by adding several questions on the AMS scientific program to the 2011 JMM questionnaire and by discussing this topic at the CoMC Focus Group Breakfast held in New Orleans. The report of the

subcommittee considered three main components of the scientific program: AMS Invited Addresses, AMS Special Sessions and AMS Contributed Paper Sessions. The review was quite positive, indicating in particular that participants often reported that Invited Addresses and Special Sessions were highlights of the JMM for them. A significant minority of respondents to the questionnaire noted the importance of the Contributed Paper Sessions for them. The report did express concern about the fact that Special Sessions in similar fields sometimes occurred simultaneously. Several Associate Secretaries responded by describing how carefully they schedule Special Sessions and commented that given the large number of Special Sessions, there will inevitably be conflicts.

- **AMS Activity Groups.** At its meeting in March 2010, then CoMC chair Loek Helminck proposed that the AMS consider creating special interest or activity groups similar to those run by SIAM and the MAA. A subcommittee (Loek Helminck, David Farmer, Janet Talvacchia, Robert Daverman and Ellen Maycock) was appointed to investigate this, and report back to CoMC for further consideration. The report of the subcommittee listed a number of benefits to the AMS and to its members and also detailed how such activity groups could be formed. CoMC discussed the proposal at length. There was wide agreement that such a program could be very positive for the AMS. Several members of CoMC were more interested in activity groups that would be connected electronically. There was also discussion on the resources that such a program might need. The consensus of the meeting was that there needed to be more planning before a program of activity groups could be launched, and that, at least initially, any meetings of activity groups would center around standard Special Sessions at Sectional Meetings and the JMM. A new subcommittee was formed to continue the investigation of this potential program for the AMS.
- **CoMC Focus Group Breakfast.** Ann Trenk chaired the Focus Group at the 2011 JMM. Since her term on CoMC ended on January 31, 2011, David Farmer presented the ideas that had been discussed during that breakfast. Much of the discussion centered on how to improve the expository quality of the mathematics talks. Also, there was some discussion concerning possible activity groups for the AMS. David Farmer will chair the 2012 Focus Group in Boston.
- **New Orleans Questionnaire.** The responses from the New Orleans questionnaire were reviewed. Once again, the AMS used an electronic survey form and sent email to all participants after the meeting with a link to the survey. Over 1600 participants responded to the survey.

### **New business:**

- **AMS presence at the annual SIAM meeting.** The Council approved, at its January 2011 meeting, the general idea of the AMS participating in the annual SIAM meeting. The Council's resolution requested that a detailed plan be presented to CoMC at its March

2011 and be brought to the Council again at its April 2011 meeting. CoMC recommended that the Council approve the proposal that the AMS have one invited speaker (semi-plenary) and organize four mini-sessions at the 2012 SIAM annual meeting.

- ***Joint Prize Session at the Joint Mathematics Meetings.*** At its January 2011 meeting, the Council approved the following recommendation from the Task Force on Prizes that was endorsed by the Executive Committee and Board of Trustees:

**The appropriate policy committees should undertake a review of the current prize ceremony at the Joint Meetings and include in their review that**

- i. some prizes be associated with talks (possibly at Sectional Meetings);**
- ii. the AMS hold a separate prize ceremony at the Joint Meetings; or**
- iii. some prizes be announced and awarded outside of meeting.**

CoMC recommended that a joint CoMC-CoProf subcommittee be formed to study this issue and appointed two people to the subcommittee.

- ***Programs of the Joint Mathematics Meetings in the January Notices.*** A letter appeared in the April 2011 *Notices* (made available online in the mid-March) commenting on the very large number of pages in the January 2011 issue devoted to the program of the JMM. CoMC discussed the fact that the Sectional Meetings programs are no longer published in the *Notices*, due to its early deadlines. The AMS Meetings and Conferences Department is actively researching the possibility of an electronic program and scheduler. Since a *pdf* of the JMM program is available online and the printed program is distributed to all participants either by mail or on site, it seems unnecessary to publish the program in the *Notices* as well. CoMC voted to recommend to CPub that the JMM program be removed from the January *Notices*. The JMM announcement, printed in the October *Notices*, serves important purposes and will continue to be included.
- ***The Mathematical Sciences in 2025.*** A letter from Scott Weidman, Director of the Board on Mathematical Sciences and Their Applications, was sent to the chairs of all the AMS policy committees. CoMC briefly discussed the request for individuals to provide their thoughts on: “ a) major research trends and opportunities over the next 15 years; b) what our profession should do to make the most of these opportunities; and c) stresses affecting the mathematical sciences.”
- ***Mathematical Congress of the Americas.*** The first Mathematical Congress of the Americas (MCA) will take place in August 2013. The goal of the Congress is to highlight the excellence of mathematical achievements in the Americas within the context of the international arena and to foster the scientific integration of all mathematical communities in the continent. There will be a meeting at IMPA in Rio de Janeiro in mid-May of the steering committee of the 2013 MCA. This committee has 6 representatives appointed by the AMS, CMS, SIAM, SMM, SBM and UMALCA. The committee has

sent out a "call for bids" to host the 2013 MCA and the site will be selected at the committee meeting in Rio.

### **2012 CoMC Meeting.**

- The committee approved the suggested date of March 24, 2012 for its next meeting, to be held at AMS headquarters in Providence, RI.
- For the 2012 meeting, the topic to be reviewed will be: Joint International Meetings.

*Ellen Maycock  
Associate Executive Director  
April 5, 2011*



**American Mathematical Society  
Committee on Science Policy Meeting  
March 4-5, 2011  
Washington, DC**

**Summary Report**

The 2011 Committee on Science Policy (CSP) meeting consisted of presentations and discussions over a day and a half. Attendees included committee members, a number of chairs of departments of mathematics from across the country and guests.

*Highlights from presentations:*

***The Honorable Jerry McNerney (D-CA-11)***

Congressman Jerry McNerney spoke to the committee about the atmosphere on Capitol Hill, especially when it comes to research funding and STEM education issues. He talked about how important it is to invest in these areas and called on mathematics professors to encourage young people to get involved in science policy.

***Hugh MacMillan***

***AMS 2010-2011 Congressional Fellow***

***Office of Senator Robert Menendez (D-NJ)***

Hugh MacMillan, the current AMS Congressional Fellow, talked about his experience with the AAAS fellowship program and his position in the office of Senator Robert Menendez. He spoke of the orientation and training for new Fellows that was provided by AAAS and then talked about some of the issues that he has been working on in his position in Senator Menendez's office.

***Karin Remington***

***Director, Center for Bioinformatics & Computational Biology***

***National Institute of General Medical Services, National Institutes of Health***

Karin Remington began her presentation by describing the 27 separate institutes and centers that make up the National Institutes of Health (NIH) and explaining the significance of the National Institute of General Medical Services (NIGMS) within NIH. She then described the portfolio of programs within the Center for Bioinformatics and Computational Biology (CBCB), including the joint NSF/NIH Mathematical Biology Program.

Remington also described the Models of Infectious Disease Agent Study (MIDAS), which involves mathematical and computational investigations of pathogens, and the Biomedical Information Science and Technology Initiative (BISTI), a consortium of representatives from each NIH institute and center that serves as the focus of biomedical computing issues at the NIH.

***Kei Koizumi***

***Assistant Director for Federal Research and Development***

***White House Office of Science and Technology Policy***

Kei Koizumi discussed the FY2012 federal budget request and how it is designed to further the President's commitment to "Winning the Future" through investments in innovation, education and infrastructure. He explained that the FY2012 budget represents a substantial increase in federal research

spending and sustains the commitment to doubling the budget of NSF, DOE Science and NIST. However, these increases come at a price in that the FY2012 budget offsets all increases with cuts in other programs and keeps non-security discretionary spending flat for the second year in a row.

Koizumi also pointed out that the FY2012 budget request includes \$3.4 billion for STEM Education in programs throughout the federal government and provides \$90 million to launch the Advanced Research Projects Agency for Education (ARPA-ED), which is designed to support transformational education technology.

Koizumi also talked about the status of the FY2011 budget and how cuts in that budget might impact appropriations for FY2012.

***Brad Keelor***  
***Senior Science and Innovation Policy Advisor, British Embassy and***  
***Naomi Webber***

***Deputy Director, Research Councils UK-Washington***

Brad Keelor began the presentation by explaining that the United Kingdom completed its four year budget review last fall for budgets through FY2014-15. There were cuts across all departments, including the Department for Business, Innovation and Skills and the Ministry of Defense. These departments provide most of the research spending in the UK. Overall, investments in science are mostly flat over four years -- down ten percent in real terms.

Keelor also compared the UK investment in R&D with that of the United States, reporting that 2010 expenditures in the UK were \$37.6 billion compared to \$401.9 billion in the U.S. He also talked about the UK's commitment to improvements in mathematics education and the UK's Science and Innovation Network, which promotes scientific collaboration between the UK and the US.

Naomi Webber then described the makeup and mission of Research Councils UK, which is similar to the National Science Foundation in the US. She spoke specifically about the Engineering and Physical Sciences Research Council, which is the largest of the seven councils and funds programs in the mathematical sciences by investing \$55 million annually in research and postgraduate training.

Webber also mentioned the 2010 International Review of Mathematics in the UK, a report benchmarking the strength of UK mathematical sciences research, which was released in January 2011.

***David Weinreich***  
***Senior Policy Advisor***  
***Office of Rep. Hansen Clarke (D-MI-13)***

David Weinreich talked about U.S. investment in research and development over time and how it has been influenced by defining moments in history (i.e Sputnik). He pointed out that the Administration is very focused on 'winning the future,' but that there is a big partisan divide and a lack of understanding on Capitol Hill when it comes to science funding. He encouraged the mathematical community to get involved in advocacy efforts and help explain to lawmakers what is at stake.

As an illustration of the current climate in Congress, Weinreich commented that support for the COMPETES Reauthorization Act (2010) compared to the America COMPETES Act (2007) was very different. The 2007 COMPETE's Act was passed easily by voice vote, whereas the passage of the 2010 Reauthorization was much more partisan, initially failing and ultimately passing by a close margin.

***Julia Lane***  
***Program Director, Science of Science and Innovation Policy***  
***National Science Foundation***

Julia Lane informed the group about a new program being developed and led by a consortium including the National Science Foundation (NSF), National Institutes of Health (NIH), Environmental Protection Agency (EPA) and the Department of Energy (DOE) in conjunction with the White House Office of Science & Technology Policy (OSTP). The goal of the STAR METRICS program (Science and Technology for America's Reinvestment: Measuring the Effects of Research on Innovation, Competitiveness, and Science) is to work collaboratively with research institutions to build a scientific data infrastructure that will document the value of federal investments in research and development at a much higher level than was previously possible.

There are two phases to the development of the STAR METRICS program. Phase One includes developing uniform, auditable and standardized measures of the impact of science spending on job creation. Phase Two involves developing measures of the impact of federal science investment on scientific knowledge, social outcomes, workforce outcomes and economic growth.

***Joel Parriott***  
***Program Examiner, Science and Space Programs Branch,***  
***White House Office of Management and Budget (OMB)***

Joel Parriott discussed the budget process and his role in providing oversight for the National Science Foundation (NSF). He explained the current procedure for judging the performance of NSF programs and spoke to the importance of a more meaningful evaluation process such as STAR METRICS.

***Sastry Pantula***  
***Director, Division of Mathematical Sciences***  
***National Science Foundation***

Sastry Pantula begin his presentation by speaking broadly about the mission of the National Science Foundation. He also mentioned the need for new program officers in the Division of Mathematical Sciences (DMS) as they have many openings currently.

Pantula went on to discuss the kinds of investments being made by DMS, including disciplinary and interdisciplinary research, multi-disciplinary research, institutes, infrastructure and postdoctoral fellows. He highlighted a few specific programs, including SEES (Science, Engineering and Education for Sustainability) a multi-year NSF-wide investment area that will address challenges in climate and energy research and education.

Pantula also provided an overview of the FY2012 Budget Request from the perspective of NSF's Directorate of Mathematical & Physical Sciences (MPS).

***Scott Weidman***  
***Director, National Academy of Sciences***  
***Board on Mathematical Sciences and Their Applications***

Scott Weidman began by giving some background on the National Academies and then discussed the NSF-DMS sponsored "Mathematical Sciences in 2025" study. The project will provide a forward-looking assessment of the mathematical sciences and of emerging trends that may affect the discipline by 2025. A committee has been formed and is seeking community input through Town Hall meetings, online submissions and targeted conference calls. The study is to be completed by spring of 2012 and

will make recommendations to NSF-DMS on how to adjust its portfolio to improve the vitality and impact of the discipline.

***Other Discussion***

There was some discussion about the role of the Committee on Science Policy and how it could become more active in advocating on science policy issues and collaborating with other societies and organizations in matters of science policy.

***Committee on Science Policy Events at the 2012 Joint Mathematics Meeting***

The committee has two slots at the Joint Mathematics Meetings each year, one for a government speaker and the other for a panel discussion. The committee will determine in the next few months how best to utilize these slots.

***Date of Next Meeting***

The 2012 Committee on Science Policy meeting will be held on March 16-17, 2012 in Washington, DC.

*Submitted by Anita Benjamin  
American Mathematical Society  
April 22, 2011*

## Washington Office Report April 15, 2011

Until April 14, the Federal government had been running on a series of short-term Continuing Resolutions (CR) for FY 2011. On Thursday April 14, H.R. 1473 was passed by the House and Senate providing a budget for the federal government for the remainder of the 2011 fiscal year, that is, through September 30, 2011. Until Thursday, other than being restricted to the FY 2010 budget level, the NSF had not realized any cuts in previously passed CRs. H.R. 1473 cuts the NSF budget by \$ 65.75 million compared to the FY 2010 level, by direct cuts of \$42 million to Research and Related Activities and \$10 million to Education and Human Resources, plus \$13.75 from a 0.2 percent across-the-board cut. The 0.2 percent across-the-board cut applies to all non-defense programs, projects, and accounts. The \$65.75 million cut gives the NSF an FY 2011 budget of \$6.807 billion compared to a FY 2010 budget of \$6.873 billion, or a one percent decrease. The NSF FY 2011 Budget Request is \$7.42 billion.

The FY 2011 budget of the Office of Science at the Department of Energy experienced a cut of \$46.1 million below the FY 2010 level. The Advanced Scientific Computing Research division of the Office of Science includes programs that fund the mathematical and computational sciences.

These budget cuts are significantly less than the budget cuts proposed in the House bill H.R. 1 where the NSF is reduced by \$359.5 million and the Office of Science by \$893.2 million in comparison to their FY 2010 budgets. However, this bill, although not passed, provides an indication of how far some Members of Congress are willing to go in cutting the Federal budget. Needless to say, increases in the budgets of the NSF and other science agencies will be hard to come by going forward. The upcoming FY 2012 appropriations cycle will provide an insight of what we can expect.

Recently Sam Rankin has been participating in the Government Affairs Task Force (GATF), a group of commercial and society publishers, concerned with open access policies the federal government is considering implementing for publications based on federally funded research. The National Institutes of Health's Pub Med Central is an example of an open access repository of federally funded research papers. In recent years, including this year, bills and amendments to appropriations and other bills have been put forth extending the NIH policy to all science agencies that provide over \$100 million in extramural grant support. NSF is one of eleven agencies that falls under this guideline. To date, none of these efforts have passed. The gist of most of these bills is that federally funded researchers are required, within twelve months after their papers are published in a journal, to provide to an open access repository, a copy of the paper as it appeared in the journal.

Publishers are not necessarily against open access, however, they are concerned as to how such a policy will affect their business models. The NIH model was established without input from publishers. Current activity by publishers is directed at having input in discussions concerning implementation of open access. Section 103 of the recently passed America COMPETES Act (P.L. 111-358), outlines a process through which stakeholders can work together to establish a

viable open access policy. Much of the language of this section was provided by GATF. Section 103 directs the Office of Science and Technology Policy (OSTP) to lead a process through the National Science and Technology Council to coordinate the development of public access policies for all federal agencies with extramural research budgets of over \$100 million. This is to be accomplished in a manner that reflects the variability among agencies and scholarly disciplines with input and collaboration from non-federal stakeholders. The law also calls for the consideration of how any new policy would impact the scientific and engineering community, and to take into account the critical role publishers play in the process.

In regard to open access, Sam Rankin participated in and gave a presentation at the MSRI workshop “Mathematics Journals: What is Valued and What May Change.” This was an interesting meeting with participants from the U.S. and Europe.

The 2011 Joint Mathematics Meetings had several sessions organized by the Washington office:

- 1) The Annual Department Chairs Workshop had the largest attendance ever with sixty chairs participating. The Workshop leaders were Timothy Hodges, University of Cincinnati; John Meakin, University of Nebraska; Helen Roberts, Montclair State University; and Stephen Robinson, Wake Forest University.
- 2) A session entitled “AMS Conversation on Non-Academic Employment” was filled to capacity. This session was led by Allen Butler, president of Daniel H. Wagner Associates, Inc and panelists included: Rick Chartrand, Los Alamos National Laboratory; Gary Green, The Aerospace Corporation; Candace Metoyer, Intel Corporation; and Andy Niedermaier, Jane Street Capital, LLC.
- 3) The Committee on Science Policy session featured a discussion with Sastry Pantula, director of the NSF Division of Mathematical Sciences.
- 4) The Committee on Education had a panel, “Teaching Elementary Math is not Elementary: How Mathematicians Can Help , and Why.” Panelists were Hyman Bass, University of Michigan; Ken Ross, University of Vermont; Johnette Roberts, City of Baker, LA School System; and Kristin Umland, University of New Mexico.
- 5) The AMS Congressional Fellowship Session featured current Fellow Hugh MacMillan and 2009-2010 Fellow Katherine Crowley.

In February, an alert was issued by the Washington Office to its Grassroots Action Network (GAN) asking for letters to senators opposing House bill H.R. 1, an appropriations bill which would severely curtail science spending. GAN now has over 2300 names of AMS members who indicated an interest in participating in advocacy efforts through a check-off on AMS dues renewal notices. The House bill has not become law since the Senate, at this time, will not pass it.

On March 11, George Andrews, AMS Past President, presented testimony to the House Appropriations Commerce, Justice, Science and Related Agencies Subcommittee. His testimony focused on the NSF and made a case for the NSF FY 2012 Budget Request. George did well and really got Chairman Frank Wolf and Ranking Member Chaka Fattah’s attention when he mentioned he was on the Penn State faculty. It turns out that Wolf graduated from Penn State and Fattah, who is from Philadelphia, was once on the Board of Trustees. Seeing the reception George received because of his affiliation with Penn State, every witness that followed George tried to make a connection to Penn State no matter how distant or obtuse it was. Several times

during the course of the afternoon, Wolf and Fattah encouraged witnesses to meet with Members of Congress and tell them they had to do something about entitlement spending. Wolf and Fattah feel this is the only way to get increases for science research.

The Washington Office organized the Committee on Science Policy meeting which was held March 4-5 in Washington. The meeting included presentations by Congressman Jerry McNerney, Hill, Office of Science and Technology Policy, NSF, and NIH staff and officials from the British Embassy. The committee also heard a presentation from the Board of Mathematical Sciences and Applications on the “Mathematical Sciences in 2025” project.

The Washington Office continues to lead CNSF, planning the monthly meetings and organizing events the Coalition undertakes. Anita Benjamin has been very busy organizing and directing the Annual Coalition for National Science Funding (CNSF) Hill Exhibition. The Exhibition will take place on May 11, showcasing thirty-six NSF funded projects. The AMS is sponsoring Keith Promislow from Michigan State University. The title of Keith’s exhibit is “Efficient Energy Conversion: The Mathematics of Nanoscale Networks.”

Anita has been working with other AMS staff to improve the society’s presence on social networking sites like Facebook and Twitter. This working group continues to meet on a regular basis to discuss ways to promote the AMS. In addition to other information shared through these sites, the Washington Office has been regularly posting information on meetings and events of interest to members and outside parties.

This spring Sam served on the AAAS Mass Media Selection Committee and the AAAS Energy, Environment, and Agriculture Science and Technology Policy Fellowships Committee. The latter committee selects Executive Branch Fellows. Also during this spring Sam wrote the mathematical sciences chapter for the AAAS Annual Research and Development Report. This Report is based on the FY 2012 Budget Request.

The Washington Office continues to be active in the Task Force for the Future of American Innovation and in monthly meetings on graduate education sponsored by the Council of Graduate Schools , and has increased activity in GATF.

*Respectfully submitted,  
Sam Rankin, Associate Executive Director  
April 22, 2011*





## **Report on AMS and Social Media**

In May 2010 Executive Director Donald McClure appointed a group of staff “to identify ways social networking can advance the work of the AMS..., identify projects and experiments of well-defined scope and start implementing them.” The members of the “Social-Nets” working group are: Anita Benjamin (Assistant Director, Washington Office), Diane Boumenot (Manager, Membership & Programs), Tim McMahon (Analyst and Designer, Business and Publications Computing Dept), Penny Pina (Director, Meetings & Conferences), Peter Sykes (Manager, Creative Services), and Annette Emerson, Chair (Public Awareness Officer).

The Social-Nets Group researched social media and practices, established an AMS presence on selected social networks, and expanded the Society’s activities in social media to enhance the Society’s communications and to engage the community.

The Group continues to publicize the AMS presence in social media; explore social media and networks, best practices and technological developments; define goals; and refine analysis. The Group will be developing for the Executive Director a formal document of AMS social media policies, and goals to be considered for integration into operating plans. In the meantime, staff continue to post items on the social networks to engage readers and viewers, and the number of followers of the AMS and feedback on each site continues to grow.

See <http://www.ams.org/about-us/social>, and the icons with links throughout the AMS website, to link to each of the networks and see examples of AMS postings and the responses.

### AMS Facebook

facebook

Search

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AMERICAN MATHEMATICAL SOCIETY

**American Mathematical Society** Like

Non-Profit Organization · Providence, Rhode Island

Mathematical ecology is a growing and interdisciplinary research between math ecologists using almost every part of math: algebra, analysis, differential equations, topological, numerical simulation, statistics and model complex biological systems. They model establish important parameters and then the area required to sustain a species or invasive species will spread through a region across the vast expanse of our continent. Countries not only benefit fisheries but our island as well. Land recently there were in fact, the rough idea to estimate model data and new mathematics short-range is for example, if an organism is killed in a region, it is one of the main greenhouse gases. Usually its abundance or scarcity of climate change, but sea ice is also an important change to well, insulating the ocean and reflecting of mathematics called percolation in how salt water travels through sea ice, a pit both to the amount of sea ice pressure and 1 communities that sustain polar ecosystems. Doing up-able experiments, and then design new models of porous materials, mentioned to understand sea ice and help reduce climate change.

Wall

American Mathematical Soc... · Top Posts ▾

**American Mathematical Society** added 4 new photos to the album Earth Day - Mathematical Moments.

Earth Day - Mathematical Moments  
Mathematical Moments at <http://www.ams.org/samplings/mathmoments/mathmoments sho...>

See More

April 22 at 9:37am · Share

14 people like this.

**Davide Bondoni**  
New book on "Relational Dual Tableaux" by Orloska and Pilarek (Springer):  
<http://www.davidebondoni.eu/relmics?start=1>

ReMiCS - Events  
[www.davidebondoni.eu](http://www.davidebondoni.eu)  
davide bondoni - Home Page

4 hours ago · Share

FACEBOOK, the most well-known social networking website, is where individuals with similar interests can “like”, share, and comment on posted items, and connect with others with similar interests.

On AMS Facebook, staff post announcements about publications, people, events, and AMS resources, and are able to invite and see responses and track visits to AMS web pages generated from AMS Facebook.

March 24-April 17 there were 54,585 views of AMS Facebook page (“Wall”) postings. AMS Facebook has 1,786 fans (or “Likers”), and more join each day. 861 are in the U.S. and the rest from other countries. 70% are identified as male, 26% female (most in age 25-34 group).

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<http://www.ams.org>

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 77 Tweets 5 Following 320 Followers 42 Listed

**Following 5**

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**amermathsoc** Amer. Math. Soc.  
 It's Earth Day: Download free Math Moments posters and hear podcasts on ice floes, climate, oceans and nature.  
<http://tinyurl.com/3mdskos>  
 22 Apr

**amermathsoc** Amer. Math. Soc.  
 MathJax on StackExchange. This question-and-answer site is now using MathJax to display formulas <http://math.stackexchange.com/>  
 20 Apr

**amermathsoc** Amer. Math. Soc.  
 U Arizona Math Center receives 2011 AMS Award for Exemplary Program or Achievement in a Mathematics Department.  
<http://tinyurl.com/3knce73>  
 19 Apr

**amermathsoc** Amer. Math. Soc.  
 Congrats to NC State University and Smith College for their Mathematics Programs That Make a Difference.  
<http://www.ams.org/citation2011>  
 19 Apr

**amermathsoc** Amer. Math. Soc.  
 Like the AMS on Facebook, see math news, book sales, math problems, and events, and connect with others.  
<http://www.facebook.com/amermathsoc>  
 8 Apr

**amermathsoc** Amer. Math. Soc.  
 @amermathsoc will be at the #NCTM meeting next week in Indianapolis. Come to booth 938 @NCTM  
 7 Apr

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 Media Developers Resources © 2011 Twitter

TWITTER, another free social networking site, allows users to post updates (“Tweets”) of up to 140 characters in length, read and re send (“Retweet”) posts of other users on their own Twitter pages.

The AMS uses Twitter as another way to keep the community informed of AMS and other news, events and deadlines. AMS Twitter now has 313 “Followers”, some of whom have Retweeted and mentioned the AMS.

AMS Blogs *interact + exchange + connect*  
THE AMERICAN MATHEMATICAL SOCIETY

# PhD + epsilon

An early-career mathematician blogs about her experiences and challenges

Home About Adriana Salerno

← Test-making anxiety      Extra! Extra! (credit) →

**Fool me once...**  
Posted on [April 7, 2011](#) by [Adriana Salerno](#)

Last Friday, Mother Nature decided to play her own April Fools joke on much of the Northeast: a snowstorm. I live in Portland, ME, which is a 45 minute commute to Bates College. If it weren't for a brave friend who gave me a ride, I would not have made it to work, and therefore, not been able to teach my classes. (See the picture below for a testament of just how brave my friend is.) In fact, two blizzards this Winter semester kept me from getting to Bates, and in both cases I had to cancel class.

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- [Test-making anxiety](#)
- [PhD! ... plus epsilon](#)

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- [Adriana Salerno](#) on [Extra! Extra! \(credit\)](#)
- [Adriana Salerno](#) on [Extra! Extra! \(credit\)](#)
- [Xamuel](#) on [Extra! Extra! \(credit\)](#)
- [Cassie](#) on [Extra! Extra! \(credit\)](#)

**Archives**

- [April 2011](#)
- [March 2011](#)

**Categories**

- [Contingency plans](#)

BLOGS offer an opportunity for individuals or groups to post regular entries of commentary, descriptions of events, graphics or videos. Blogs also encourage comments from readers, which often develop into threads of conversations.

The first AMS-hosted blog, **PhD + epsilon**, is by past AMS media fellow Adriana Salerno (now assistant professor at Bates College). She blogs about her experiences and challenges as an early-career mathematician. Launched in April, it has generated comments from readers. The next blog to be released is **On the Market**, a job search blog for the mathematical sciences community, by the Joint Committee on Employment Opportunities, moderated by Sue Geller. The AMS Graduate Student Blog, hosted by Williams College, covers a wide range of topics and generates reader comments.



YOUTUBE is the most well-known network for posting videos. Video is a dynamic medium for presenting people and events, and for generating comments.

The AMS YouTube page (“Channel”) includes videos of Who Wants to Be a Mathematician games (pictured here is a still from a video of RI Governor Chafee at the game on Pi Day), and segments about the Joint Mathematics Meetings and SACNAS. The AMS plans to post more videos of interviews and events related to AMS programs. To date, videos on AMS YouTube have been uploaded for viewing 12,424 times.

LinkedIn Account Type: Basic

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**American Mathematical Society**

Discussions Members Promotions Jobs Search More...

Start a discussion or share something with the group...  
Maximum length is 200 characters.  
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 **What meetings or conferences of the AMS did you attend last year, and why?** • 1 day ago




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 **Are you shortening the amount of meetings or conferences you attend in a year? If so, how many did you attend before, how many now, and why?**  
posted 1 month ago

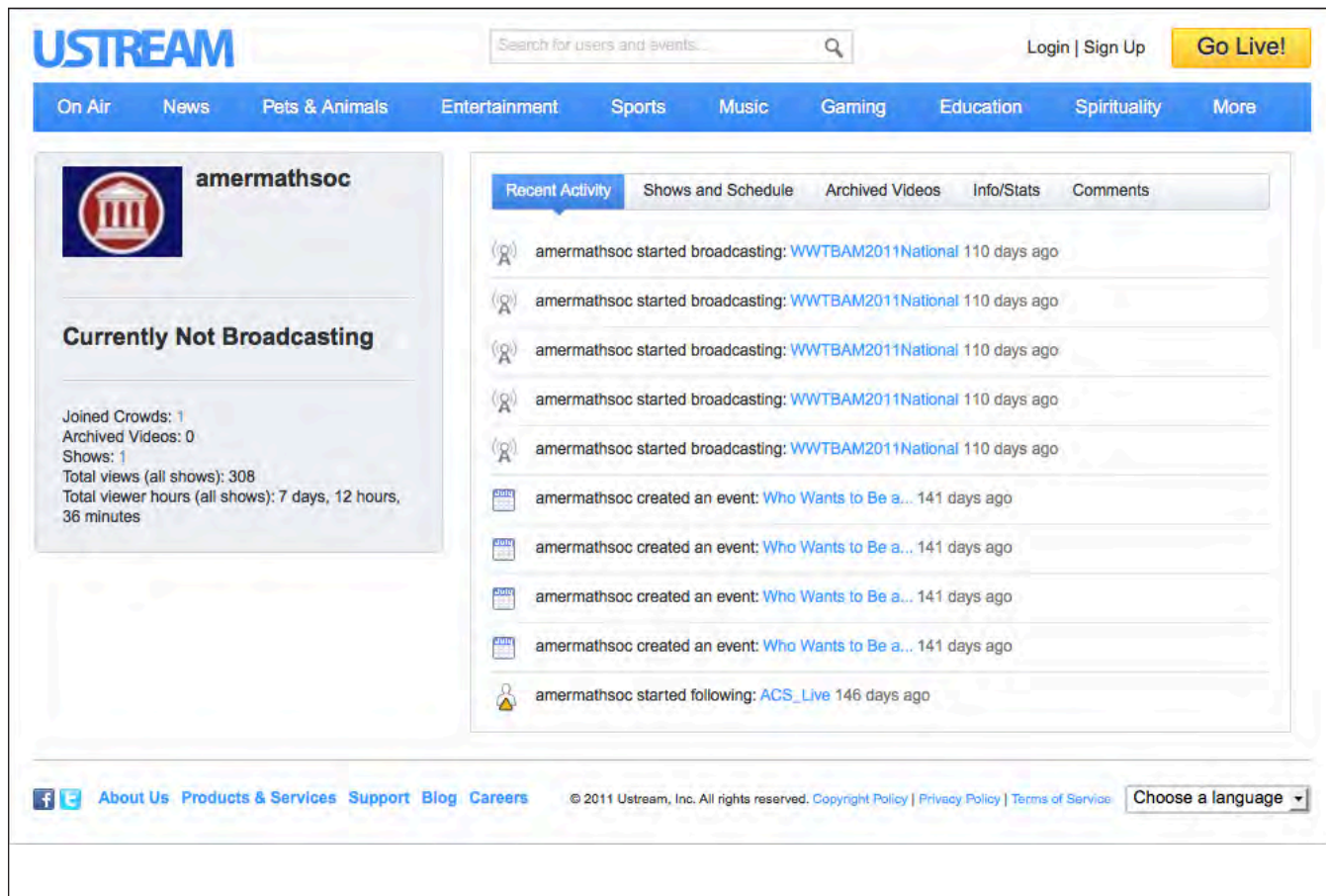
**Coy Gupta** 22 days ago • Yes we have cut-back our travels due to costs, but collaborating with others can be effectively done using online tools and media. ... »

Follow Penny See all 3 comments »

LINKEDIN, the world's largest professional network on the Internet, is where individuals can join online groups to network for employment, share common workplace experiences and concerns, and find information on potential employers, services, and job-seekers.

The AMS is present on LinkedIn both as a Company (where 139 people are following information we post about the AMS) and as a Group, where currently 535 AMS LinkedIn members and AMS staff are following "Discussions" initiated by the AMS (on meetings and MathJobs) and by others (on mathematical topics, courses, job searches).



USTREAM provides a live interactive broadcast platform on the web, where users can view and broadcast a wide variety of content, and comment on live webcasts.

The AMS issued a webcast of the national *Who Wants to Be a Mathematician* game held at the Joint Math Meetings in New Orleans, which allowed the contestants' teachers, classmates and families to watch the game live from around the country.

Annette Emerson, AMS Public Awareness Officer 4/22/11





# Proposal for the Creation of an AMS Student Chapter Program Initial Draft – 21 April 2011

AMS Graduate Working Group: Joseph H. Silverman (chair), Dan Bates, Sylvain Cappell, Kareem Carr, Diana Davis, Eric Friedlander, Doug Lind, Ellen Maycock, Frank Morgan, Ken Ono

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## Section 1: Introduction and Overview

We propose that the AMS institute a program of student chapters that will generate interest in the mathematical sciences and encourage students in their mathematical pursuits. These proposed AMS Student Chapters would:

- Offer funding (up to \$500 annually) by the AMS for mathematical activities undertaken by the student chapters;
- Offer a focus for small groups of local students to interact among themselves and with more established mathematicians.
- Offer a conduit for resources and advice between the AMS and students in the mathematical sciences.

We envision that such a program of student chapters will increase students' awareness of AMS activities and encourage students' current and future involvement in the AMS.

Our proposal is that the AMS Student Chapters be initially established for and by graduate students, although we anticipate that some chapters may include undergraduate members, and eventually there may be all undergraduate chapters at schools that do not have a graduate program. In order to encourage membership and participation in the AMS by chapter members, we suggest that AMS funding be contingent on a certain number of chapter members being members of the AMS. (For example, five AMS members might qualify a chapter to apply for \$250, and ten AMS members for \$500. We note that at schools that are AMS institutional members, all graduate students are automatically members of the AMS.)

This document is an *initial draft* that is meant to promote discussion of the possibility of the AMS forming a student chapter program. The remainder of this document includes a discussion of potential costs (Section 2), material that could be used as the basis for the creation and functioning of student chapters (Sections 3-9, much of it based on a similar program run by SIAM), and a brief list of some of the issues that may require further discussion (Section 10).

## **Section 2: Estimated Cost of the Student Chapter Program**

The total cost to the AMS will depend on how many chapters are formed and how active they are, plus any administrative costs associated with running the program. We suggest a rough estimate of \$10,000 the first year, ramping up to \$50,000 per year when the program is fully operational. This is based on between 100 and 200 chapters, with not every chapter requesting the maximum allowed funding in any given year. If funding becomes an issue, the AMS could change the reimbursement amounts and/or change the rules to make it more difficult to receive more than \$250.

SIAM has a similar student chapter program, and we used the SIAM program as a model in creating the proposed AMS program. In particular, SIAM offers its student chapters up to \$500/year. For comparison purposes, SIAM currently has 72 chapters, of which 62 are in the United States. We also note that SIAM has both graduate and undergraduate chapters, and one institution (the University of Colorado at Boulder) has a separate chapter of each type.

The remainder of this document describes in more detail how AMS Student Chapters would be created and how they would function.

## **Section 3: Student Chapters**

An AMS student chapter is designed to generate interest in the mathematical sciences and to provide students with opportunities such as:

- Share ideas with fellow students and faculty.
- Hone job skills and explore career opportunities.
- Make contacts with students and faculty at their own and at other institutions.

- Invite guest speakers and organize mathematical meetings.
- Sponsor social functions for the mathematical community.
- Attend local AMS meetings as a group.

The AMS student chapter program will benefit both graduate students and the AMS in various ways, including:

- Providing a more direct and reliable means of communication between the AMS and representatives of graduate students.
- Giving a focus for graduate student mathematical organizations, which might lead to local funding.
- Heightening awareness and appreciation of the AMS by graduate students.

AMS student chapters may be based at a single college or university, or at several institutions in a localized area. The AMS encourages chapters to reach out to other allied departments such as computer science, physics, and engineering.

The material in this section based in part on <http://www.siam.org/students/chapters>.

#### **Section 4: Benefits of Student Chapters**

- Student members of AMS student chapters receive free student memberships in AMS.<sup>1</sup>
- The AMS provides up to \$500 per academic year for each student chapter to support guest speakers, refreshments for chapter meetings, and other activities.
- The AMS helps promote student chapter activities via listings on the AMS website and links to chapter websites.
- Chapter activities are reported in the *AMS Notices*.
- Participation in chapter events at sectional and national AMS meetings.
- Faculty advisors and chapter officers receive periodic updates from the AMS regarding chapter activities and news.

The material in this section based in part on <http://www.siam.org/students/benefits>.

#### **Section 5: Checklist for Establishing a New Chapter**

##### **Timeline:**

---

<sup>1</sup> This needs to be thought out carefully. If the college or university is an AMS institutional member, then their graduate students are already entitled to free AMS membership. (Colleges get 4 free undergrad memberships.) This is one of the perks of being an institutional member, so allowing non-institutional members to form a student chapter and receive free student memberships could have a serious financial impact on the AMS. Possibly for non-institutional members, offer 4 free nominee memberships to the chapter, or nominee memberships to the officers, and require other students to join that AMS. Or use the new dues category, which is something like 1/8 of regular dues, so a nominal amount.

1. Submit a signed petition and letter of intent to AMS indicating your intention to establish a Student Chapter of the AMS.
2. The AMS will review your petition and letter of intent, and assuming it is approved, a letter of approval will be sent to your primary contact and/or faculty advisor. This will be done within 60 days of the AMS's receipt of your material
3. Create the Rules of Procedure for you chapter and return a copy to the AMS. This should follow the draft version supplied by the AMS (see below), with appropriate changes to fit the needs of your chapter.
4. Explore funding options, especially within your department and institution, and develop a budget.
5. To receive financial support from the AMS, submit a Request for Funding to the AMS by September 30 of the academic year. (New chapters may submit funding requests at the time that they are approved.)
6. Provide a list of Chapter members to the AMS so that they can receive their complimentary student memberships in the AMS.

**Letter of Intent:**

The letter of intent must include the following information:

- \_\_\_\_\_ Identify the Sponsoring Organization (generally a college or university). Additional organizations may be designated as Associate Sponsors.
- \_\_\_\_\_ Identify the Faculty Advisor. Include advisor contact information (email and phone).
- \_\_\_\_\_ Describe the purpose of the proposed chapter.
- \_\_\_\_\_ Describe the activities of the proposed chapter.

**Petition:**

- \_\_\_\_\_ Two faculty members at the sponsoring organization who are members of the AMS.
- \_\_\_\_\_ One faculty member at each associate sponsoring organization (if any) who is a member of the AMS.
- \_\_\_\_\_ At least 10 students who agree to be members of the chapter.<sup>2</sup>

**Rules of Procedure:**

Put together the rules that will govern your chapter. The AMS provides a draft version that you can use as a template. You may modify the template to fit your chapter. Some of the items that should be covered are:

- \_\_\_\_\_ Activities
- \_\_\_\_\_ Institutions from which members will be recruited
- \_\_\_\_\_ Membership Eligibility
- \_\_\_\_\_ Benefits of Membership

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<sup>2</sup> SIAM requires that a certain number of the students forming the chapter should already be members of SIAM. It is open for discussion whether such a requirement is useful.

- \_\_\_\_\_ Officers and terms of office
- \_\_\_\_\_ Executive Committee (if any)
- \_\_\_\_\_ Other Committees (if any)
- \_\_\_\_\_ Meetings
- \_\_\_\_\_ Chapter Funds
- \_\_\_\_\_ Dues (if any)

**Funding:**

- \_\_\_\_\_ Develop a proposed budget for your chapter
- \_\_\_\_\_ Submit funding requests to the AMS by September 30
- \_\_\_\_\_ Discuss with your department how to handle funds, and if necessary, set up a chapter bank account.
- \_\_\_\_\_ Investigate additional sources of funding from departments and and sponsoring institutions.

The material in this section based in part on

<http://www.siam.org/students/chapters/checklist.php>.

**Section 5: Draft Rules of Procedure**

The following is a template to use in designing the rules of procedure for your chapter. Material to be added or changed is indicated by italics.

This Rules of Procedure (hereinafter called Rules) apply to the AMS Student Chapter called "*insert name of college or university* Chapter of the AMS." In the event there is more than one sponsoring organization, insert instead "Student Chapter of the AMS *name of region*." Sponsoring organizations can include colleges and universities, and industry and government units.

The Chapter to which these Rules apply is formed by the American Mathematical Society and shall operate within the Bylaws of the parent organization. The AMS bylaws specify how Chapters are formed; see the AMS bylaws for details. The Chapter shall not affiliate with any other organization without first obtaining the written approval of the AMS. Provisions for AMS Student Chapters are contained in the AMS Bylaws and are included in these Rules. No provisions of these rules shall be construed so as to contradict the Bylaws of the AMS.

ARTICLE I: PURPOSE

The objectives of the American Mathematical Society (AMS), as established in the Certificate of Incorporation (3 May, 1923), are as follows:

- The particular business and objects of the Society are the furtherance of the interests of mathematical scholarship and research.

Purposes of the Chapter shall be consistent with the objectives of the AMS. *State the specific purposes of your Chapter here.*

## ARTICLE II: ACTIVITIES

*Briefly describe the activities you intend for your Chapter. Examples might include regular meetings of the chapter, inviting speakers, trips to conferences, awarding of an annual student prize, community outreach, etc.*

## ARTICLE III: INSTITUTION SERVED

*Specify the institutions from which chapter members will be recruited.*

## ARTICLE IV: MEMBERSHIP

IV.1. Any person engaged or interested in mathematics and its applications shall be eligible for membership in this Chapter. The AMS encourages chapters to be interdisciplinary, including members from multiple departments. *You may wish to specify further (or restrict) those who are eligible for membership, such as juniors and seniors, graduate students, faculty, etc. Organizers are encouraged to require Regular or Student Membership in the AMS.*

IV.2. *Specify here what membership types, if any, there will be and what dues, if any, will correspond to these types. After Chapter organization is complete, annual dues (if any) shall be the responsibility of the Officers or the Executive Committee of the Chapter.*

IV.3. All members of the chapter who are students enrolled in the sponsoring institution(s) are eligible for free student memberships in the AMS. The Chapter is responsible for providing a list of its student members to the AMS so that complimentary AMS student memberships can be processed.

IV.4. *Insert here provisions for termination of a member in a Chapter by resignation or otherwise, e.g. "Termination of student membership will take place upon graduation or withdrawal from the university or upon failure to pay dues."*

## ARTICLE V: SPONSORSHIP

*Sponsoring and Associate Sponsoring Institutions are normally colleges or universities, but may be industry or government units.*

V.1. The Sponsor is *insert name of college or university*. (If applicable, insert the Associate Sponsor(s) is (are) *insert name(s) of Associate Sponsor(s)*).

V.2. The Sponsor of the Chapter shall appoint a Faculty Advisor for the Chapter. In the event said Advisor relinquishes his/her position, the Sponsor shall appoint a new Advisor. The responsibilities, rights and duties of the Faculty Advisor shall be those normally assigned to the Faculty Advisor of student organizations of the Sponsor, but in addition, the Faculty Advisor is expected to take leading role in the development of the Chapter activities consistent with the objectives of the AMS. *Organizers may wish to modify the wording here such that the term of the Faculty Advisor is limited to a fixed period unless re-appointed.*

## ARTICLE VI: OFFICERS

VI.1. The Chapter shall have a President, a Vice-President, a Secretary and a Treasurer. (The Secretary and Treasurer may be combined into a single office; each Chapter may establish additional officers as it deems necessary to conduct its affairs.) Officers shall be Regular or Student Members in good standing with the AMS, and shall be chosen from Student Members of the Chapter.

VI.2. The President shall preside at the meetings of the Chapter (and the Chapter Executive Committee (see Article VII below)). In the absence of the President, the Vice-President shall assume the duties of the President. In the absence of the latter, the Secretary shall assume said duties. *In addition to the duties outlined above for the Vice-President, the organizers may wish to specify additional duties, such as responsibility to meetings or other Chapter activities.*

VI.3. The Secretary shall keep a record of the affairs of the Chapter, handle correspondence, and submit an annual report of Chapter activities to the Secretary of the AMS, which report shall be suitable for publication in Notices of the AMS or its equivalent.

VI.4. The Treasurer shall receive and take custody of Chapter funds, and shall submit an annual Treasurer's Report and other financial reports, as requested, to the Treasurer of the AMS. The annual Treasurer's Report shall be prepared as of the end of the academic year and shall be transmitted to the Treasurer of the AMS by no later than 30 days following the end of the academic year.

VI.5. *Organizers shall specify the terms of office here. It is suggested that terms of Chapter officers not exceed two years, but re-election of an officer for an additional term should be permissible. Two-year terms permit staggering of terms, which fosters continuity of Chapter management.*

## ARTICLE VII: EXECUTIVE COMMITTEE

VII.1. *It is suggested, but not required, that the Chapter be managed by an Executive Committee consisting, for example, of the incumbent officers and the most recent retired president. Chapter organizer should specify here who has responsibility for Chapter management and decision making. If there is an Executive Committee, indicate its responsibilities, membership, and who the committee chairperson is.*

VII.2. *If there is an Executive Committee, organizers should indicate how a vacancy is filled for the unexpired term.*

## ARTICLE VIII: OTHER COMMITTEES

VIII.1. *Organizers shall specify how nominations for officers and other elected officials are to be prepared and submitted. For example: "A Nominating Committee may be appointed by the President with the approval of the Executive Committee; nominees must be eligible as stated in Article VI." Organizers shall also indicate how elections are to be implemented.*

## ARTICLE X: MEETINGS

X.1. There shall be at least *indicate the number* meetings per year. *How meeting topics are to be selected and meetings are scheduled and implemented should be indicated here.*

X.2. The Chapter shall conduct a business meeting once per year during the month of *specify month*. Other business meetings may be called by the President or the Treasurer on two weeks' notice.

## ARTICLE XI: CHAPTER FUNDS

XI.1. The Chapter may levy dues, voluntary or otherwise, collect registration fees for Chapter meetings, and otherwise raise funds in any lawful manner consistent with these Rules and the Bylaws and Certificate of Incorporation of the AMS. *Chapter policy regarding dues should be inserted here.*

XI.2. *Although the payment of Chapter dues need not be a criterion for membership in the Chapter, the Chapter may limit the privilege of voting for officers and others holding office to those members of the Chapter who have paid such dues. Insert policy here.*

XI.3. The Chapter shall deposit all unused funds to which it has legal title in excess of \$200 in an insured savings account, unless current operating commitments are in excess of that amount or unless the Chapter Treasurer obtains a written authorization from the Treasurer of the AMS.

XI.4. The Treasurer shall maintain books of account that show income and expense items for all activities and balances for all accounts of the Chapter.

XI.5. The Chapter may request a grant or loan from the Treasurer of the AMS. Such requests shall be made by submission of "Request for Funding" form to the AMS and include a current financial statement for the Chapter and a proposed budget for the requested funds.

XI.6. Other than seeking funds from the sponsoring institutions of the chapter, no officers or member of the Chapter may apply for a grant to support the Chapter activities or enter into any contract to support such activities or provide services, without approval of the President and the Treasurer of the AMS or the Executive Director of the AMS acting on behalf of the Treasurer.

## ARTICLE XII: AMENDMENTS

XII.1. These Rules may be altered or amended with the approval of the AMS Board of Trustees. Submission to the board of proposal alterations or amendments shall be made only after approval by majority vote of members of the Chapter present (or represented by proxy) at a scheduled meeting. *Organizers may wish to include provisions for bringing the notice of the proposed change to the attention of the Chapter members.*

## ARTICLE XIII: TERMINATION OF THE CHAPTER

XIII.1. A Chapter may terminate itself by the unanimous vote of the members of the Chapter present (or represented by proxy) at a scheduled meeting, provided that notice of the proposed termination and the meeting at which it is to be considered has been given to all Chapter members at least 30 days in advance.



XIII.2. A Chapter may be terminated by the board if there has been no Chapter activity for one year.

XIII.3. In the event a Chapter terminates, the funds to which it has legal title shall revert to the account of the AMS.

The material in this section based in part on  
<http://www.siam.org/students/chapters/rules.php>

### Section 6: Petition for the Formation of a Student Chapter of the AMS

Sponsoring organizations may include colleges, universities, industry and governmental units. If more than one organization sponsors the Chapter, one should be designated as the "Sponsor" and the remaining organization(s) are designated "Associate Sponsor(s)".

This petition is to be signed by 2 faculty members at the sponsoring institution who are members of the AMS, 1 faculty member from any associate sponsoring institution(s) who is a member of the AMS, and at least 10 students who agree to be members of the chapter, of whom at least 5 must be members of the AMS. (Note that after the chapter is approved, all members of the chapters receive free student membership in the AMS.<sup>3</sup>)

We, the undersigned, petition the AMS Board of Trustees to approve the formation of a Student Chapter of the AMS at \_\_\_\_\_.

Sponsoring Institution: \_\_\_\_\_

Associate Sponsoring Institution(s) if any: \_\_\_\_\_

Please indicate by circling F or S if you are faculty or student, and by circling Y or N to indicate if you are a current AMS member.

	Name (please print)	Signature	Institution	Email	Department		
F	S	_____	_____	_____	_____	Y	N
F	S	_____	_____	_____	_____	Y	N
F	S	_____	_____	_____	_____	Y	N
F	S	_____	_____	_____	_____	Y	N
F	S	_____	_____	_____	_____	Y	N
F	S	_____	_____	_____	_____	Y	N

The material in this section based in part on  
<http://www.siam.org/students/chapters/pdf/petition.pdf>

<sup>3</sup> This should be changed to reflect the membership options for chapter members.

## **Section 7: Annual Final Report**

The AMS will provide an Annual Final Report form that student chapters can download, print, fill out, and submit. Alternatively, the forms could be entirely online and submitted electronically.

The form used by SIAM may be found at

[http://www.siam.org/students/chapters/pdf/final\\_11.pdf](http://www.siam.org/students/chapters/pdf/final_11.pdf)

## **Section 8: Expense Report**

The AMS will provide an Expense Report form that student chapters can download, print, fill out, and submit. Alternatively, the forms could be entirely online and submitted electronically.

It was noted that the form should include information about other sources of funding, in particular to prevent groups simultaneously receiving funding from the AMS, SIAM, and/or the MAA for the same event.

The form used by SIAM may be found at

<http://www.siam.org/students/chapters/pdf/ExpRptForm.xls>

## **Section 9: Request for Funding**

The AMS provides funding to help chapters generate interest in mathematics among students on campus. Student Chapters with at least five AMS members may request up to \$250 per academic year from the AMS for chapter activities, and chapters with at least ten AMS members may request up to \$500 per academic year.

The AMS will provide a Request for Funding form that student chapters can download, print, fill out, and submit. Alternatively, the forms could be entirely online and submitted electronically.

The form used by SIAM may be found at

<http://www.siam.org/students/chapters/pdf/funding.pdf>

## **Section 10: Items for Discussion**

1. As already discussed elsewhere, there is the delicate issue of providing free or reduced price AMS membership for chapter members.
2. Can a student chapter be funded by both SIAM and the AMS? For example, might there be a "XXX University AMS/SIAM Student Chapter"? If so, would the chapter be able to request \$500 from both the AMS and SIAM? Further, when undergraduate chapters are created, could they also receive MAA funding and recognition?
3. The current formulation of the AMS student chapter program is quite similar to SIAM's program. Is this a problem? If student groups are forced to choose between forming an AMS chapter or a SIAM chapter, might this cause tension with SIAM? Is there an issue with the AMS potentially poaching existing SIAM chapters? Presumably the AMS doesn't want to get into a bidding war

with SIAM over student chapters. Joint chapters might solve that problem. Possibly joint chapters could request a lesser amount from each organization, but with a total greater than \$500, thereby providing an incentive to form a joint chapter. In any case, it is clear that the AMS should initiate a discussion with SIAM on these issues.

## **Appendix A: Contact Information for Members of the Working Group**

To send an email to the entire group, use the alias

ams-gradwork@math.utk.edu

Individual email addresses:

"Dan Bates" <bates@math.colostate.edu>  
"Sylvain Cappell" <cappell@cims.nyu.edu>  
"Kareem Carr"  
"Diana Davis" <diana@math.brown.edu>  
"Eric Friedlander" <eric@math.northwestern.edu>  
"Doug Lind" <lind@math.washington.edu>  
"Ellen Maycock" <ejm@ams.org>  
"Frank Morgan" <Frank.Morgan@williams.edu>  
"Ken Ono" <ono@mathcs.emory.edu>  
"Joseph Silverman" <jhs@math.brown.edu>  
"Robin Hagan Aguiar" <rha@ams.org>



***Fee changes for the Employment Center***

The fees listed in the chart below will go into effect for the 2012 Employment Center in Boston, Massachusetts.

Two years ago, the AMS launched new Employment Center software provided by Boxwood Technologies and integrated into the EIMS job ads. User response to the new system has been mixed, and we are investigating other products for 2013.

The fees below include use of a table, the web information system, and the web appointment scheduling system. Computer work stations are provided onsite for use of participants, although ideally most contact will be made before the meeting begins. Employment Center registration on the new software also includes one job ad on the EIMS system.

Pricing has been adjusted to reflect the fact that some employers have no use for the posted ad portion of this system. Boxwood software does not allow us to price tables separately from ads. Also, we have decreased the cost of the larger tables to encourage their use which helps to maintain a more professional atmosphere.

Note also that applicants no longer pay fees, however all participants will need a meeting badge for admittance into the room.

Summary of recent and proposed fees

	2007	2008	2009	2010	2011	<b>2012</b>
<i>Quiet Area table (1-2 int)</i>	235	245	250	265	295	<b>285</b>
<i>Second Quiet Area table</i>	85	95	100	100	105	<b>110</b>
<i>Committee table (3-6 int)</i>			350	365	400	<b>365</b>
<i>Second Committee table</i>				100	105	<b>110</b>

***Fee changes for Employment Information in the Mathematical Sciences (EIMS)***

The following fees have been set for the 2011/12 Employment Information in the Mathematical Sciences.

This electronic job ad system, aimed at a general mathematical audience as well as the PhD market, utilizes software and web hosting provided by Boxwood Technology. This service has the appearance of being housed on the AMS website. Note that the paper version of EIMS was discontinued in July, 2009. The “Featured Job” functionality allows employers to have their job featured more prominently in search results, and has been quite popular.

Fees were increased by \$10 last year, by \$5 this year and most likely would increase by \$10 next year. We are attempting to maintain EIMS as a simpler, lower cost alternative to MathJobs.org.

Proposed listing fees for July through June:

	2009/10	2010/11	2011/2012
<i>60 day listing, unlimited size</i>	200	210	<b>215</b>
<i>120 day listing, unlimited size</i>	275	285	<b>290</b>
<i>180 day listing, unlimited size</i>	350	360	<b>365</b>
<i>"Featured Job" add-on</i>	75	75	<b>75</b>

***Fee changes for MathJobs.org***

The following fees will go into effect for 2011/12 MathJobs.org employer registrations (from July 1, 2011 through June 30, 2012). Employers located in North America will be allowed to open regular accounts. All employers will be allowed to open advertising-only accounts. The service is free to applicants.

The fee structure allows for one-ad (but otherwise full service) accounts to be purchased by North American employers for a slight discount. This offer is meant to accommodate the needs of smaller schools and to encourage employers from outside academia to try using MathJobs.org.

Proposed employer fees:

Regular account (for up to seven ads), 12 months from date of sign up:	<b>\$550</b>
Regular account (for one ad only), 12 months of usage from date of sign-up:	<b>\$385</b>
Advertising-only account (for one ad), 12 months from date of sign up:	<b>\$275</b>

Previous fees:

	Regular accounts	Ad-only accounts
<i>2010/11</i>	\$525	\$260
<i>2009/10</i>	\$500	\$250
<i>2008/09</i>	\$450	
<i>2007/08</i>	\$400	
<i>2006/07</i>	\$350	
<i>2005/06</i>	\$300	

***Fees for MathPrograms.org***

The following fees have been set for 2011/12 MathPrograms.org registrations. Academic institutions and nonprofit and government organizations who are seeking applications from the mathematical sciences community for programs or funding may create a 12-month account. They may post program announcements, accept applications and confidential letters of reference, assign access to those who will evaluate the applications, respond to applications, and store the applications in the system.

During the introductory period of this service, ten organizations have created accounts on the system, in addition to various AMS programs and the Duke University Department of Mathematics.

The fees will be in effect from July 1, 2011 through June 30, 2012. A one-program fee allows smaller programs to benefit from the service. The service is free to applicants.

**Proposed organization fees (for up to seven programs):**

Regular account, up to 7 programs, 12 months from date of sign up: **\$500**  
Regular account, 1 program, 12 months from date of signup: **\$250**

***2012 Short Course Fees***

The following chart indicates the history of fees for the Short Course since 2005 and the fees that have been set for 2012.

<b>Year</b>	<b>Name of Course</b>	<b>Preregister -member/ non</b>	<b>On-site- member/ non</b>	<b>S/U/E prereg*</b>	<b>S/U/E onsite*</b>
2005	The Radon Transform and Appl. to inverse Probability.	\$85/\$108	\$115/\$140	\$37	\$55
2006	Modeling and Simulation of Biological Networks	\$87/\$115	\$118/\$148	\$38	\$57
2007	Aspects of Statistical Learning	\$90/\$120	\$120/\$151	\$40	\$60
2008	Applications of Knot theory	\$94/\$125	\$125/\$155	\$42	\$63
2009	Quantum Computation and Quantum Information	\$96/\$130	\$130/\$160	\$44	\$65
2010	Markov Chains and Mixing Times	\$98/\$135	\$132/\$165	\$46	\$67
2011	Computational Topology	\$100/\$140	\$134/\$170	\$48	\$69
	Evolutionary Game Dynamics	\$100/\$140	\$134/\$170	\$48	\$69
2012	Random Fields and Random Geometry	\$102/\$145	\$136/\$175	\$50	\$71
	Computing with Elliptic Curves using Sage	\$102/\$145	\$136/\$175	\$50	\$71

\*S/U/E: Student/Unemployed/Emeritus





## **Report to the AMS on the Mathematics activities at the 2010 SACNAS conference**

The success of Research Experiences for Undergraduate programs (REU) has shown a persistent need for minority undergraduate students to be exposed to areas of active research in mathematics, and in particular to enhance the opportunities available to them to present their research findings at national venues such as the SACNAS conference. Mathematics has always been a part of SACNAS and together with our partnering and sponsoring agencies and organizations such as the National Security Agency (NSA) National Science Foundation (NSF), American Mathematical Society (AMS), and 7 NSF-funded Mathematics Institutes we continue to sponsor a coordinated effort to both increase and sustain the pipeline of underrepresented mathematicians through a strong presence at the SACNAS conference.

There was funding from NSA and NSF for 150 students to attend the 2010 SACNAS conference in Anaheim, CA on September 29 - October 3, 2010. Additional funding was provided by AMS support. SACNAS effectively implemented a broad range of educational, and professional and leadership development activities for undergraduate, graduate, post-doctoral and young professionals. These provided critically important opportunities for mathematics students and professionals to establish and maintain contact with a strong network who, as mentors and role models, have and will support them throughout their college and university years and their professional lives. Students' oral or poster presentations, attendance at mathematics focused symposia and mini-courses addressed current research in mathematics.

The 2010 SACNAS national conference offered the following activities and events:

### **PRECONFERENCE ACTIVITIES**

#### **Undergraduate Mini courses in Mathematics**

This session ran in parallel with the Modern Mathematics Workshop (MMW) organized by the Mathematics Institutes. While the MMW highlights programs for graduate students, postdocs and professionals, the institutes are also interested in reaching undergraduate students by organizing two mini courses in different mathematics topics and combining the audiences of the MMW with the undergraduates during a keynote speech.

##### **1. Math Mini Course I: Mathematical Models in Geosciences**

*Sponsored by Math Institutes, the National Science Foundation, and the National Geospatial-Intelligence Agency*

The goal of this mini-course is to expose undergraduates to the connections between mathematics and geosciences, including simple models of geophysical flows and the ideas that lead to ocean circulation models and atmospheric phenomena.

Session Speaker: Juan M. Restrepo, PhD, University of Arizona

## **2. Math Mini Course II: Mathematical Approaches to Systems Biology**

*Sponsored by Math Institutes, the National Science Foundation, and the National Geospatial-Intelligence Agency*

The goal of this mini-course is to illustrate the approach of systems biology and its utility for our understanding of cancer. After an introduction to cancer systems biology, the course will describe several case studies of successful mathematical approaches. The course will end with hands-on modeling activities.

Session Speakers: Reinhard Laubenbacher, PhD, Virginia Bioinformatics Institute; and Franziska Hinkelmann, Ph.D. Candidate, Virginia Tech

### **Math Institutes Modern Mathematics Workshop: Session I (Continues on Thursday)**

*Sponsored by Math Institutes, the National Science Foundation, and the National Geospatial-Intelligence Agency*

Seven national mathematics and statistics institutes offer this session to invigorate the research careers of minority mathematicians and mathematics faculty at minority-serving institutions. We highlight presentations on topics drawn from the institutes' upcoming programs, a keynote speaker, and an informative panel presentation on the 2011-12 programs and workshops.

### **Math Institutes Modern Mathematics Workshop: Session 2 (Continued from Wednesday)**

9:00-10:00AM Keynote Speaker

10:20AM-12:00PM-Panel of all the Institute Representatives

## **CONFERENCE ACTIVITIES**

### **Keynote address by mathematician**

Richard A. Tapia (Rice University)

### **Breakfast & Keynote Address**

Who Wants to Be a Mathematician? This session is a fun and exciting contest for undergraduates. All contestants win prizes, with a top prize of \$2,000.

Chairs: Michael Breen, PhD, Public Awareness Officer, American Mathematical Society, and Bill Butterworth, PhD, Associate Professor, DePaul University

## **SCIENTIFIC SYMPOSIA**

### **Games, Puzzles, Patterns!**

Often people think of puzzles without thinking of mathematics although many strategies and tricks are based on solid mathematical theory. This session demonstrates a variety of two-player games arising within counting theory such as Go, Chess, and Dots-and-Boxes. This session is for all who love puzzles (mathematicians or not!).

Chair: Angela Gallegos, PhD, Assistant Professor, Occidental College

Speakers:

Arthur Benjamin, PhD, Professor, Harvey Mudd College - The Best Way to Knock 'em Down

Emille Davie, PhD, Visiting Assistant Professor, University of California, Santa Barbara - The Game of Nim

Daniel Garcia, PhD, Computer Science Lecturer SOE, University of California, Berkeley - 274 Students Can't Be Wrong! GamesCrafters, a Computational Game Theory - Undergraduate Research and Development

Jennifer Quinn, PhD, Professor and Associate Director of Interdisciplinary Arts & Sciences, University of Washington, Tacoma - Playing with Patterns: Focus on Fibonacci

### **Mathematical Modeling in Climate, Biological Systems, and Geophysical Fluid Dynamics**

Complex systems such as patterns in climate, weather, and ecosystems cannot be viewed under a sole scientific umbrella. The speakers will present work that uses mathematics, statistics, and complex networks in an applied framework.

Chairs: Alejandro Aceves, Professor, Southern Methodist University; and Gabriel Huerta, Associate Professor, University of New Mexico

Speakers:

Gerardo Chowell, PhD, Assistant Professor, Arizona State University -Connections of Models to Data to Estimate Epidemiological Parameters and Test Public Health Policy

Juan Restrepo, PhD, Associate Professor, University of Arizona - Geophysical Fluid Dynamics, Scientific Computing, and Estimation Theory

Alejandro Villagran, PhD, Postdoctoral Fellow, Rice University - Statistical Computation in Climate and Computer Models

### **Statistical Approaches to Study the Sustainability of Critical Urban Infrastructures and the Environment**

The session will describe and illustrate statistical tools that can be used to study the sustainability of urban infrastructures and the impact of the environment on public health issues, especially as it relates to obesity in the population of Hispanic children. In particular, new approaches to the modeling of the power grid to measure its reliability will be presented, and

analyses of interventions and programs that attempt to control the high incidence of obesity in children will be discussed. Results from a binational study on the obesity of Mexican children will also be discussed.

Chair: Javier Rojo, PhD, Professor, Rice University

Speakers:

Leonardo Duenas Osorio, PhD, Assistant Professor, Rice University - Methods to Assess the Reliability and Sustainability of Power Distribution Systems

Lisa Rosas, PhD, W.K. Kellogg Postdoctoral Scholar, University of California, San Francisco - Obesity and Diet Among Children of Mexican Descent: Results of a Binational Study

Emma Sanchez, PhD, W.K. Kellogg Postdoctoral Scholar, University of California, San Francisco - Are New School Nutrition Policies Closing the Latino/White Disparity in Childhood Obesity?

### **Applications of Statistics to the Environment, Genetics, and HIV/AIDS**

Learn about the power and importance of statistics. Speakers will show how statistics is used in solving problems in genetics, HIV/AIDS, and environmental research.

Chair: Keith Crank, PhD, Assistant Director, American Statistical Association

Speakers:

Christina Kitchen, PhD, Associate Professor, University of California, Los Angeles - Evolutionary Medicine: How Biostatistics Can Aid in the Fight Against HIV/AIDS

Janet Sinsheimer, PhD, Professor, David Geffen School of Medicine at the University of California, Los Angeles - Statistics and the Human Genome

Talithia Williams, PhD, Assistant Professor, Harvey Mudd College - Statistics in Environmental Research

### **Hidden Structures and Mirror Symmetries: Relations Between Physical and Mathematical Models of Space**

Is the folding of DNA related to the structure of the visible universe? This symposium will introduce the subjects of knot theory, topology, geometry, and mirror symmetry and hint at subtle and deep connections between them. Undergraduate students, graduate students, and faculty are all encouraged to attend!

Chairs: Dagan Karp, PhD, Assistant Professor, Harvey Mudd College; and Robin Wilson, PhD, Postdoctoral Fellow, Cal Poly Pomona

Speakers:

Ilesanmi Adeboye, PhD, Visiting Assistant Professor, University of California, Santa Barbara - An Introduction to Hyperbolic Geometry

Roberto Pelayo, PhD, Assistant Professor, University of Hawaii at Hilo - Knots, Surfaces, and the Geometry of Kakimizu Complex

Ursula Whitcher, PhD, Teaching and Research Postdoctoral Fellow, Harvey Mudd College - Reflexive Polytopes and Mirror Universes

### **Mathematics of Human Biology**

This session provides insight into applied and computational mathematics to internal functions of the human body such as sleep cycles, the effect of exposure to chemicals (such as PFOS), and virtual surgery.

Chair: Erika Camacho, PhD, Assistant Professor, Arizona State University

Speakers:

Janet Best, PhD, Assistant Professor, Ohio State University - Dopamine, Serotonin, and Diet

Kevin Flores, PhD, Postdoctoral Fellow, Arizona State University - Multi-Scale Models of Cellular Dynamics

Leona Harris, PhD, Assistant Professor, The College of New Jersey - Applications of Physiologically-Based Pharmacokinetic Models

Joseph Teran, PhD, Assistant Professor, University of California, Los Angeles - Scientific Computing in Real Time

### **Mathematics Learning and Identity as Latinos/as: Our Mathematics, Our Future**

This session presents research findings related to mathematical learning and identity development for Latinos/as across K-12 education. The research reports on multiple dimensions that impact mathematical learning and how Latino/a students position themselves and are positioned by others as math learners.

Chairs: Julia Aguirre, PhD, Assistant Professor, University of Washington, Tacoma; and Sylvia Celedon-Pattichis, PhD, Associate Professor, University of New Mexico

Speakers:

Cynthia Anhalt, PhD, Visiting Assistant Professor/Post Doctoral Faculty, University of Arizona - Beyond Computation: Interviews with Elementary Mexican-American Students on Their Understanding of Mathematics Assessments Items

Sylvia Celedon-Pattichis, PhD, Associate Professor, University of New Mexico and Erin Turner, PhD, Assistant Professor, University of Arizona - Mathematical Problem Solving Among Latina/o Kindergarten Students: An Analysis of Opportunities to Learn

Rodrigo Gutierrez, Doctoral Student, University of Arizona - Critical Mathematics Learning in a Precalculus Classroom

### **Mathematics Teaching of Latinas/os: Helping the Field Better Understand and Predict the Future of STEM Education**

Research projects associated with the Center for Mathematics Education of Latinas/os (CEMELA) highlight the complex nature of teaching Latinas/os when equity/social justice goals are considered. Researchers show how focusing on the mathematics education of Latinas/os is important for better understanding and predicting how STEM education can address a global and sustainable future.

Chairs: Julia Aguirre, PhD, Assistant Professor, University of Washington, Tacoma; Rochelle Gutierrez, PhD, Associate Professor, University of Illinois at Urbana-Champaign; and José María Menéndez Gómez, PhD, CEMELA Postdoctoral Fellow, Radford University

#### Speakers:

Julia Aguirre, PhD, Assistant Professor, University of Washington, Tacoma - Connecting High Cognitive Demand Mathematics and Community-Based Funds Knowledge: New Approaches to Mathematics Teacher Preparation

Sylvia Celedón-Pattichis, PhD, Associate Professor, University of New Mexico - Implementing Standards-Based Curriculum: Voicing the Experiences of an ESL/Mathematics Teacher

Rochelle Gutierrez, PhD, Associate Professor, University of Illinois at Urbana-Champaign - Nesting in Nepantla: How Might a Focus on Uncertainty Better Prepare Teachers for an Equity Stance?

José María Menéndez Gómez, PhD, CEMELA Postdoctoral Fellow, Radford University - University/School Partnership: Adapting Mathematics Instruction for Latina/o Students

### **PROFESSIONAL DEVELOPMENT SESSIONS**

#### **Career Development in the Sciences: What Can Professional Societies Do for You?**

Professional scientific organizations provide linkage to training opportunities, committee service experiences, presentation at meetings, and, perhaps most importantly, networking with successful scientists. This workshop presents mechanisms students can use to identify which professional societies are appropriate for their goals and how to make best use of the opportunities.

Chairs: Thomas Landefeld, PhD, Professor, California State University, Dominguez Hills; and Phillip Ortiz, PhD, Area Coordinator, Empire State College

#### Speakers:

Teresa Mourad, Director, Education and Diversity Programs, Ecological Society of America

Donald McClure, AMS Executive Director

## **Opportunities in Mathematics from a Funding Agency Perspective**

This multidisciplinary session highlights mathematical funding opportunities available to applicants in a wide range of career levels from undergraduate students to senior faculty members. Panelists from the NSA, NSF, DOE, and NIH will present current and new initiatives and then field questions from the audience. Everyone is invited.

Chair: Stephen Wirkus, PhD, Associate Professor, Arizona State University

Speakers:

Heather Garten, PhD, Director, Mathematical Sciences Program, Department of Defense

Mary Ann Horn, PhD, Program Director, National Science Foundation

Steven Lee, PhD, Applied Math Program Manager, Lawrence Livermore National Laboratory

Karin Remington, PhD, Director, NIGMS Center for Bioinformatics and Computational Biology

## **MENTORING SESSIONS**

### **Math Institutes Reception**

Sponsored by the Mathematical Sciences Institutes in North America, the National Science Foundation, and the National Geospatial-Intelligence Agency

### **Conversations with Scientists**

Representing the spectrum of science disciplines, SACNAS professionals renowned for their scientific and mentorship activities gather with student attendees to engage in informal roundtable discussions about careers in the sciences. Conversations are intended to break down the barriers that often exist between students and professionals. Through Conversations with Scientists interactions, mentors share their personal experiences and insights offering students guidance and inspiration regarding educational and career choices. The personal connections made during Conversations with Scientists set the stage for ongoing mentorship and support throughout the conference. We had tables for Mathematics and Mathematics Education.

### **Mathematics Student Presentations**

There were 55 mathematics (general, applied, pure, education) poster and oral presentations. SACNAS considers this opportunity to be an important feature of the conference. All student presentations are judged by at least two professionals and the judges give students helpful supportive feedback about their work and presentation style. This is an important way in which students are initiated into the world of scholarship, preparing them to present at professional conferences within their discipline in the future.

## **CONFERENCE ATTENDANCE**

Table 1: Mathematics Representation at SACNAS Conferences

Year	Number of Total Math Students	Total Math Attendance	Location
2002	109	147	Anaheim, CA
2003	129	234	Albuquerque, NM
2004	124	249	Austin, TX
2005	164	312	Denver, CO
2006	169	276	Tampa, FL
2007	152	271	Kansas City, MO
2008	150	269	Salt Lake City, UT
2009	146	235	Dallas, TX
2010	170	293	Anaheim, CA

The total attendance at the 2010 SACNAS conference was 3,350. Part of the reason for the large attendance was joint activities with the annual meeting of MAES (Mexican American Engineers and Scientists). The overall attendance of mathematics students and professionals in the last several years is shown below. Table 1 shows the number of conference participants that identified themselves in the area of mathematics. The totals include student participants, postdocs, faculty, teachers and professionals and illustrate our strong commitment not only to maintaining a strong mathematics presence at the SACNAS conference, but also to increase our mathematics attendance at future conferences.

Overall, the 2010 SACNAS national conference provided a broad range of highly effective educational, mentoring and networking activities that supported and served the minority scientific community at all levels of the higher education pipeline. These activities benefited all conference attendees and certainly impacted mathematics students equally included opportunities to:

- Engage via Scientific Symposia and Keynote Addresses with nationally recognized scientific and mathematic role models and mentors.
- Gain professional skills essential for advancement in the sciences and mathematics, including professional development workshops that focused on communication of scientific and mathematical research methods and findings.
- Receive feedback from faculty judging poster and oral presentations and in the process make meaningful connections with prospective mentors.
- Make informed decisions about their professional future and to establish lasting connections with university, government agency, industry, and research organization representatives.
- Engage in structured mentoring activities such as the Conversations with Scientists and the Mathematics Institutes Reception, where professional scientists, mathematicians and



administrators provided essential information to students at all stages of the higher education pipeline, and assisted them to develop an academic and career roadmap that will guide effectively as they navigate their way to professional success in the science and mathematics world.

**FISCAL REPORT**

The \$5,000 of AMS sponsorship was used to fund speakers for one session and student participants as indicated below.

	airfare	lodging	registration	
Kevin Flores	154.00	346.00	350.00	
Julia Aguirre	265.00	171.00	300.00	
Jose M. Menendez	509.30	692.00	300.00	
Edgar Diaz Herrera	0.00	346.16	350.00	
Omayra Ortega	145.00	519.00	550.00	
<b>TOTAL</b>	<b>1,073.30</b>	<b>2,074.16</b>	<b>1,850.00</b>	<b>4,997.00</b>

*Ricardo Cortez  
Tulane University  
April 11, 2011*



**Epsilon Awards 2011**

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<b><u>Program</u></b>	<b><u>Award Amount</u></b>
<b>All Girls/All Math</b> University of Nebraska Lincoln, NE	<b>\$7,500</b>
<b>Canada/USA Mathcamp</b> Reed College Portland, OR	<b>12,500</b>
<b>Lamar Achievement in Mathematics Program (LAMP)</b> Lamar University Beaumont, TX	<b>\$7,500</b>
<b>MathPath</b> Macalester College St. Paul, MN	<b>\$10,000</b>
<b>PROMYS</b> Boston University Boston, MA	<b>\$10,000</b>
<b>PROTaSM</b> <b>(Puerto Rico Opportunities for Talented Students in Mathematics)</b> University of Puerto Rico, Mayagüez Mayagüez, PR	<b>\$7,500</b>
<b>Research Science Institute</b> MIT Cambridge, MA (Center for Excellence in Education)	<b>\$7,500</b>
<b>Ross Mathematics Program</b> Ohio State University Columbus, OH	<b>\$12,500</b>
<b>Texas State University Honors Summer Math Camp</b> Texas State University San Marcos, TX	<b>\$12,500</b>
<b>Young Scholars Program</b> University of Chicago Chicago, IL	<b>\$12,500</b>

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**TOTAL = \$100,000**

*Ellen J. Maycock  
Associate Executive Director  
April 4, 2011*



**To: Executive Committee and Board of Trustees (ECBT) of the AMS**  
**From: Edward Aboufadel, Secretary of AAAS Section A (Mathematics)**  
**Subject: Symposia at the 2011 AAAS Annual Meeting**  
**Date: April 18, 2011**

**Overview:** The AAAS Annual Meeting, considered by many to be the showcase of science, features a variety of presentation formats. In addition to more than one hundred and fifty symposia on themes of contemporary interest, there are individual topical area lectures and plenary lectures. The generous support of the AMS has been centrally important in enabling Section A to offer programs and speakers that communicate to general scientific audiences and the press (and by extension, the public at large) the nature, excitement, and usefulness of mathematics. The 2011 meeting was held February 17-21 in Washington, DC. On page 114 of the meeting program this year, the support of the AMS was acknowledged.

We appreciate the efforts by the AMS to report on the AAAS meeting, such as at this URL: <http://www.ams.org/meetings/aaas2011>.

Below are summaries of the four symposia that were sponsored this year by section A. Included with each report is a list of AAAS Sections (other than Section A) that indicated in the program their interest in the symposium. The mathematics section makes up a bit more than 1% of the AAAS membership, so we are certain that the symposia speakers are reaching a broad audience of scientists and the media. All four reports this year were written by Edward Aboufadel. Section A also contributed to the addition of Mike Breen's "Who Wants to Be a Mathematician" to the AAAS' Family Science Days program at the meeting.

*1. Growth and Form in Mathematics, Physics, and Biology*

Friday, February 18, 2011, 8:00 – 9:30 AM

Organized by: L. Mahadavan (MIT) and Edward Aboufadel (Grand Valley State University)

The speakers were L. Mahadevan (Harvard University), Yves Couder (Ecole Normale Supérieure), and Alan Newell (University of Arizona). Ray Keller (University of Virginia) was the discussant.

The title of Mahadevan's talk was "Simple Aspects of Growth and Form". In this talk, he presented a computational model to describe how plants develop flat or pointed tips as they grow, and how cellular tubes grow, loop, and wrinkle, such as what occurs with pollen or the intestines. The model included a force-velocity curve, and his goal is to identify just one or two parameters that might be enough to describe everything.

Yves Couder's talk, "Experiments on Isotropy or Anisotropy in Growth", built upon Mahadevan's talk of exploring the growth of plant tips, by starting with the idea that a fluid of weak velocity displaces a fluid of high velocity. The Hele-Shaw flow is a model of this dynamic, and it leads to PDE's where the boundary is a moving interface. He referred to this growth as viscous fingering. Instability in the model will lead to isotropic patterns (no preferred direction of growth), but this growth can be made anisotropic (a certain direction is preferred) by applying stresses on plants, such as pressing the meristem vertically. Couder demonstrated this effect with actual plants and then outlined the parallel mathematics computation that predicts such growth. He concluded by observing that it is possible to make plant growth isotropic, but "it is brutal".

Alan Newell explored the development of stripes or hexagons (the superposition of three stripes at 120-degree angles) in living beings (e.g. fingerprints, fish, tigers) in his talk "The Universal Nature of Fibonacci Patterns: There are discrete algorithms that have been created to explain stripes and hexagons based on optimal packing and reverse diffusion. There are also partial differential equations that model the behavior. This led to the following question: If the development of stripes or hexagons leads to optimal packing problems and to partial differential equation models, then there may be some at this point unknown connection between those two areas of mathematics.

Ray Keller spoke briefly, reflecting on the three talks. He noted that intuition is indispensable in researching these topics, and that viscosity is a key idea.

Attendance started at 30 for the 8am session, and grew to over 60 by the end of the symposium.

Other sections that listed interest in this symposium in the printed program: Physics, Biological Sciences, Engineering, Education, Statistics.

## *2. Mathematics and Collective Behavior: From Insects to the Internet*

Friday, February 18, 2011, 10:00 – 11:30 AM

Organized by: Warren Page (City University of New York, retired)

The speakers were Iain Couzin (Princeton University), Pierre Degond (Paul Sabatier University), and Anna Nagurny (University of Massachusetts).

This was a very popular symposium, with over 100 people in attendance, and not enough chairs for everyone.

Couzin was the first speaker, and he demonstrated software that he and his research team have developed to study the movements of groups of animals. This included analyzing video to track direction and head position of each animal in a crowd. In studying schools of fish, each fish has equations of motion that takes into account repulsion behavior (from predators and from wanting to not get too close to other fish), along with attraction and alignment behavior. This led to computer generated simulations of schools of fish that rotate in the water, although the rotation is not at all clear from the equations of motion. Couzin also discussed trying to determine what animals see and how they react to what is in their sight, using raycasting as a mathematical tool. All this led to a model of collective decision making, which included a parameter to describe the likelihood of an animal to stick with its group. One consequence of the model developed by Couzin is that only a few leaders are needed to lead the whole group, but you need enough leaders. If leaders disagree, usually the crowd will end up following the majority of the leaders, although the crowd can bifurcate. This was some of the key ideas described in Couzin's talk, "Collective Motion and Decision-Making in Animal Groups".

Degond spoke on "Spatial Self-Organization in Animal Groups and Human Crowds", and his talk focused on avoiding crowd disasters (trampling and other deaths) and studying how crowds self-organize. For the former topic, he noted that it is hard to do experiments with real people, so we turn to mathematical models, all which have some strengths but are also flawed. He mentioned individual-based models, with individuals buffeted by physical and social forces, but we are not electrons. Cellular automata and gas kinetics have been used, too, along with translating research from the study of road traffic, but we are not vehicles, either. It does appear that having more than five people per square meter is where trouble starts in crowds. Degond's research involves putting groups of people in crowding or walking situations, and using motion capture techniques – multiple cameras and a local GPS-like system – to reconstruct trajectories. By coloring pedestrians as "blue" or "white", angular density and flux of the sets of pedestrians can be computed, such as in a situation where all participants must walk around an annulus either clockwise or counter-clockwise. One result is that traffic jams move in opposite the direction the walkers are moving, a type of behavior that is also seen in vehicle traffic.

The final speaker was Anna Nagurney, who discussed "User-optimized and System-optimized Travel Behavior". She notes that when it comes to traffic congestion, policy is developed based on the ability to predict, which requires mathematics. The conflict is that individual decision-makers in a traffic network select routes to minimize individual costs, but if there is a global decision-maker, flows would be routed to minimize total cost to society. These two approaches to network design may not yield the same flow pattern. The mathematical principles underlying these ideas lead to a finite-dimensional variational inequality problem, and the analysis indicates that if individual user behavior is not taken into account, some bad decisions can be made.

Consequently, any analysis of networks and traffic comes down to a question of which nodes and links really matter.

Other sections that listed interest in this symposium in the printed program: Physics, Psychology; Social, Economic, and Political Sciences; Engineering; Statistics; Linguistics and Language Science.

### *3. Mathematics and Our Energy Future*

Saturday, February 19, 2011, 10:00 – 11:30 AM

Organized by: Russel Caflisch (Institute for Pure and Applied Mathematics) and Mary Lou Zeeman (Bowdoin College)

The speakers were Martin Z. Bazant (Massachusetts Institute of Technology), Keith Promislow (Michigan State University), and Ian Dobson (University of Wisconsin).

Bazant spoke on “Phase Transformations in Lithium-Ion Batteries”. In this talk, he developed an Allen-Cahn type nonlinear partial differential equation to model the energy curve of a lithium battery. Based on this development, a hysteresis curve can be identified that describes the charge/discharge cycle of the battery. The flow of the current that is charging the battery is important to avoiding phase transformations, which are not good for the battery. A consequence of the mathematical model is that a high charging current will lead to the battery filling homogenously, which is desired.

Keith Promislow discussed the mathematics and engineering underlying the development of the Proton Exchange Membrane Fuel Cell, a battery that may be able to work for 20 years. A key point was the interplay between water and a polymer in the battery, leading to complicated differential equations. Promislow also made use of differential geometry in his analysis. His talk was titled, “Nanoscale Networks for Efficient Energy Conversion”.

Dobson’s talk was on a different subject than batteries, namely “Cascading Failure in Widespread Blackouts”. He observed that the power grid east of the Rocky Mountains is basically one big network, and models of this network involved over 10,000 nodes and 100 control centers. There is a balance between power into the network (being generated by dams, etc.) and power being used, and there is very little storage. For this network, a cascading failure is a series of failures, each which successively weakens the power system. Under higher loads, it is more likely for these failures to propagate, and this has been seen in reality and can be demonstrated with mathematical models. The probability curve for large blackouts has thick tails, due to the cascading effect. Consequently, we can have a stable system with no blackouts,



and then no upgrading of the system, but a 2% growth in load on the system can suddenly lead to multiple blackouts in a short period of time.

Attendance at this symposium was stable at about 60 throughout the time.

Other sections that listed interest in this symposium in the printed program: Physics, Engineering, Industrial Science and Technology, Statistics.

#### *4. Science Without Borders: Learning from TIMSS Advanced 2008*

Saturday, February 19, 2011, 1:30 – 4:30 PM

Organized by: Patsy Wang-Iverson (Gabriella and Paul Rosenbaum Foundation)

The speakers were Alka Arora (International Study Center), Barbara Japelj Pavesic (Educational Research Institute), Liv Sissel Gronmo (University of Oslo), Richard Askey (University of Wisconsin), and Chad Orzel (Union College).

TIMSS Advanced 2008 assessed advanced mathematics and physics students in the final year of secondary school. These same populations of students were first assessed in TIMSS 1995. This session discussed some of the TIMSS results in mathematics and physics. The writer of this report (Aboufadel) was only able to attend the second half of the symposium.

Gronmo's talk was titled, "Learning from Norway's Performance on TIMSS Advanced 2008". She discussed how in the analysis of the TIMSS, the students were divided in to several clusters throughout the country. Not surprisingly, a cluster that was a high performer was Cluster 8. In this cluster there were well-prepared teachers who always gave traditional homework and participated in training in mathematics content and the use of the computer. Two-thirds of the students in this cluster never use the computer or calculator in school and most students learned from the teacher rather than the textbook. Teachers in this cluster get students to enjoy working on mathematics problems (how did they do that?), and have high expectation of student achievement.

Askey took the TIMSS exam writers to task in "Learning from TIMSS Advanced Mathematics Items". He identified several mathematical items for which a student could correctly guess the response on multiple-choice items without being able to solve the actual problem. This is where a student might have enough knowledge to know an answer was negative, but perhaps could not perform algebra. Askey suggests adopting some of the techniques from Japan (<http://www.maa.org/juee/>) which can still can be machine-graded, but require responses like these:

1. {1}, {2}, {3}, {4}, ... each represent values between 0 and 9 or + or - signs. For example, to indicate -8 as the answer to {1}{2}, mark

{1} ⊖ + 0 1 2 3 4 5 6 7 8 9

{2} - + 0 1 2 3 4 5 6 7 ⑧ 9

2. If the answer is a fraction, reduce the fraction to its lowest terms and indicate the sign in the numerator. For example, to indicate -2/9 as the answer to {3}{4}/{5}, mark

{3} ⊖ + 0 1 2 3 4 5 6 7 8 9

{4} - + 0 1 ② 3 4 5 6 7 8 9

{5} - + 0 1 2 3 4 5 6 7 8 ⑨

Orzel spoke on Physics knowledge that was assessed by TIMSS Advanced 2008. He compared the content of popular textbooks used in high school and state standards for the teaching of physics with the distribution of content of the questions on TIMSS. For example, of the TIMSS questions focusing on mechanics, energy and momentum are underrepresented.

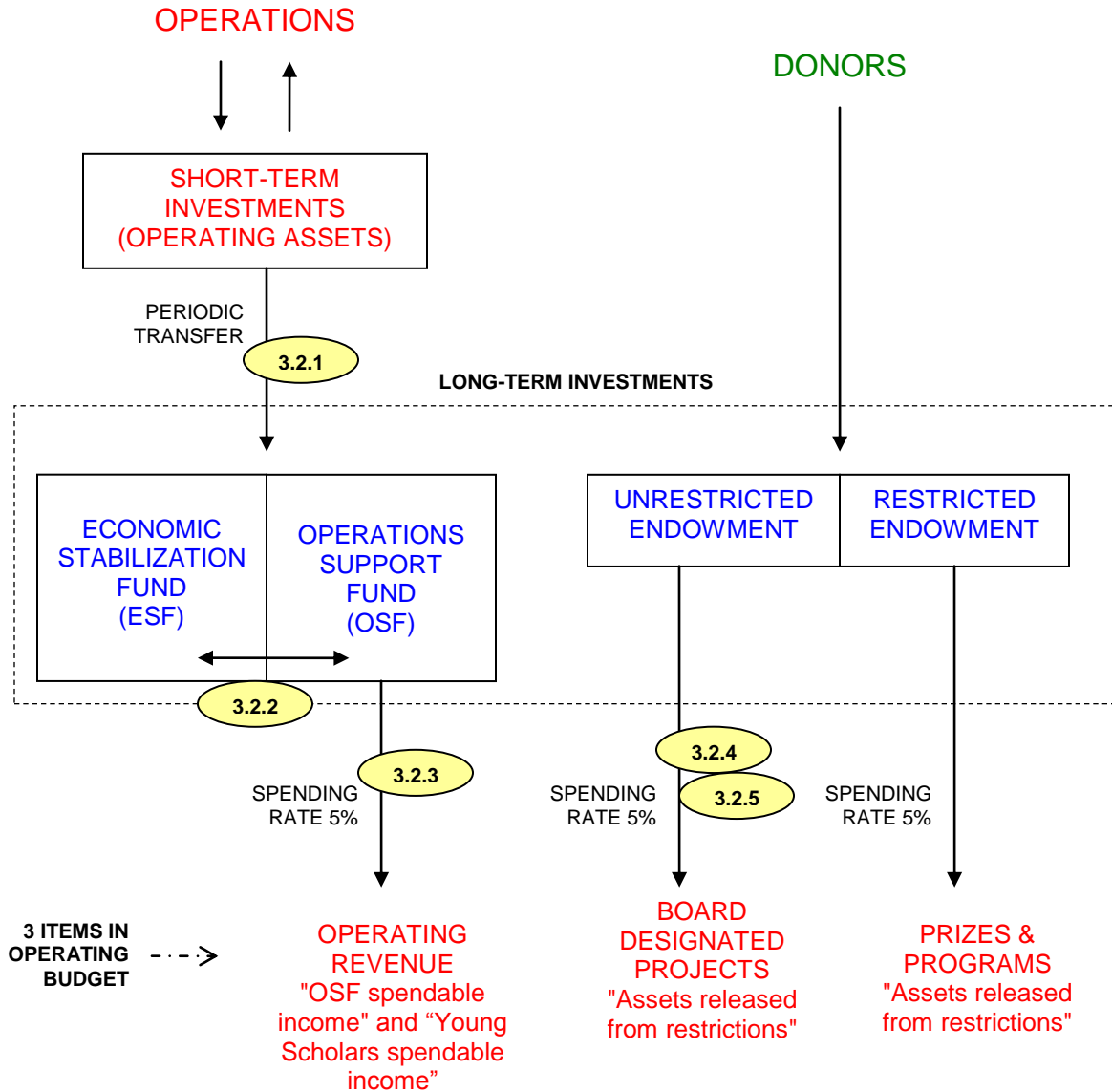
Talks earlier in the symposium included Arora's, "TIMSS Advanced 2008 Overview" and Pavesic's "Benchmarking Slovenia Student Knowledge to TIMSS Advanced 2008".

Attendance at this symposium was about 25.

Other sections that listed interest in this symposium in the printed program: Education.

# AMS Long-term Investments Cliffs Notes

(For details, see section D of Fiscal Reports)



**ESF** = 75% annual operating expenses + unfunded medical liability (APBO)

**OSF** = remainder of quasi-endowment (spending on 3-yr rolling average)  
 Rebalanced annually, December 31

**Note:** Spendable income from true endowment funds held in Temp Restricted net assets and 'released' to operations as related expenses are incurred.

Values as of:	12/31/10	12/31/09
ESF	\$23.7 M	\$23.1 M
OSF	43.6 M	35.1 M
Unrestricted	5.9 M	5.4 M
Restricted	4.5 M	4.0 M



**AMERICAN MATHEMATICAL SOCIETY**

**To:** Board of Trustees **Date:** April 19, 2011  
**From:** Emily Riley, CFO  
**Subject:** Operating Fund Portfolio Management Report

**SUMMARY RETURNS**

The purpose of this memorandum is to summarize the Society's cash management policies and report on the operating portfolio's investment income performance during 2010. There are no proposals for changes in authorized investment limits or additional investment vehicles presented.

Investment earnings results by type and in total and other pertinent portfolio information for 2010 and the preceding six years are as follows:

	<b><u>2010</u></b>	<b><u>2009</u></b>	<b><u>2008</u></b>	<b><u>2007</u></b>	<b><u>2006</u></b>	<b><u>2005</u></b>	<b><u>2004</u></b>
Money Market Funds	0.16%	1.0%	2.9%	5.0%	4.8%	2.8%	1.0%
Vanguard Fixed Income Mutual Funds:							
Short Term Corporate Bond Fund	5.3%	14.2%	(4.7%)	6.0%	5.1%	2.3%	2.2%
GNMA Fund	7.1%	5.4%	7.3%	7.1%	4.4%	3.4%	4.1%
Long Term US Treasury Fund	9.1%	(11.9%)	22.7%	9.4%	1.9%	6.8%	7.3%
Fidelity Floating Rate Bond Fund (12/04)	7.8%	28.9%	(16.5%)	2.7%	6.4%	4.2%	0.5%
Vanguard Convertible Securities	19.2%	40.8%	(29.8%)	10.6%	13.0%	6.6%	7.2%
TIPs (April 2005)		7.4%	(1.3%)	8.9%	0.9%	0.9%	
Certificates of Deposit	1.3%	2.7%	4.0%	5.2%	4.7%	3.1%	2.1%
Common Stock	3.0%	23.3%	(24.4%)	(1.4%)	22.4%	0.0%	0.0%
Annual total portfolio return	4.5%	7.1%	(0.7%)	5.8%	5.2%	3.3%	2.4%
AMS benchmark - Avg 6 month CD rate per Federal Reserve Bank	0.44%	0.8%	3.1%	5.2%	5.2%	3.7%	1.7%
AMS returns versus benchmark	3.86%	6.3%	(3.8%)	0.6%	0%	(0.4%)	0.7%
Wkly Average Operating Portfolio (in 000's)	\$13,866	\$13,858	\$15,525	\$15,459	\$14,578	\$15,223	\$13,570
Annual Investment Income (in 000's)	\$626	\$984	(\$105)	\$895	\$757	\$503	\$332

At December 31, 2010 operating fund investments equaled \$15,897,241, which is an increase of approximately \$2,100,000 from the previous year. In addition to the operating portfolio investments, there was an increase in cash available for operations of \$609,000 in 2010.

The return for 2010 was 4.5% for the operating investments as a whole, despite the drop in interest rates on money market funds and certificates of deposit. This 4.5% return was 3.9% over the benchmark used for the operating portfolio, the average annual 6-month CD rate per the Federal Reserve Bank. The decreasing return on the certificates of deposits and money market funds was expected for 2010. These low rates are expected to continue throughout 2011. The weekly average balance in the operating portfolio dropped in 2009 from \$15,525,000 in 2008 to \$13,858,000, because \$2,000,000 was transferred to the long-term portfolio in May 2009. While the weekly average balance remained about the same in 2010 as compared to 2009, the AMS ended the year with a much higher operating portfolio balance than the year before.

### **History of Authorized Investment Vehicles and Limits.**

At the May 1996 ECBT meeting it was agreed that the Society should have as a goal an accumulation of current assets such that they exceed current liabilities. To help achieve this objective, at the May 1997 ECBT meeting a plan for the creation of an intermediate term investment portfolio was adopted. Increased limits of \$1,000,000 (to \$4,000,000) in our money market funds, \$1,000,000 (to \$2,000,000) in our Vanguard fixed income funds, and \$500,000 (to \$1,500,000) in Treasury Notes were approved. In addition, a \$1,500,000 combined limit for other mutual funds, consisting of high yield and convertible bond funds, was established at this time.

In May 2000, the limits for money market funds, fixed income funds and the high yield/convertible funds were each increased by \$500,000. At the May 2002 ECBT meeting, the limit on the money market fund was increased to \$5,500,000, primarily to accommodate the larger investment balance carried in the operating portfolio. In May 2004, The Board of Trustees added floating rate bond funds to the authorized investments, with an investment limit of \$2,000,000. In May 2005, the Board changed the limit on money market investments to be 50% of the operating portfolio balance at any point in time, again to accommodate the larger portfolio balance and liquidity needs of the Society.

The strategy of using an intermediate portfolio has occasionally resulted in greater volatility, but overall has generated an increase in the earnings of our operating fund investments. By shifting a portion of operating fund investments into slightly riskier investment vehicles we have, on average, increased the earnings compared to those that would have been achieved in low risk, short term investments.

### **Recent Portfolio Adjustments.**

Finding suitable banks with higher-than-average rates of returns on certificates of deposits has become increasingly difficult over the past two years. Accordingly, the certificates of deposit portfolio has been reduced and the money market funds have been used to 'stockpile' the funds needed to support operations for the near term.

### **Changes in the Cash Management Environment.**

In the past rising inflation, as we are experiencing now, has correlated with rising interest rates, but rates have remained low. Although inflation is on an upward trend now, it was low during 2010 at 1.5% for the year. The Federal Reserve has signaled that it is not ready to start raising interest rates. Higher rates will return, but not in the near future.

### **Cash Management at the AMS.**

The following rules govern AMS's management of cash:

1. **Availability and Liquidity.** The placement of investments in the operating portfolio is coordinated with the Society's immediate and estimated future cash requirements, which are based on actual and projected revenue and disbursement streams. Cash needs to be available at the appropriate times to cover the operating expenses of the Society as they are incurred - payroll, payroll taxes and other withholdings, and vendor liabilities comprise the bulk of our cash needs. Adequate portfolio liquidity is the ability to turn investments readily into cash without suffering undo loss of principal.
2. **Income.** Cash in excess of immediate operating needs should be invested so as to optimize returns. The Society has intentionally accreted such excess cash, so that the ratio of current assets to current liabilities remains at least 1.5 to 1 (after removing the deferred revenue from both the numerator and denominator, and preferably 2:1) or at least 1:1 without the deferred revenue adjustment. These ratios were 2.2 and 1.3, respectively, at December 31, 2010, and about the same as December 31, 2009.
3. **Preservation of principal.** Safety is of prime concern in investments of operating capital. Diversifying investment vehicles and monitoring investment maturity dates and market value fluctuations greatly reduces an investment portfolio's exposure to risk. Maximum allowable positions should and have been established for different types of investments.

### **Authorized Investments.**

The investment vehicles authorized by the Board of Trustees for the operating portfolio are as follows:

- **Certificates of Deposit.** As in prior years, a large percentage of the Society's operating investment portfolio has been invested in certificates of deposit, although it has declined in 2009 and 2010 for the reasons discussed above. The weekly balance in certificates of deposit averaged about 16% of the total portfolio during 2010 and was 28% of the portfolio in 2009.

We generally purchase "jumbo" CD's of federally insured savings institutions and commercial banks that are assigned an acceptable safety rating by a weekly bank rating newsletter. Current investment policies limit the amount of investment in each bank issuing CDs to the Federal Insurance Deposit limit of \$250,000 (exclusive of accrued

interest) for Savings and Loan institutions and smaller banks and \$400,000 per large commercial bank. There is no limit to the total amount of CDs that can be held by the operating investment portfolio.

Issuer	Banks & Savings and Loans
Risk of default	None - federally insured
Risk of market decline	None
Maximum Amount	\$250,000 per bank or S&L, \$400,000 in large cap banks, unlimited in total

Most often we intentionally accumulate the CD portfolio (generally for one-year terms, shorter terms are used to take advantage of rising interest rates) in order to increase the yield on the portfolio, even if slightly. However, the typical CD rates are now so low and the cash flow needs of the Society have been greater in recent years because of planned investments in plant and equipment, that accumulating the money market funds is more efficient to do, and the portfolio of CDs was reduced by almost \$1,600,000 in 2010.

- **Treasury Bills.** T-Bills are convenient to use when we have a large planned expenditure for a predetermined future date, such as contributions to the Economic Stabilization Fund; however, better rates are available on alternative forms of short-term operating investments. Treasury Bills have no market risk associated with them because they are backed by the full faith and credit of the US government, are issued for short durations and are highly liquid. Accordingly, there is no limit to the total amount of T-Bills we may hold in our portfolio.

Issuer	U.S. Government
Risk of default	None
Risk of market decline	None if held to maturity
Maximum Amount	Unlimited

- **Cash and repos (repurchase agreements).** The AMS uses a concentration account at Citizens Bank - Massachusetts into which all receipts are automatically deposited and from which all disbursements are made. Under a repurchase agreement, cash above an established minimum balance is "swept" on a daily basis and invested overnight in repurchase agreements. Under a repurchase agreement, the customer (AMS) purchases government securities and the bank agrees to "repurchase" them the following day. The rate earned on these depends on the dollar amount of the repo; it is generally very low in comparison to rates available on other investment vehicles. Interest rates on repurchase agreements have been extremely low for a number of years. Unless one is sweeping large amounts of cash throughout the year, the interest earned does not justify the fees charged to maintain the agreement in place. The AMS has not used this investment vehicle since 1999 and it is not expected to be used in the near future.



Issuer	Citizens Bank - Massachusetts
Risk of default	Minimal
Risk of market decline	None
Maximum Amount	\$1,000,000
Comments	Collateralized by US Gov't securities

- Money market funds.** The Board of Trustees has authorized a maximum investment of 50% of the balance in the operating portfolio at any point in time. At the end of 2010 the balance in money markets was \$7,321,412, or 46% of the entire portfolio, principally in Vanguard's Money Market Prime portfolio. Yields on the funds averaged .16% in 2010, and will likely not increase significantly anytime soon. There is little risk to principal because the valuation of the initial investment is generally not subject to change because of its short-term duration. However, given the tenuous economic situation domestically, defaults could occur. A few money market funds 'broke the buck' during the worst of the economic crisis. The US Government offered a program to ensure the valuation of money market funds at \$1 per share, and large money market managers have signed on to the program. Balances in these funds are usually maintained only at levels needed for short-term operating needs in excess of short-term maturities, or for planned investments to be made in the near future (which avoids the administrative costs of 3 month CD's or T-bills), or to take advantage of rising interest rates, since they generally under-perform alternative authorized investment vehicles.

Issuer	Vanguard and Fidelity
Risk of default	Minimal
Risk of market decline	Very Low
Maximum Amount	50% of operating portfolio balance

- US Treasury Notes.** The Board of Trustees has authorized a maximum investment of \$1,500,000 in US Treasury Notes. A loss of market value may be incurred on these investments in a rising interest rate environment if funds are needed before maturity and have to be sold; however this risk is slight as the Society's liquidity is deemed extremely adequate. Treasury Notes can be an attractive investment when interest rates are expected to decline and the yield curve is fairly steep. This has not been the case in recent history.

Issuer	U.S. Government
Risk of default	None
Risk of market decline	None if held to maturity, otherwise value moves inversely to interest rate changes
Maximum Amount	\$1,500,000
Comments	Best used just before interest rates decline

In April 2005, \$500,000 of inflation-protected Treasury notes (TIPS), which pay a stated rate of interest, plus inflation over the period outstanding (by adjusting the principal), were purchased. These investments have no risk of default and no risk of market decline if held to maturity, which is what was done. In addition to the interest

payment received during the five years these were held by the Society, the redemption value received upon maturity was over \$575,000 in April 2010.

- ***Fixed Income (Bond) Mutual funds.*** The Board of Trustees has authorized a maximum investment of \$2,500,000 in fixed income mutual funds (initial investment, exclusive of reinvested income and share price increases, with appropriate disclosure to Treasurers and Board), and at the end of 2010 we had \$3,612,000 invested. The initial investment amount is well below the limit. All of these investments are with the Vanguard Group of Valley Forge, PA. A combination of three funds is used: the High Grade Short-Term Corporate Bond portfolio, the GNMA portfolio, and the Long-Term US Treasury portfolio.

Issuer (currently used)	The Vanguard Group
Risk of default	Minimal
Risk of market decline	The longer the maturities of underlying investments, the higher the risk.
Maximum Amount	\$2,500,000
Comments	Market value will decline as interest rates rise and increase as rates fall.

Historically, most of the volatility in the Society's short-term portfolio has been the result of market valuation adjustments on these investments (they are marked to market monthly); however, gains or losses technically are not realized on these funds until they are redeemed. The GNMA fund is less affected by interest rate volatility than the Long-Term US Treasury, despite similarity in term length of the underlying securities, as these debt instruments support the housing industry (and are unrelated to the problems at FNMA and FreddyMac).

Since these funds are different in nature, it is helpful to look at their characteristics separately, keeping in mind that the limit applies to the combined total.

*Vanguard High Grade Short-Term Corporate Bond Fund:*

Issuer (currently used)	The Vanguard Group
Risk of default	Low, due to quality of underlying debt instruments and borrowers
Risk of market decline investments	Low, due to short duration of underlying investments
Comments	Share price is usually relatively stable; return is determined by recent interest rates, as underlying debt is short duration
2010 return	5.3%

*Vanguard GNMA Fund:*

Issuer (currently used)	The Vanguard Group
Risk of default	Low – while not backed by the full faith and credit of the US government, It isn't likely

Risk of market decline	that the US government would allow GNMA to default on its obligations
Comments	Medium, as duration is longer Since the GNMA obligations are linked to collateralized mortgage obligations, and mortgage rates tend to change more slowly than other long term rates, this fund is a bit less volatile when interest rates change.
2010 return	7.1%

Vanguard Long-Term US Treasury Fund:

Issuer (currently used)	The Vanguard Group
Risk of default	Low, as most underlying securities are US government direct issues
Risk of market decline	Highly sensitive to interest rate changes, as duration of underlying securities is long-term
Comments	This fund has caused most of the volatility in the Intermediate portfolio; staff mitigates some risk by adjusting investment amount
2010 return	9.1%

- **High Yield and Convertible Bond Mutual funds.** The Board of Trustees has authorized a maximum investment of \$2,000,000 in any combination of high yield bond and convertible securities accounts. At December 31, 2010 we had \$1,531,591 invested in these vehicles, in one convertible securities mutual fund managed by the Vanguard Group. Gains or losses technically are not realized on these funds until they are redeemed, although, for financial statement purposes, the Society records these investments at market. It is not anticipated that further investments in this group of investment vehicles will be made in the near future.

Issuer (currently used)	The Vanguard Group
Risk of default	Medium to High
Risk of market decline	Sensitive to movements in the equity markets
Maximum Amount	\$2,000,000
Comments	Total returns often parallel those of equity markets
2010 Return	19.2%

- **Floating Rate Income funds.** The Board of Trustees has authorized a maximum investment of \$2,000,000 in Floating Rate funds. \$1,000,000 was invested in the Fidelity Floating Rate High Income Fund in December 2004. The return for 2010 was 7.8%. Gains or losses technically are not realized on these funds until they are redeemed, although, for financial statement purposes, the Society records these investments at market.

Issuer	Fidelity
Risk of default	Low
Risk of market decline significantly	Low, possibly medium if economy falters
Maximum Amount	\$2,000,000
Comments	The fund is expected to have a relatively stable NAV with yield providing most of the return
2010 Return	7.8%

**Summary of Operating Portfolio Investments, December 31, 2010.**

<u>Description</u>	<u>Value at 12/31/10</u>	<u>Current Board Limit</u>	<u>Excess over Limit</u>
Money Market Funds	\$7,321,412	50% of total portfolio	NA
Certificates of Deposit	2,090,000	\$100,000 per inst.	NA
Treasury Notes		1,500,000	NA
<i>Vanguard Bond Funds:</i>			
GNMA Fund	1,531,738		
Short-Term Corp Bond Fund	1,427,354		
LT US Treasury Fund	<u>653,295</u>		
Subtotal	<u>3,612,387</u>	2,500,000 (1)	NA
<i>High Yield and Convertible Funds:</i>			
Vanguard Convertible	<u>1,531,591</u>		
Subtotal		2,000,000	NA
<i>Floating Rate Funds:</i>			
Fidelity Floating Rate High Inc	<u>1,326,429</u>		
Subtotal	<u>1,326,429</u>	2,000,000	NA
Common Stock	<u>15,422</u>	Unrestricted gifts	
Total	<u>\$15,897,241</u>		

(1) Limit is exclusive of reinvested dividends and share price increases. See discussion above.

## *Report on the Personify Project*

### **Summary**

Progress continues on the implementation of the Personify association management software from TMA Resources (TMAR) and the project remains within its original budget. Since the ECBT meeting in November 2010, staff has finalized and approved a list of modifications that TMAR will develop, approved detailed designs of more the half of those modifications, completed the first round of converting data from our existing database to Personify, and created the initial implementation schedule.

### **Project Report**

During the analysis and design portion of the implementation, AMS staff worked with TMAR to define the ideal system for supporting our business functions. We identified 45 modifications that would be required to make Personify meet that ideal. The initial estimated cost for these modifications far exceeded the budget for the development portion of the project.

AMS staff worked with TMAR staff to reduce the cost of development to keep the project within its original budget. This will be accomplished by:

- Eliminating those modifications that would have been nice to have, but are not required to conduct AMS business as it is currently defined
- Modifying some AMS processes and procedures to work within Personify's base functionality
- Having some development done by AMS staff
- Using credit for a module that will not be used in order to fund the development of some of the modifications

The CIO wrote a memo listing the 45 modifications, their estimated development cost, and recommended disposition of each. This memo was reviewed and approved by the Project's Core Implementation Team, as well as the Staff Executive Committee. Of the 45 modifications, TMAR will develop 13, AMS staff will develop another 12, and 4 will be accommodated by modifying current procedures to work with the existing Personify software. The remaining modifications will either be handled through changes in our processes, or are wish list items that will be reviewed at a later date.

TMAR was informed of the 13 modifications to be developed. For each modification, TMAR writes detailed technical design documents for staff to review and approve. Detailed designs have been approved for 6 of the modifications. We have received for review 3 additional detailed designs and the remaining 4 designs are being written. Development work has begun on some of the approved designs.

Work has also been done to convert data from our existing system for loading into Personify's database. TMAR provides conversion templates and expects clients to map their data into those templates. They also provide a data validation tool and a data conversion tool. With both of these

tools, TMAR is running them for the first cycle and providing AMS staff with the resulting error reports. TMAR is then training AMS staff to run the tools for additional cycles. Normally, TMAR would run all cycles of validation and conversion, but this methodology was implemented in an effort to cut costs. It has also had the side benefit of educating the AMS staff on the content and structure of the Personify database and has been a worthwhile experience.

The completion of the list of Personify modifications and the first cycle of data conversion has allowed for the creation of a schedule with a realistic date for the production release of Personify at the AMS. Using the knowledge obtained in a number of Personify implementations and their knowledge of the AMS, TMAR's schedule estimates Personify will be ready for production use in October 2011. This schedule was reviewed with the Staff Executive Committee and key personnel in the Member and Customer Services department. Taking into account staff workload, the membership and subscription renewal calendars, and the fact that delaying the implementation has no financial implications, it was agreed that the target date for production use of Personify at the Society is the spring of 2012. The additional time will be used to absorb delays in the completion of tasks in the TMAR schedule, the completion of AMS tasks not included in the TMAR schedule, and the creation of documentation of processes and procedures for using Personify at the AMS.

*Tom Blythe*  
*Chief Information Officer*  
*April 25, 2011*

# Report of the Executive Director

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*Prepared for the Council, April 16, 2011*

This report to the Council will become the foundation for the report on Society activities in 2010 that appears in the *2010-2011 Annual Report of the American Mathematical Society* and in the *State of the AMS* article to appear in *Notices*. However, I will not include information about the economic climate and the financial condition of the AMS in the two published documents. Both of those publications will also include a Treasurer's Report which provides more detailed financial reporting. The Council per se doesn't get too many opportunities to hear about financial matters though, and I thought this would be a good opportunity to say a little bit about the last two years.

2010 was a very busy year 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, has 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% 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% 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 on the process of applying for all types of jobs. [MathJobs.org](http://MathJobs.org) and EIMS worked to make information about open positions known to job seekers.

The 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% during the same time period.

Libraries, already suffering from spiraling journal prices over the past 20 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 it 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. 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

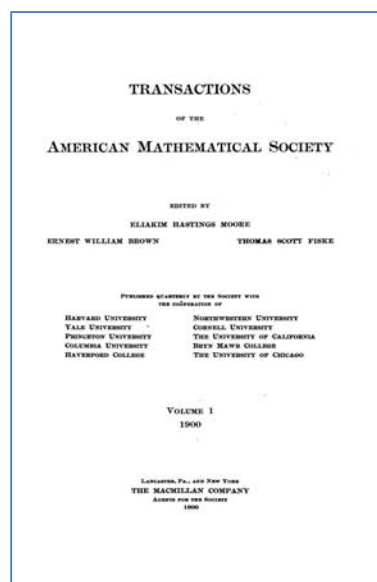
## Highlights of 2010 Activities

2010 was a year of successes and challenges. Here are some highlights.

### Journals

In May 2010, the AMS completed its research journal retro-digitization project. The generosity of a private donor supported digitization of *Journal of the AMS*, *Transactions of the AMS*, *Proceedings of the AMS* and *Mathematics of Computation* back to volume 1, issue 1. 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 IMU 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.

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

Author<sup>1</sup> Domicile for Articles Published in 2006 – 2009

## Mathematical Reviews

Mathematical Reviews (MR) observed its 70th 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 and viewed through any common browser. The development of MathJax was supported by the AMS, SIAM and Design Science. The software is open source, and it 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.

<sup>1</sup> For multi-author papers, the domicile of the corresponding author was used.

In 2010, the Second Edition of *Partial Differential Equations* by Lawrence C. Evans was published and two new titles were added to the AMS Pure and Applied Mathematics Texts series founded by Paul J. Sally, Jr. A total of 100 new books were published in 2010.

Two significant developments are currently in progress. Over 2,000 titles 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 will be 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 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 8 Sectional Meetings, a joint meeting in June with the Sociedad Matematica Mexicana and a joint meeting in December with the Sociedad de Matematica 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 on *The Cosmic Distance Ladder*. It 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 week-long conferences drew 120 early-career mathematicians. These conferences, funded by the National Science Foundation, are part of the AMS program that includes special sessions at the Joint Mathematics Meetings, a longitudinal study, and a continuation of the connections and collaborations.



In 2010, the NSF funding for Mathematics Research Communities was renewed for three more years, 2011-13.

The AMS continued to provide travel grants for graduate students to attend JMM2010 and JMM2011. This special program has continued to grow substantially and it is made possible by a private donor. In 2010, approximately 80 students were supported to travel to San Francisco. In January 2011, over 100 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 60 new recipients in each of the three years 2011-13. 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.D.

### **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' presentation, titled *Can Computers do Math?*, was about packing problems, giving their history and why they are important in modern mathematics and its 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 is helping 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 that which occurred in the Gulf of Mexico in 2010.

*Don McClure*

## **Mathematics journals: what is valued and what may change. Report of the workshop held at MSRI, Berkeley, California on February 14 – 16 2011**

Mathematics relies on its journal literature as the main conduit for peer review and dissemination of research, and it does so more heavily and differently than other scientific fields. The conflict between universal access and the traditional subscription model that funds the journals has been debated for the past decade, while hard data on financial sustainability and usage under the different models has been slow to appear. However, the last ten years have seen the move from print to the electronic version of journals becoming the version of record, and the workshop took an evidence-based approach to discussing dissemination, access and usage of mathematics journals.

The workshop goal was to discuss what is important and unique to the publishing of mathematical research articles and how we can best ensure that publishing practices support peer reviewed research in the long term. Much of the current discussion is taking place between funders and publishers, including scholarly societies, but not directly with mathematicians. A second goal was to see if we can find a consensus of opinion on what is important about journal publishing to mathematicians, that is, where the balance lies between the need for profits from publishing and the desire for broader dissemination of research.

The presentations ranged widely; written reports of the talks make up the body of this document. During the first morning John Vaughn, Sam Rankin and Jim Crowley described the way the world works in Washington, leading us to think about the future of mathematics journals should new legislation be passed to mandate open access<sup>1</sup> of federally sponsored research in the USA. Interleaved with those talks we had a presentation on the work of the IMU from John Ball and a talk from Jean Pierre Bourguignon that placed journals in the broader context of the research they publish and the work of a mathematician.

We heard talks on how mathematics journals work in practice and saw evidence of the growth of journals and the changing behaviour of readers and authors. Information was provided on the balance between not-for-profit and commercial publishers; the governance of learned societies; who reads mathematics journals; and the value of the older material to current mathematics research from the citation records. An unscheduled talk by Kristine Fowler, a librarian from the University of Minnesota gave some very interesting results from a recent survey of mathematicians' views on open access. David Gabai's talk on the recent history of the Annals of Mathematics provided a fascinating insight to the effect of free open access on the journal's subscriptions, along with a description of the low cost of publishing the journal. Talks were presented by a variety of major mathematics publishers, ranging from the AMS and Elsevier to Project Euclid. Finally, new publishing models for changing access were presented from a variety of speakers: mathematicians, publishers and a new university office of scholarly communication.

Here is a summary of what we learned from the meeting.

### ***Characteristics that distinguish mathematics journals from other disciplines:***

- there are lots of journals in the mathematical sciences – 774 listed 'cover-to-cover' in the Mathematical Reviews database alone;
- they are fully international; one cannot distinguish how a journal operates according to which country it comes from; there are no boundaries to submission

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<sup>1</sup> 'Open access' refers to any research paper that is made freely available in published form at no cost to the reader; it does not distinguish between funded (gold) and unfunded (green) open access.

- from overseas authors and no boundaries to the choice of country where an author may submit a paper;
- there are no speed pressures; refereeing is expected to be rigorous and detailed. The average time a paper spends between submission and acceptance is many months;
  - published articles form the building blocks of future mathematical research. A proof, once proved, stands for all time and is cited for as long as the literature can be found, it is therefore important not to lose the building blocks;
  - evidence was shown for the longevity of mathematics papers in terms of both continued reading and citation of the oldest material;
  - the community calls them referees rather than reviewers; journals frequently rely on a single referee to provide a rigorous check of the work, plus opinions from others on the relative importance of the work;
  - data sets and other supplemental materials are rare in pure mathematics and the paper stands on its own – this means there is no easy way to cheat in terms of the result presented, apart from direct plagiarism;
  - applied mathematics may include data and other supplemental material, but the data sets are commonly available and it is not a part of the culture to refuse to give background data; applied mathematics is distinct from applications of mathematics – both are valid but the relevance of the work is judged on different criteria.

***On the arXiv:***

Mathematicians recognize the value of having free access to pre-refereed material and the presence of a preprint on the arXiv (<http://arxiv.org/>) already fulfils most of the requirements laid out by the green open access lobby. In view of the long referee times, posting a paper on the arXiv first establishes primacy of the result in the few cases where this is important to mathematicians. Publishers have learned that they cannot put the genies back in the bottles and that much of ‘their’ content is already freely available. Instead they work to promote the final published version as the ‘version of record’ and distinguish that from the arXiv version. Nowadays publishers encourage authors to post the early versions up to and including the final accepted version with a piece of acknowledgement ‘to be published in the Journal of X’. However many authors fail to keep the record updated and there are problems with referencing an arXiv preprint. This keeps the publishers happy that they still have something of value in hosting and selling the final published version in return for the costs of editing and dissemination.

For some sampled mathematics journals, as many as half the published papers have preprint versions posted on the arXiv and the percentage is growing. This makes the arXiv by far the dominant preprint repository and it is the first place many mathematicians in certain areas of the discipline look for new research. It is supported by the many thousands who choose to post their preprints there; no university or publisher forces them to do this. As a result there is very little enthusiasm in the mathematics community for alternative institutional repositories which are viewed as self-aggrandising university projects. The prior assertion of copyright ownership made by some universities in order to deposit articles in their own repositories has the effect of removing the right of the author to decide where they wish their work to be published. In contrast, the arXiv is widely and increasingly used; it is fully international and the barriers to posting an initial preprint are very low.

A problem is that there is no long term economic model for paying for the arXiv beyond the recent plea to major universities to support it through donations. We believe that there is an urgent need for the mathematics community to come up with a truly international solution during the next few years and it is hoped that researchers from other subject areas, most notably the theoretical physicists, are also looking for a solution. The arXiv may need a fully

capitalized perpetual fund to be set up; the IMU might consider what it can do to facilitate further discussion.

***On the archive:***

The switch to online versions as the primary source of mathematics journals has led to an interesting dilemma. Libraries would like to be the permanent repositories of the mathematical literature but have already begun to reduce their paper archives while not taking on the direct hosting of the journals they buy. The publishers are now responsible for archiving and upgrading the online versions in line with demand for more functionality. The question is what happens if the publisher folds? In the past the literature was scattered across many libraries. Nowadays publishers sign up to archiving services like CLOCKSS but this doesn't meet the desire for upgrades, and storing out-of-date formats has little value. This is particularly important in mathematics where the rendering of mathematical symbols and formulas remains an issue. The recent development of MathJax is likely to help but may herald another change in format that will require publishers to charge for future developments. Libraries may need to review their long-term archiving policies.

***Open access, green and gold:<sup>2</sup>***

Mathematicians do not like the 'gold' open access model although Research Councils around the world are considering whether to fund mandated open access. There was general consensus that this model discriminates against unfunded authors, including retired authors and those from developing countries. The question was raised whether mathematicians should become involved in the judgement of 'who pays' for those papers where the author has no funding. It would be one more burden on mathematicians to identify the deserving needy but if they are not involved the publishers will make their own choices. If the NSF decides to fund a government-mandated open access policy, the money will go to those publishers who have set up charges for optional open access. For 'gold' open access, there is no embargo period and once the NSF has paid the fee, the article is immediately freely available online.

Evidence from the Annals experiment in 'green' open access was stark; libraries cancelled 34% of the subscriptions between 2003 and 2008 when the journal was freely available online. The Annals is one of the very best journals in mathematics and one of the cheapest journals; and so it came as a surprise to many at the workshop to hear that some of the best-funded libraries in the US had decided to save on the subscription rather than support the experiment in widening access.

*On embargo periods:* We did not hear anyone at the workshop support the principle of 'green' open access after a short embargo like the NIH model – a 12 month embargo period (i.e. a manuscript must be deposited by an author in a public access repository within 12 months of publication). Many mathematicians voluntarily post their preprints in the arXiv and this could answer the demand, if there is any, for public access. The window between a preprint being freely available on the arXiv, then again being freely available in published form just twelve months later is generally held to be too small given the long life of articles and the slow pace of publication in mathematics. The fear is that libraries will do as they did with the Annals, and cancel the journal subscriptions and have their readers look at the preprint version for an extra 12 months. With no subscription income and no 'gold' open

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<sup>2</sup> 'green' is free open access where nobody has paid but the article is made freely available; 'gold' is where someone, nominally the author but usually the research funder, pays to have the paper made freely available.

access fees, many journals will not survive. However there was appreciable support for mandating green open access after a period that is more appropriate to mathematics, say after five years. This was mirrored by proposals from French and German mathematicians for making the archives of all journals freely available after five years. Should mathematicians be forced to choose a model for publicly funded future research, we think it likely that they would see five years as the best alternative even if it were at the expense of the closure of the very few 'reverse' moving wall experiments, such as those operated by the London Mathematical Society.

***Other matters: Plagiarism, impact factors***

There was strong criticism of the misuse of journal impact factors to evaluate individual papers but concern was raised that it may not be possible for the IMU to provide any useful alternative index. Other concerns about the use of such metrics for quantifying journal quality have been well documented.

There was also a discussion on the apparent increase in plagiarism and in multiple submissions (where an author submits a paper to more than one journal simultaneously), along with the global rise in the number of mathematics papers being written. It was agreed that there is a need for societies/publishers to maintain standards. Tools such as CrossCheck have helped combat egregious cases, but these place an additional burden on staff and editorial boards. The arXiv is used by some Editors when checking complaints and there was a discussion on whether its use could be extended to provide a more formal registration of papers.

***Conclusions***

The mathematics research community values its own standards of rigorous peer review, which they call refereeing, and the longevity of its journals. They want access to the old material and the certainty that it be maintained and remain accessible regardless of the medium. Mathematicians are wary of attempts to change scholarly publishing from a non-scientific political world that does not understand the value and nature of the mathematical literature.

Many people would like to change the funding model for mathematics journals, arguing that they wish to provide public access to publicly funded knowledge. The arXiv already provides public access but it suffers from having no long-term funding mechanism; we believe the most benefit to the community would come from addressing this problem and providing a permanent solution.

There is an argument for letting mathematicians decide what they want to support voluntarily rather than forcing new business models into the market. We should certainly encourage new experimental models, some of which have been very successful. Even those that are no longer free have helped put pressure to keep the price of journals down. Through allowing mathematicians to decide which model they want to support voluntarily, one can discover sustainable long term solutions. There may need to be some fail-safe mechanism to ensure that the past volumes of failed experimental journals are not lost to the literature.

The mathematics community has long argued against the high price of certain journals and would be happy to see a change in the funding model that reduces those profits that are not fed back into the research economy. As a result, the community is not closed to the idea of freeing up access, but it recognizes that any new model should not risk the long-term future of scholarly mathematics journals by imposing dangerously short mandated embargo periods. What the US government decides to do will affect the world-wide mathematics community. It



is hoped that the US government does not force a model on its own researchers that may restrict the choice of where to submit a paper. There should also be a clear division between funding research and being involved in evaluating the output of the research once funded. Paying for publication may influence the reader's judgement of the value of the research. In general, we see such schemes as unfair and a barrier to new research from unfunded mathematicians. If mandated open access were to be funded, there would be a case for no embargo period. Many publishers have already set up optional paid open access schemes to accommodate research funders who may impose a mandate. It is to be hoped that 'green' open access would not be imposed that mandates open access twelve months after publication; five years is considered a more appropriate period for mathematics.

***Disclaimer***

We have written the conclusions in the knowledge that it will never be possible to find a perfect list and certainly not all the workshop participants would support these views which are our own. However, we believe it important to assert the unique value of peer-review in mathematics journals and to describe what is necessary to support a healthy structure in which the very best of mathematical research can be distinguished while maintaining the breadth of mathematics journals. The many diverse journals in the mathematical sciences provide a platform for worthy research which has real value. We hope that this report may be used in future debates as fuel for the phrase 'one size does not fit all'.

James Crowley *SIAM*, Susan Hezlet *LMS*, Robion Kirby *Berkeley*, Don McClure *AMS*.

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## **Expanding Public Access to Research Results: Finding a Common Path Forward**

John Vaughn  
Executive Vice President  
Association of American Universities,  
Chair, Scholarly Publishing Roundtable

The often too-strident, too-ideological debate over whether and how to increase public access to research results was preceded by an equally acrimonious debate over “the serials crisis,” the explosive growth in the number and cost of scholarly journals and its consequences for research library acquisitions. Much of that growth reflected the increased volume of research domestically and especially internationally, surely a desirable and beneficial development. But that growth put serious strains on research library budgets, and the considerable evidence of increases in journal prices that seemed to dwarf publication costs generated a very negative reaction from university librarians and administrators.

According to data collected by the Association of Research Libraries (ARL), from 1986 through 2004, serials expenditures at ARL libraries increased 273% and serials unit cost increased 188%, although serials purchased increase only 42%. Over that same period, the U.S. consumer price index increased 73%. The impact on books was severe: while monograph expenditures increased 63% and monograph unit cost increased 77%, monographs purchased decreased 9%. These and related cost/price data led to a widely held view that universities were a captive market: research universities would need to acquire scholarly journals irrespective of price, and journal pricing policies increasingly seemed to reflect a recognition of that fact. The disparity between cost and price was particularly pronounced in the journals of certain commercial publishers, but the widespread practice of non-profit academic and professional society publishers charging prices in excess of cost to generate revenue to support their societies led many university provosts to question why research library budgets should be expected to bear a substantial portion of the cost of society operations.

With the rise of digital communications capacity, the debate shifted from the price of journals to new forms of digital publishing that would reduce the cost of publishing and enhance access and use. Though often used interchangeably, it is useful to distinguish the terms “open access” and “public access”: under open access publishing, the costs of publishing are covered at the front end so that the final product has been fully paid for and can be made freely available immediately; public access refers to policies under which subscription journals are made freely available after some cost-recovery embargo period.

In the U.S., an intense debate about publishing policies has centered around whether and to what degree federal research funding agencies should mandate free public access to the results of research they fund. The warring factions have rallied behind competing legislation. Library and public interest groups and many college and university administrators support the Federal Research Public Access Act, which would mandate free public access to results of federally funded research no more than 6 months after research published in peer-reviewed journal. The Association of American Publishers (AAP) and many publishers support the Fair Copyright in Research Works Act, which would prohibit any federal agency from requiring, as a condition of research funding, the transfer to the agency of articles resulting from that funding; if enacted into law, this legislation would make NIH’s PubMed Central unlawful.

As a frequent recipient of entreaties by advocates of the competing legislation, Congressman Bart Gordon (D-TN), Chairman of the Science and Technology Committee of the U.S. House

of Representatives, created the Scholarly Publishing Roundtable in June, 2009, with a charge to develop consensus policies for expanding public access to journal articles arising from federally funded research. The 14-member group included university administrators, librarians, commercial and non-profit publishers, and researchers with expertise in scholarly publishing. The group worked over the course of the year, producing a report in January of 2010. The report is available [here](#).

The report states a set of shared principles — properties of scholarly publishing that the group believed should inhere in all evolving forms. These include peer review, adaptable business models, increased accessibility with improved functionality, sustained archiving and preservation, and creative reuse of published research and interoperability among sites hosting that research.

The report's core recommendation is: Each federal research funding agency should expeditiously but carefully develop and implement an explicit public access policy that brings about free public access to the results of the research that it funds as soon as possible after those results have been published in a peer-reviewed journal.

The report includes a number of additional recommendations concerning federal agencies working in full and open consultation with all stakeholders in developing their public access policies, agencies establishing specific embargo periods between publication and public access, the need to foster interoperability, using to the extent possible the version of record as the version to which free access is provided, agencies working outside their statutory domains as voluntary collaborators with non-governmental stakeholders, promoting innovation in the research and educational use of scholarly publications, addressing the challenges of long-term digital preservation, and creating a public access advisory committee to facilitate communication between research funding agencies and external stakeholders.

Twelve of the 14 members of the Roundtable fully endorsed the report's recommendations. One publisher believed that the recommendations called for too much government intervention; another publisher believed that they didn't call for enough government intervention. The Association of American Publishers opposed key recommendations of the report, primarily based on concerns about unfunded public access policies threatening the viability of scholarly publishing. Among library groups, ARL took no formal position but expressed disappointment in the lack of endorsement of the Federal Research Public Access Act, while the Association of Academic Health Sciences Libraries supported the report and its recommendations.

The House Science and Technology Committee, which had convened the Scholarly Publishing Roundtable, was complimentary of the report, its favorable response made tangible in subsequent legislation introduced by that Committee to reauthorize the America COMPETES Act. The legislation, which was enacted into law last fall, creates an Interagency Public Access Committee effectively implements a number of the report's recommendations, including coordinating the development of standards for research data and reports to achieve interoperability across Federal science agencies and science and engineering disciplines; coordinating Federal agency programs that support research and education to ensure preservation and stewardship of digital research data, including scholarly publications; working with international counterparts to maximize interoperability between US and international research databases and repositories; soliciting input from, and collaborating with, non-governmental stakeholders; and establishing priorities for coordinating the development of Federal science agency public access policies to maximize uniformity of those policies as they affect the science and engineering enterprise and their stakeholders.

A number of non-governmental initiatives have been undertaken to facilitate access to and management of scholarly publishing materials. One such initiative is CrossRef, non-profit, independent organization of over 700 member publishers and 1500 library affiliate members, which increases interoperability through a journal-reference linking service providing access to article metadata through a unique article Digital Object Identifier (DOI) ([www.crossref.org](http://www.crossref.org)). CrossRef has recently begun a new service, CossMark, to certify published articles' Version of Record.

Orcid – the Open Researcher & Contributor ID is a project designed to create a central registry of unique identifiers for individual researchers and an open, transparent linking mechanism with other current author ID schemes ([www.orcid.org](http://www.orcid.org)).

In the U.S., selected members of the Scholarly Publishing Roundtable are continuing to work with government officials and non-governmental stakeholders to advance the Roundtable's long-range vision of creating a functionally interconnected global network of repositories supporting full-text interoperability – using Version of Record to the extent possible. Achieving this goal will require sustained coordination and collaboration of all governmental and non-governmental stakeholders, working within and across countries in a spirit of compromise in pursuit of common purpose for the benefit of scholarship and the broader public good.

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## **The work of IMU and CEIC on journals and related issues**

John Ball  
Director,  
Oxford Centre for Nonlinear PDE, Mathematical Institute, University of Oxford.

In 2002 (with a revision in 2004, see [here](#)) the Committee for Electronic Information and Communication (CEIC) of the International Mathematical Union (IMU) issued a Best current practices document for mathematicians, librarians and publishers. This contained recommendations on documents (structure, links and versions), personal home pages and collected works (in particular advocating that mathematicians should put on their home pages copies of all their scientific papers, if necessary scanned), archiving, copyright (see also [here](#)) and (eventual free) access. In the document [Digital Mathematics Library](#), IMU reinforced its views on access in the context of a vision of a distributed library of digitized past literature, including a moving wall (e.g. 5 years) after which material would be made freely available. On the one hand, the moving wall model proved over-idealistic in view of the value to publishers of selling access to back-runs (though at the meeting it seemed to have wide support). On the other hand there are a number of excellent projects (Project Euclid, Numdam, AMS ...) which have made a significant proportion of older material freely available, listed in registries (such as those of Ulf Rehmann [http://www.mathematik.uni-bielefeld.de/~rehmann/DML/dml\\_links.html](http://www.mathematik.uni-bielefeld.de/~rehmann/DML/dml_links.html) and the AMS <http://www.ams.org/dmr/>). A splendid recent example is the retrodigitization of all the [ICM Proceedings](#), thanks to the fine work of Keith Dennis and Ulf Rehmann. CEIC also produced in 2006 a [Best Practice Document](#) on retrodigitization which is useful for those (for example, mathematical societies) embarking on retrodigitization projects.

In 2010 IMU returned to the topic of mathematics journals, issuing a new Best Current Practices for Journals document that was approved by the 2010 IMU General Assembly in Hyderabad. The document was written by CEIC together with Doug Arnold, and benefited from comments by many stakeholders to whom a draft was circulated. It is available at <http://www.mathunion.org/fileadmin/CEIC/bestpractice/bpfinal.pdf> and was reprinted in the

January 2011 Notices of the AMS. The document describes the value added by good journals in terms of quality control, improving content and presentation, dissemination and archiving, and takes as guiding principles for the running of good journals:

*Transparency:* all the journal's stakeholders – readers, authors, referees, editors, publishers, etc. should be fully aware of the decision processes that affect them,

*Integrity of the publication process:* including maintaining an objective review process focused on scientific quality, proper acknowledgment of sources, and a respect for confidentiality where required, and

*Professionalism:* including timely handling of manuscripts at each stage of the process, and continuity of management, scope, and vision as they evolve.

The document expresses concern about the trend of referees communicating additional opinions to editors which are not meant for transmission to authors, since the principle of transparency implies that authors should be fully informed of the grounds for the decision on their work. Following the same principle, in general authors should receive complete referee reports, although there may be exceptional circumstances when an editor can reasonably decide to exclude part of a report, for example if it contains libellous or insulting remarks, or certain kinds of sensitive information. Editorial discretion should not be used to suppress inconvenient comments, such as a recommendation to accept the paper when the editor's decision is to reject it.

The document also draws attention to the ethical problems involved with alternative modes of financing the publication process, such as through author fees, submission fees, page charges, or combinations of these. First, the opportunity to publish in a peer-reviewed venue should be available to all, subject to scientific merit, not the ability to pay via research grants, institutional support or other means. Second, payment in direct return for publication creates a potential conflict of interest with the peer-review process.

In 2008 IMU published jointly with ICIAM and IMS an influential report on Citation Statistics (<http://www.mathunion.org/fileadmin/IMU/Report/CitationStatistics.pdf>) which drew attention to the dangers of uncritical use of impact factors, the h-index and similar measures, and to the different reasons why work is cited. (Unfortunately the uncritical use of the h-index in promotion exercises, and the imprimatur given to impact factors as a good measure of journal quality through its use by some learned societies in advertising their journals, suggests that the report has not been influential enough!)

The Citation Statistics report was followed up in the ICM 2010 Round Table on The Use of Metrics in Evaluating Research and Research. A video of the Round Table is available at <http://www.icm2010.org.in/> and a written summary is available and will appear in the ICM Proceedings. The prevalence of the impact factor as a measure of journal quality, and the issues surrounding impact factor manipulation (see Nefarious Numbers, Douglas N. Arnold and Kristine K. Fowler, <http://www.ams.org/notices/201103/rtx110300434p.pdf>) has led Doug Arnold to suggest that IMU and ICIAM might construct their own ranking of journals. This and other issues, such as a suggestion by Stefan Müller of overlay journals attached to the ArXiv, are currently being considered by a joint IMU/ICIAM Working Group on Journal Ranking and Pricing, which will report soon.

## Policy Makers and Open Access

Sam Rankin  
American Mathematical Society

Acts under discussion in the US:

Federal Research and Public Access Act (H.R. 5037, S. 1373). First introduced in 2006 and then again in 2009, H.R. 5037 introduced in 2010, and

H.R. 801 Fair Copyright in Research Works Act. Introduced in 2008, 2009.

As of February 2011, these acts have not passed.

### *Federal Research and Public Access Act*

Applies to Federal agencies with extramural research expenditures of over \$100,000,000.

Requires a Federal research public access policy no later than 1 year after passage of bill.

Applies to any research supported in whole or in part by Federal government.

Submission of final published version of peer-reviewed manuscript.

Free online access not later than 6 months after publication appears in peer-reviewed Journal.

In June 2009, U.S. House of Representatives Committee on Science and Technology in coordination with OSTP convened a Scholarly Publishing Roundtable to examine the current state of scholarly publishing and develop consensus recommendations for expanding public access to the journal articles arising from research funded by agencies of the United States government.

In December 2009 Office of Science and Technology Policy solicited comments on open access. To date the Administration has not had a response to the collected comments.

### *America COMPETES Section 123. Interagency Public Access Committee*

(a) The Director (of OSTP) shall establish a working group under the National Science and Technology Council with the responsibility to coordinate Federal science agency research and policies related to the dissemination and long-term stewardship of the results of unclassified research, including digital data and peer-reviewed scholarly publications, supported wholly, or in part, by funding from the Federal science agencies.

(b) The working group shall

(1) identify the specific objectives and public interests that need to be addressed by any policies coordinated under (a);

(2) take into account inherent variability among Federal science agencies and scientific disciplines in the nature of research, types of data, and dissemination models;

(3) coordinate the development or designation of standards for research data, the structure of full text and metadata, navigation tools, and other applications to maximize the interoperability across Federal science agencies, across science and engineering disciplines, and between research data and scholarly publications, taking into account existing consensus standards, including international standards;

(4) coordinate Federal science agency programs and activities that support research and education on tools and systems required to ensure preservation and stewardship of all forms of digital research data, including scholarly publications;

(5) work with international science and technology counterparts to maximize interoperability between United States based unclassified research databases and international databases and repositories;

(6) solicit input and recommendations from, and collaborate with, non-Federal stakeholders, including the public, universities, non-profit and for-profit publishers, libraries, federally funded and non-federally funded research scientists, and other

organizations and institutions with a stake in long term preservation and access to the results of federally funded research;

(7) establish priorities for coordinating the development of any Federal science agency policies related to public access to the results of federally funded research to maximize the benefits of such policies with respect to their potential economic or other impact on the science and engineering enterprise and the stakeholders thereof;

(8) take into consideration the distinction between scholarly publications and digital data;

(9) take into consideration the role that scientific publishers play in the peer review process in ensuring the integrity of the record of scientific research, including the investments and added value that they make; and

(10) examine Federal agency practices and procedures for providing research reports to the agencies charged with locating and preserving unclassified research.

(c) Report to Congress not later than 1 year after date of enactment of Act, the Director (of OSTP) shall transmit a report to Congress describing

(1) specific objectives and public interest identified under (b)(1);

(2) any priorities established under subsection (b)(7);

(3) the impact the policies described under (a) have had on the science and engineering enterprise and the stakeholders, including the financial impact on research budgets;

(4) the status of any Federal science agency policies related to public access to the results of federally funded research; and

(5) how any policies developed or being developed in subsection (a), incorporate input from the non-Federal stakeholders described in subsection (b)(6).

National Science Board's Task Force on Data Access will also consider open access of research.

National Science Foundation developing internal committee on open access.

Publishers are beginning to think about or are participating in public access initiatives including Patient Access, Public Library Access, Journalist Access, Rental Access and Data Access

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### **The role of publications in mathematics research: a systemic approach**

Jean-Pierre BOURGUIGNON

(CNRS-Institut des Hautes Études Scientifiques, Bures-sur-Yvette, France)

In my opinion, the question of the future of mathematical journals requires a systemic approach, as it is typically a question in which secondary effects can be, in the long run, of the same size as primary effects.

To take a broader view one has to come back to the true function journals occupy in the work of mathematicians, and this has to be done while taking account of the very big changes that have affected the availability of documents and the communication between people in the last 20 years.

#### *Mathematics*

Let us start with the discipline itself, as it has to remain the heart of the matter. Mathematics is a body of knowledge about elaborate concepts based on facts proved and its use at interfaces of the discipline.



As a result, the discipline advances through the creation of new concepts and methods leading to the establishment of new facts proved in articles giving explicit proofs, hence the need to get such documents to circulate.

A side issue that may turn out to have a great impact in the near future: documents bringing appropriate information to people involved in interfaces may be of a rather different nature. So far such documents have not been given a lot of attention by mathematicians, although they probably deserve it, especially at a time where domains of interaction are widening considerably and potential users come from many different horizons.

For a very long time, the standard way used by mathematicians to reach out has been by teaching students of other scientific disciplines and engineering. It is a fact that, in mathematics maybe more than in other fields, teaching, basic and advanced, has close relations with research.

This led mathematicians to develop a usage of mathematical journals that is, in many respects, specific to them. Journals are supported by the community in the sense that submitting articles to journals is free, and referees evaluate articles also for free, and this work is sometimes extremely time consuming as it requires a thorough check. Also, because of the long term value of articles, since they do contain the end product of mathematical research, mathematicians care about the long term accessibility to the mathematical literature. This leads me to talk about mathematicians themselves.

#### *Mathematicians*

Functions that mathematicians assume in connection with the problem we are dealing with are: the production of new mathematics; the teaching of mathematics; the dissemination of mathematical results through lectures and articles; the evaluation of mathematicians through their activities and their papers.

They do so as members of mathematical communities, but also as members of the academic community at large, a position that they do not always assume with enough tolerance, perhaps not always taking enough time to explain the specificities of the discipline that have built up over centuries.

In recent years all over the world, like many other members of the academic community, they have been under pressure because of the squeeze of free time, the increasing role of funding coming through projects, as well as the pressure to publish since their performance was more and more rated on the basis of bibliographic data. The overall acceleration of exchanges that accompanied the generalisation of new technological tools also contributed to increase the pressure.

#### *Mathematical Journals*

First of all, one must keep in mind that there is a huge diversity among journals, and this diversity is fundamentally healthy, even if some of the journals can disappear without affecting the overall functioning of the community. Nevertheless, it is certainly an illusion to believe that the community can still function soundly from a scientific point of view while keeping only 10 to 20 % of the presently existing mathematical journals.

The function of mathematical journals is indeed manifold:

- of course their main function is to disseminate knowledge;
- yet, as access to mathematical results over a long period of time is critical for the development of research (because of the permanence of the information contained), they must keep knowledge easily available on a long term basis;

an other obvious function is to check the accuracy of results and the quality of their presentation, but a secondary one, directly connected to it, is the pressure that the submission to a journal exerts on authors because they know one or several anonymous readers will formulate comments and in the end judge the article submitted to them as referee;

not to be forgotten also, some journals help communities develop, either at a regional, national or thematic level.

The production of mathematical journals involves several stakeholders, and each one of them is legitimate:

publishing houses, both academic and commercial, are enterprises that need to find an economic model making the product viable;

mathematicians are involved in many functions, as authors, as referees and as editors; the last two functions have been for some time under stress as it is more and more difficult to convince the right colleagues to contribute in this way;

professional evaluators have focused their attention on journals to try and establish a new discipline, bibliometrics; the principle on which it is based is that statistical data collected over a certain period of time can give important information on the performance of a researcher; my view is that many elements in this principle can be challenged.

It is obvious that new technological developments have led to major changes in the business models of journals, the rapid generalisation of electronic access and also of hyperlinking between articles bringing the possibility of new services and also of new ways to use the resource. The question of "open access", now a major issue up for discussion, challenges the economical models that emerged in this transitional period.

#### *My Main Concern: the Threat on Content*

The need to consider the question of the future from a systemic point of view comes for me mainly from the fact that we are presently facing a threat on the content of mathematical research. Why is that so?

First, mathematicians can devote less and less time to content:

the pressure to publish quickly is building up;

a lot of time is traditionally dedicated to evaluating the content of articles is taken away by the demand for evaluating projects, structures, career development, etc; in the last twenty years, these demands have grown considerably at the expense of reading genuine articles.

Second, the worldwide generalisation of research management schemes has had a uniformising effect, specificities of disciplines being almost fully erased. This is especially adverse to mathematical research, whose final product is indeed contained in published articles, i.e. in mathematical journals, with very little obsolescence and a potential broad impact. It is a fact that mathematics has kept its unity, while undergoing a constant reorganisation of its internal subdisciplinary structure with the result of creating new opportunities of relevance and contact between subareas.

Another aspect of the threat on content comes from the mathematical community itself: in the constrained environment described above, more and more published articles tend to be "almost" correct in the sense that the happy few, i.e. the true experts in the field, can determine how some proofs (or some statements) have to be modified (most often slightly) to make complete sense, and to achieve what they promise.

The existence of "grey areas" in publications poses a real threat to the development of the mathematical enterprise, since it may prevent newcomers, and I think typically of young mathematicians coming from communities that are being formed in emerging countries, from participating at the right level to the advancement of mathematics. This is both unfair and

unhealthy for the discipline. As responsible members of a scientific community, we should not tolerate that such a situation develops, and fight against this tendency with determination.

### *Conclusion*

As you have read, I personally feel that the main functions of mathematical journals are still fully valid. The aspect "keeping the quality" may even be more critical than ever.

I want to warn against neglecting secondary effects of the recent evolution of management of research, and changes in the general economic model underlying mathematical journals on the production of new mathematics. The critical value of the content is being underestimated against other more fashionable and much less substantial concepts, such as speed, fashion and submission to outside imperatives.

With the recent invasive technological changes, the risk is to put too little attention on implicit dimensions of the functioning of the mathematical enterprise such as the true value of a new result, the universality of the potential impact, free thinking, ...

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## **The Manifold Atlas Project: a model for future publishing?**

Matthias Kreck  
University of Bonn

I have addressed two topics. The first concerns the fact that mathematics is growing so fast that - even in a single subarea - nobody can follow what is going on. Thus in a way the problem is not too little information but too much. This problem is of course not completely new and has led to writing encyclopedias. I started a project which is a sort of encyclopedia but based on the internet and adjusted to its options. It is a sort of Wikipedia and called "Manifold Atlas" but there are some essential differences between the Manifold Atlas and Wikipedia. The first is that people cannot write anonymously, the second is that although as in Wikipedia articles can develop, if they reach a mature form, they are refereed. If the refereeing is positive this is a source which can be quoted in scientific papers. Accepted papers will be published in a journal of the Manifold Atlas called Bulletin of the Manifold Atlas (BoMA). At the same time the same article will go back to the Atlas and can develop further. An impressive editorial board of more than 40 topologists and geometrists agreed to work for the Atlas. Their duty is to look at pages from time to time and observe when they are mature.

Then they will ask the managing editor to contact the authors of a page and ask them whether they agree that the page is ready for refereeing. The Manifold Atlas is sponsored by the Hausdorff Center at the University of Bonn. The Center finances a Postdoc and gives some money for supporting a programmer. In the last one and a half years the platform of the Atlas was built up and is now essentially ready.

In August the funding of the Hausdorff Center ends but the Max Planck Institute for Mathematics in Bonn could be convinced to pay the Postdoc (Diarmuid Crowley) for another two years. The hope is that until then the Atlas is so successful that a long term financing can be achieved.

The second topic addresses the question how stable the journal system is. At the moment most mathematicians are happy with our journals, as far as peer reviewing is concerned. Accessibility is (at least for mathematicians working at a rich university) no problem. But it would be better if also the other mathematicians had this access and there are worries that the price of many journals is so high that even richer universities cannot afford them. How

dangerous is such a development for the mathematical publishing? To answer these questions I considered the following scenario: Suppose that the politicians worldwide cancel the budget for mathematical libraries as far as journals are concerned but give the mathematicians a considerable amount of money to built up a new system, suppose in addition that the politicians guarantee the existence of a server like Arxiv. Would this be a drama? My opinion is: not at all. We could keep our system essentially unchanged, meaning that all journals remain with their excellent editorial boards and high quality peer reviewing which also now is completely in the hands of mathematicians (as now some support for managing editors could be given from the central pot). The only difference would be that at the end of this process where now the managing editor sends a mail to the publisher containing the accepted paper, the managing editor would put the paper on the server where the different journals would have their separate home. So we would have: Annals of Mathematics, 3rd series (Arxiv), Inventiones, 2nd series (Arxiv), and so on.

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## **Avenues for Mathematics Journals—on the road to 2025**

Hans Koelsch,  
Springer

**Abstract:** The talk bridges from the foundations of mathematics publishing at Springer to community-driven partnership, and new opportunities in 21st century publishing.

**Contents:** Mathematics and Springer, Community-Driven Partnership, New Opportunities

**Summary:** Mathematics has a long-standing tradition at Springer. Journal partnerships with and for the mathematics community stretch from journals such as *Mathematische Annalen* (founded in 1868) to newest developments like the *Bulletin of Mathematical Sciences* (2011) launched under the SpringerOpen umbrella as an Open Access journal.

The transition from classical print subscriptions to database licensing is nearly completed, allowing many more users to access many more journals than ever before in the history of journal dissemination.

Visibility of journals, findability of content, usage of articles, and their citations can be seen as a scientific-community driven spiral up to even better visibility, content exposure, more usage, and ever more citations, for the benefits of research.

Open Access has become a new way of content dissemination. While it plays rather a minor role in mathematics still and the funding remains unclear for many mathematicians, growth is seen both in the number of new journal titles published under this model and article submissions.

SpringerOpen journals publish under the Attribution license (cc by) which is the most accommodating license even allowing for commercial use and re-use of articles. In cooperation with BioMed Central's membership program more than 120 U.S. institutions including affiliated top-notch mathematics departments can benefit already from this new form of Open Access Publishing.

Most recent examples for SpringerOpen are *The Journal of Mathematics in Industry* published in partnership with the European Consortium for Mathematics in Industry, and the *Bulletin of Mathematical Sciences* in cooperation with the King Abdulaziz University, Jeddah, Saudi Arabia.

In addition, new ways of accessing knowledge are offered to the research community via SpringerImages or via RealTime allowing instant monitoring of journal usage. Apps for mobile devices will help researchers on the move to always be able to access content anywhere with a variety of devices.

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**“Do what you are doing now [and more!] but find a different economic model.”**

Jim Crowley  
Executive Director, SIAM

This is the challenge that is posed to us: to find a different financial basis that will continue to ensure the long-long stability and vitality of scholarly publishing in mathematics without sacrificing quality and standards while broadening access. While this is taking place, the concept of a journal itself is evolving and such changes complicate any decision process to adopt a new model.

Like many scholarly societies, journal publications have been a central mission of SIAM from its origins in 1952. SIAM was established to advance the application of mathematics to engineering, industry, science, and society; to promote research that will lead to effective new mathematical and computational methods and techniques for science, engineering, industry, and society; to provide media for the exchange of information and ideas among mathematicians, engineers, and scientists. Scholarly journals are not just something we do; they are part of our *raison d'être*.

Because a society exists to serve a discipline and those who work in that discipline, societies have a special charge for ensuring the high quality and integrity of research in their field. SIAM now has fifteen peer-reviewed journals, accounting for over 3,700 articles submitted per year; about 1,100 articles accepted in a typical year; and over 1,200 papers published (not including SIREV and TVP) in 2009 (with a total 27,559 pages).

This has become a global enterprise. In 2009 North America accounted for 38% of submissions to SIAM journals, while Western Europe accounted for 42%. East Asia (11%) and South America (2%) were relatively smaller, but are growing significantly. And so scholarly societies like SIAM cannot take a US-centric view of journals and must look at any recommended changes in terms of the global situation.

*What We Do Now*

SIAM's approach to journals publishing has evolved carefully over the decades since its formation. Whereas volunteer editors handled much of the administrative work in the early days, SIAM has over time developed a professional staff whose goal it is to relieve editors of much of the administrative burden and to leave it to the editors to deal with the scientific issues.

SIAM staff work with the editors to assist with managing the peer review process. This includes providing the software for submission and review as well as tracking papers and assisting with reminders. SIAM does perform copyediting on all the papers that are published to ensure readability and standard formats. Bibliographies must be carefully checked to ensure that appropriate links to cited references can be made. These efforts are performed by SIAM staff.

In addition, DOIs for electronic version of the articles are posted in CrossRef and files are prepared and sent to AIP for posting on the Scitation platform. A rather new step is that

articles are also run through CrossCheck to catch any obvious duplication; when any duplication is noted.

#### *Journals Continue to Evolve*

SIAM was early to have its journal online, starting in 1996. The nature, format and presentation of scholarly journals generally has been slow to evolve, but is certainly in the process of adapting to new capabilities. These changes will have an impact on mathematics journals, and even more so on journals in computational mathematics.

As journals evolve it is important to maintain high standards of scholarship, ensure a reliable record of research, and keep up the integrity of the scientific record.

As an example of new tools to help with checking against plagiarism is the CrossCheck software. It is an interesting example because it shows how a tool created to make it easy to check whether portions of a paper duplicate something previously published actually creates more work. Because running CrossCheck can be a time-consuming process, editors ask staff to do a preliminary screening and to alert them only when there appears to be problem. SIAM now performs CrossCheck on all submitted papers and again on final versions of accepted papers before publication.

More interesting than new tools are new modes of communication that go beyond the printed page (or its electronic correlate). We will see new kinds of content and new formats emerge. These will be driven by the desire for reproducible results and/or more exposition for the non-specialist and students who are only learning the field.

New types of content may include data, software/code, and multimedia (video output from simulations, for example). Other material, such as that from oral presentations, may be included to enhance the exposition. Discussions forums that allow commentary on accepted papers may be used in the future as well.

SIAM has been an early adapter of multimedia files to supplement journal articles (SIAM Journal on Dynamical Systems, an all-electronic journal, adopted this policy when it launched).

Experiments will test various ideas, and some will survive and become part of future journals. Standards will need to be developed, discipline by discipline, to decide what becomes part of the official record and what supplemental material is subject to peer review.

At the same time, the process the mathematical sciences have used for decades to produce journal articles – TeX to PDF – may change as well, motivated in part by the need to provide access to a wide variety of mobile platforms.

The point is that whatever financial model that is adopted must be sufficiently flexible to respond to such changes and the costs to implement them.

#### *New Financial Models*

So how do we change to a new financial model? And what model should we adopt?

I would argue that there is no simple, clear-cut choice, assuming that we wish to continue the functions of maintaining high quality and standards without placing greater administrative burden on the scientific community.

Consider first the subscription model – the one we are most accustomed to. In this model, libraries, in consultation with the users at their institution, are the one who make the purchasing decisions. Electronic access is free to users at the subscribing institution.

Subscription prices can vary widely and access is generally limited to those at subscribing institutions.

>>staff support, copyediting, etc.; society vs. commercial; factors affecting price.

Access under this model is not universal but there are mechanisms to extend access. Societies offer low-cost access to members. Various organizations are emerging to help provide access to developing countries. And some societies are experimenting with providing public access through public libraries.

It should also be noted that the arXiv, used by many as a pre-print server, also ensures that much of the literature is available in some form.

However, it is argued that subscription model limits access. Some feel that open access is needed to help advance science and to make results available to those who might not otherwise have access.

#### *Open Access*

Open access has several variants, including publication delays and author-pays models. The publication delay model poses some problems for the mathematical sciences. In this model, subscriptions are maintained but the literature is placed in open access after a period of delay. In the biomedical literature, a delay of six to twelve months might suffice to make the information available to the public in a short period of time but allow enough time that researchers will still seek access through subscriptions.

Because literature in the mathematical sciences remains vital for a long period of time (a long half-life), a short delay might be meaningless and render subscriptions worthless. This would mean that publishers would be unable to recover their costs.

Many feel that a delay of anything less than five years might pose problems for the subscription model.

Another variant of open access is the model where the author, rather the library, pays to have his/her published. This particular model might have had a better chance of success when pages charges were standard, but funding agencies eliminated paying publication costs under grants in the 1980s.

The author-pays model also has several variants. It has its challenges and problems as well. There is the issue of fairness. Will requiring fees from authors place certain authors or authors from certain countries at a disadvantage? This raises numerous global issues where some nations may play publication fees, and others may not.

There is another hidden, and perhaps more insidious risk. Less scrupulous publishers might encourage more papers to be accepted, even if of lower quality, in order to enhance revenue. It has been noted that on average (across all mathematicians in a sampled large research mathematics department) the number of papers per mathematician is not large. But highly published mathematicians can publish a substantial number of papers in a year. Even if they co-publish these with graduate students and/or postdocs they supervise, the researcher must find the funding to cover these publication costs under this model. Given that fees might be several thousand dollars per article, according to some estimates, the costs to the author could be substantial. This raises the question of the potential source of these funds.

Libraries now cover much, if not all of the publication costs, through subscription models (at least in the tradition subscription model). Several decades ago, these were complemented in part by (often voluntary) page pagers that authors paid from grants or from employers (especially in the case of companies). However, funding agencies in mathematics tended to

discontinue paying publication charges on grants over two decades ago. This is yet another area where mathematics may find differences with some other disciplines.

*Third-Party (Government) Funding.*

This is not quite a separate model, but is a significant factor in how other models might work. Assuming that the government accept the role of funding publications costs, there would be several questions that would arise. Who would set the costs and would these be uniform? If so, would granting agencies then determine what functions are performed on articles (such as copyediting and formatting)?

Another question would be how the funds for publications costs would flow. Would these go to author (through individual grants as did page charges), to the library, or directly to the publisher?

If the federal government did accept responsibility for paying publication costs, how would this affect funds currently allocated to research? And is there a risk that placing funding for publication costs under federal budgets might create another risk to scholarly publishing if future leaders decide to drastically reduce whatever budgets were originally established? Furthermore, how would actions by one federal government affect those of other nations?

*Challenge.*

There are a range of services provided by publishers and within that a range of costs. The community and the marketplace will decide which of these services are necessary or even desired. For example, we will continue to provide professional copyediting until such time as it is deemed that this is no longer needed or desired by our authors and editors.

Many publishers, large and small, will experiment with new technology, new tools, new formats, and new modes of delivery. These will continue to add costs in the short term. In the meantime, publishers will experiment with new financial models as well. Those ideas that prove successful will be adopted by others.

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## **Summary survey results as presented at the workshop**

Kristine Fowler  
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In December 2010, I administered a survey of mathematicians' attitudes and behavior on selected publishing issues. Within a random sample of mathematicians worldwide, over 600 responded. The questions addressed journal publishing decision factors, Open Access, research dissemination via the internet, intellectual property, and collaboration technologies. The first three of these being most relevant to workshop discussion, the following highlights were reported:

When submitting research papers for publication in a journal, three factors were “very important” to over half the respondents: the journal's quality and reputation, its inclusion in literature indexes, and lack of author fees.

Other important factors included speed of publication, a large number of readers, and assurance of long-term availability.

Factors less frequently cited as important included access costs to readers or libraries, author rights policies, and existence of a print version.

A third (34%) report that they have published a paper in an Open Access journal (although some of these are mistaken, as a quarter of the titles specified are not in fact OA). The top 5 reasons for publishing in an OA journal are the same as for any journal publishing decision,



with lack of author fees rising somewhat in importance. Correspondingly, over two-thirds of the verifiable OA journals in which respondents have published have no author fees.

Many mathematicians remain unaware of the OA journal model and/or of OA journals in their field. Among objections to OA journals, there was significantly greater “unwillingness” than “inability” to pay author fees, and several comments indicated that author fees call into question the integrity of the editorial process. This concern could perhaps be addressed by the CEIC recommendation to “insulate peer review and editorial decision-making from monetary considerations.”

Posting papers to a personal website remains prevalent: 81% do so at least occasionally. A smaller majority, 56%, have at least one paper in the arXiv (possibly deposited by a co-author), and 30% “regularly” post their own papers there. The top reasons for contributing to the arXiv include early dissemination, better availability of published or unpublished papers, and free reader access; nearly half of arXiv posters say it is “standard practice in the field.” Among those who haven’t contributed papers to the arXiv, there are few objections to it—they simply haven’t found a sufficient reason to do so.

Two-thirds (65%) of respondents judge that mathematicians are more likely to make their research openly accessible, compared with other science researchers. They cite the lack of patentability or other immediate economic gain of mathematics results, as well as recognition that sharing furthers collaborative research. There appears to be a critical mass for open sharing within mathematics, both due to a general altruistic culture, and because effective sharing mechanisms are in place.

The full study is to be published in the summer of 2011, including a guest column in the Notices of the American Mathematical Society.

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### **The View from a Learned Society: Open Access and Complications for our Ideals of Advancing Mathematics**

Angus Macintyre  
President, London Mathematical Society  
angus@eecs.qmul.ac.uk

The London Mathematical Society (LMS) was founded in 1865, and since then it is the leading learned society for mathematics in UK. We have a membership of about 2400, of whom 589 are based outside the UK, 209 are based in USA.

#### *What do we stand for? (From our charter)*

The advancement, dissemination and promotion of mathematics in the UK and worldwide. Our legal status is that of a charity. We are answerable to the UK Charity Commission, and on statutory matters to the Privy Council. Our principal source of income is the publication of mathematics.

#### *Governance*

The LMS is governed by a President and 20 Council members, including 2 Vice-Presidents, a General Secretary, a Treasurer and three other “Secretaries” responsible respectively for the Programmes, Education and Publication Committees). The Secretaries are elected every year by the membership and the other Council members for 2 years at a time. The President’s term is restricted to 2 years.

Members of Council are Trustees of the LMS, with very serious legal responsibilities.

There is an LMS Publisher (currently Susan Hezlet) with a staff of 3. Professor John Jones is the Publications Secretary. All recommendations of the Publications Committee must be approved by Council. Both Susan and John regularly report to Council.

Financial matters are carefully monitored by Council. There is a publicly stated policy on the price of publications, with the intention of keeping the rate of price rises no higher than the rate of inflation, except when there is added content or value.

The LMS Publications Committee has a great deal of delegated responsibility, and its long meetings give time to take a long term view. Attention is paid to the balance of expertise, and Council is deeply involved throughout (a VP, and a Council representative, are members, and the Treasurer visits regularly). Many Editors and Editorial Advisers are involved and there are two external advisers from the publishing world. The Committee occasionally holds a Strategy Away Days which works well giving the chance for concentration on long term publishing policy.

The entire operation is about highly respected research mathematicians considering current proposals, and bringing to Council worked out ideas for future enterprises.

#### *Publishing activity and profits*

The scale of our publishing activity is second only to AMS and SIAM in not-for-profit mathematics publication. We have had journal submissions from at least 83 countries. Less than 20% of our published articles come from UK institutions, with about 20% coming from US institutions. There is some evidence (of uncertain reliability) that the US provides 24% of our readership, and UK about 8%.

We are not allowed simply to salt the profits away, and to the greatest extent possible we plough them back into supporting a wide range of mathematical activities. For example:

1. Many rapid-response small grants (of considerable diversity). These are not, and cannot be according to our Charter, restricted to LMS members or particular sectors of mathematics. There is a particular need for this in UK, where not only is government funding being cut, but traditional, and provenly effective, responsive mode funding is being cut in favour of grandiose schemes ladling out large dollops of funding to the likes of "Mathematical Underpinnings of X";
2. Provide grants for international collaborations, in many cases involving US mathematicians;
3. Adhere to large organizations such as IMU and EMS;
4. Support liaison with industrial mathematics, statistics and operations research, in the daunting task of improving both the quality and the quantity of UK government support for mathematical research;
5. Support Women in Mathematics;
6. Support young Russian mathematicians;
7. Support groups of early career researchers, by funding their own conferences, and allowing them to develop a community spirit;
8. Support mathematics in the developing world, by mentoring schemes, and collaboration with IMU , AMS and other organizations;
9. Involvement in broader educational matters;
10. Outreach activities, including Popular Lectures.

#### *What can be the Impact of Open Access on the activities above?*

The loss of very many subscriptions from US libraries would surely put an end to most of the charitable activities mentioned above. We fear the situation when US mandates Open Access after one year for all US-funded research (GreenOpenAccess), and library funds are diverted

to cover Open Access payments. Replacing “one” by “five” here could still jeopardize subscriptions. The thorough-going Gold Open Access, where every author is responsible for finding payment to cover Open Access for her/his article, seems to us unfair, for reasons explained shortly.

We are confident that if we could continue our current so-called reverse wall arrangement, in which access is entirely open for the first six months, and then followed by the regular subscription arrangements (and inexpensive pay-to-view arrangements), we would have a harmonious system, whereby we disseminate free to those researchers who need rapidly our latest publications, and are able to continue our traditional charitable activities, which, in our opinion, are good for mathematics in the world at large. We also subscribe to developing countries initiatives to enable people in those countries to access all of the journal volumes free of charge after the initial six month period.

We reluctantly introduced the current hybrid arrangements whereby an author may pay for a permanent open-access arrangement but this has hardly been used. In a period, likely to be of long duration, where funding dwindles in the UK, it is going to be hard, especially for senior retired mathematicians, to find funding to pay Open Access fees. We doubt that this problem is unique to UK among developed countries, and the threat to our colleagues in the developing world is even greater.

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## **Dynamics of Mathematics Journals, 2000 to 2009**

Donald E. McClure  
American Mathematical Society  
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The characteristics of mathematics journal articles have changed dramatically over the last decade. The data described herein encompass articles published by virtually all publishers worldwide as reflected in the data bases of Mathematical Reviews. A snapshot is also presented of the articles with publication year 2009 that were published in one of the four primary research journals of the American Mathematical Society.

Figure 1 below shows growth of at least 36% in the number of mathematics journal articles being published over the nine year interval from 2000 to 2009. The counts that are graphed show the number of “regular items” added to the Mathematical Reviews data base (MRDB)<sup>3</sup> by Publication Year of the journals. These are items that are judged by an Associate Editor at Mathematical Reviews to have mathematics content, they are classified according to their Mathematics Subject Classification code, they are processed for author and institution identification and they have complete bibliographic information reported. The counts include only journal articles and exclude papers in proceedings of conferences and edited book volumes.

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<sup>3</sup> The data were extracted from the MRDB on January 25, 2011. At that time, items were still being added for the most recent publication years, including 2009.

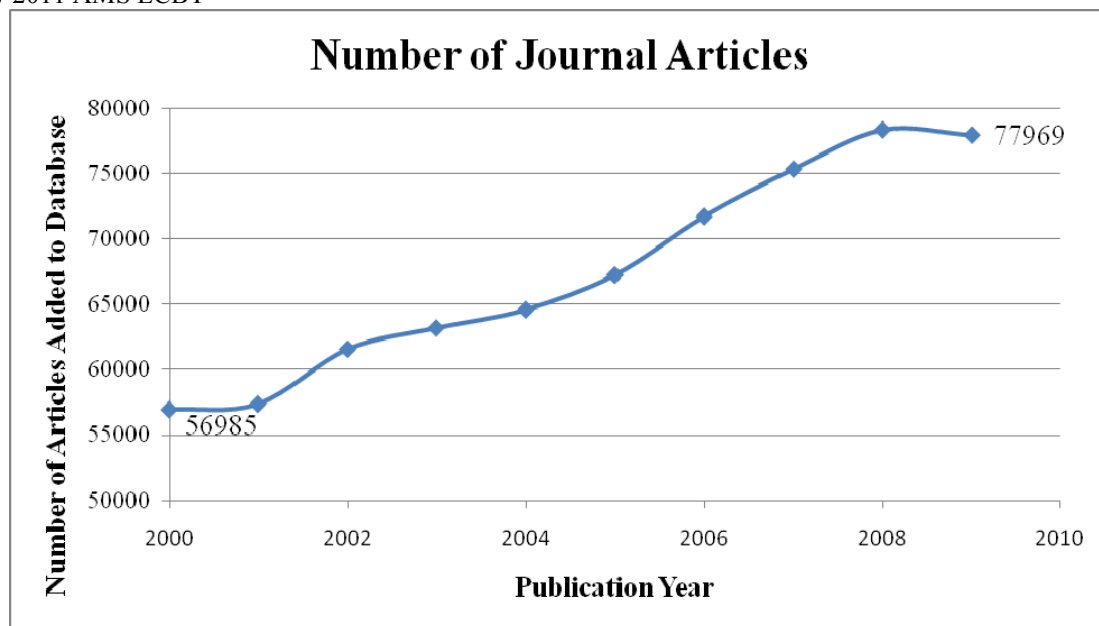


Figure 1

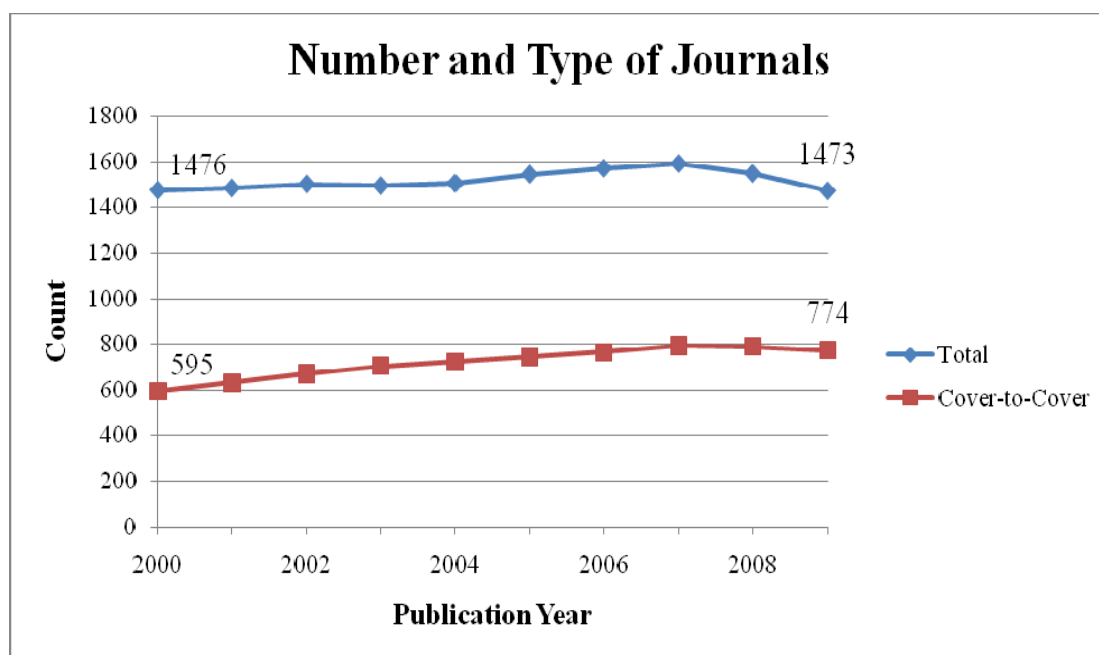


Figure 2

Figure 2 shows the number and type of journal in which these articles appeared. In particular, in 2009 the MRDB data, as of January 25, 2011, included items from 1473 journals of which 774 are so-called “cover-to-cover” journals. All of the articles in a cover-to-cover journal are mathematics articles. For example *Annals of Mathematics* is a cover-to-cover journal. If a journal is not a cover-to-cover journal, then it typically contains articles that do not have original mathematics content and such articles are not entered into the MRDB. 774 of the journals in 2009 were cover-to-cover and 699 were not.

A lot of the research mathematics literature appears in journals that cross disciplinary boundaries, Figure 3 below shows the proportions of articles for each publication year that appear in the two types of journals. The proportion in cover-to-cover journals is increasing

slowly but steadily. Still, over 38% of the journal articles in 2009 were in cross disciplinary journals.

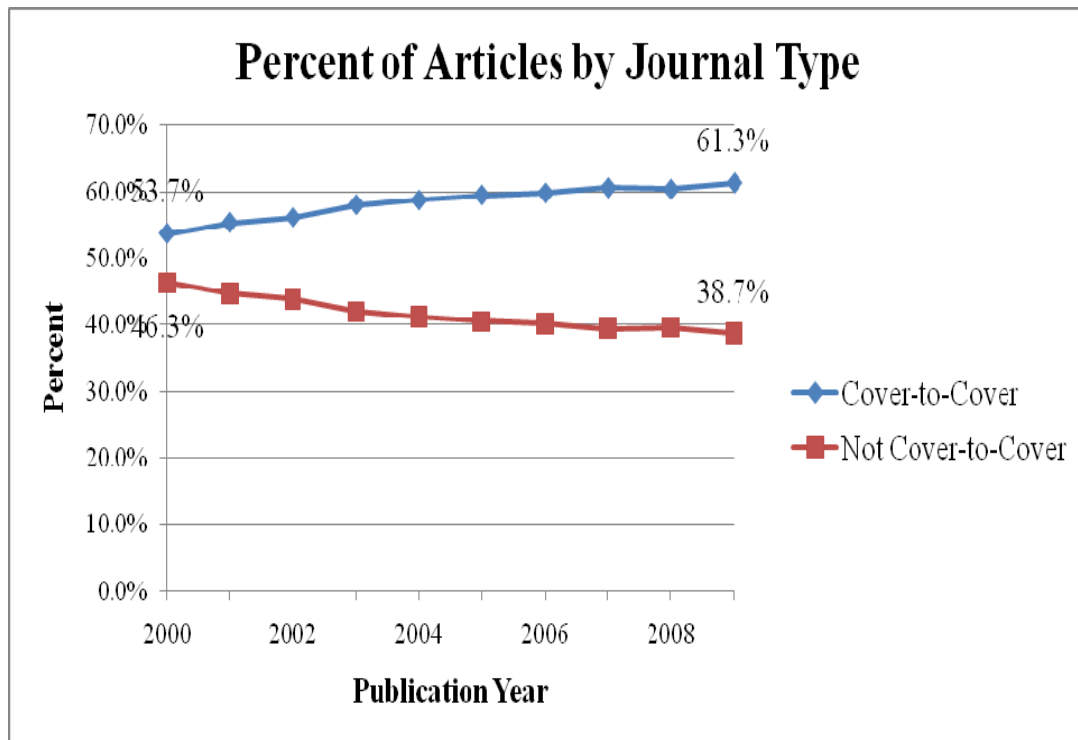


Figure 3

**Table 1:** Number of Journals by Country for Publication Year 2009

COUNTRY	NUMBER OF JOURNALS
United States	291
England	150
The Netherlands	141
Peoples Republic of China	110
Germany	90
Japan	71
India	68

Table 1 includes all countries that publish more than 50 of the journals reported herein in publication year 2009. The total number of journals published by these 7 countries is 921, or 62.5% of the 1473 journals in that publication year.

Figure 4 below reports information from the MRDB about market share of different categories of publishers. It is clear that the large commercial<sup>4</sup> publishers will have strong influence over the business models adopted in the future of scholarly publishing.

<sup>4</sup> What is a “commercial” publisher? In the data extracted from the MRDB, a publisher was categorized as a commercial publisher if they have a “.com” domain name. The results of using this criterion were reviewed by the Mathematical Reviews acquisition librarian, who was impressed by the reliability of the results.

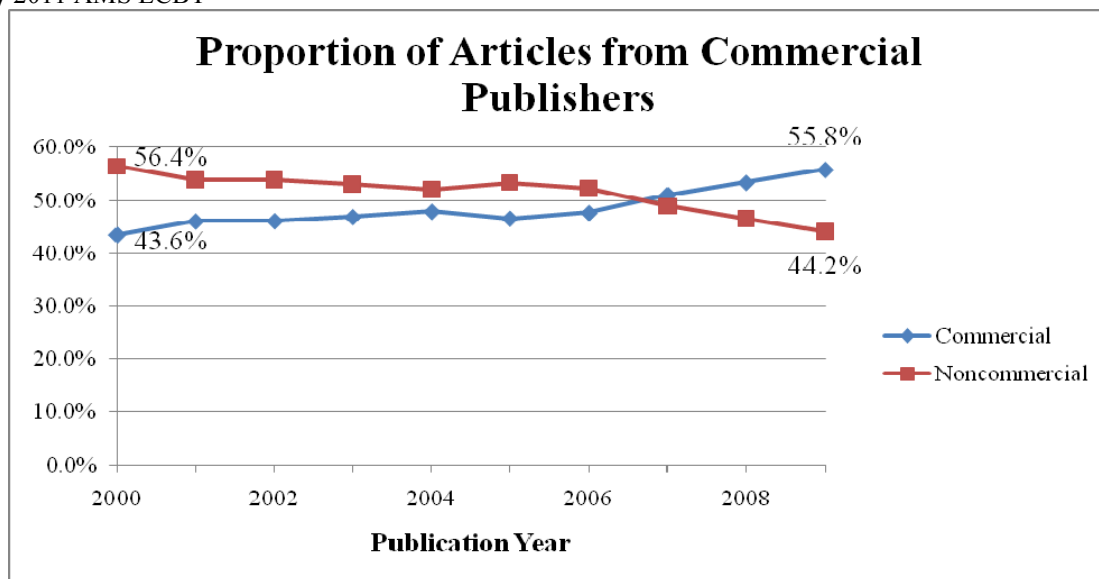


Figure 4

**Table 2:** Percentages of Articles With or Without Support by a U.S. Agency in Publication Year 2009

	JAMS <sup>5</sup>	TAMS	PAMS	MathComp
NSF Support	47.1%	18.3%	14.2%	12.4%
Other US Support	5.9%	1.5%	1.8%	4.1%
No US Federal Support	50.0%	81.0%	84.8%	84.3%

The AMS and other journal publishers are naturally interested in the impact on their journals of new public access requirements for federally funded research. Table 2 provides information about the patterns of research support for the four primary research journals published by the AMS. The data source and the journal acronyms are explained in the footnote to the table.

TAMS, PAMS and MathComp published a total of 882 articles in 2009, and JAMS published 34 articles. At first it is surprising to see the small percentage of articles in TAMS, PAMS and MathComp that have any U.S. Federal Agency research support. But the explanation lies in the small percentage of papers that have an author from the U.S. The data on Author Domicile are presented in Table 3 below.

**Table 3:** Author Domicile for Articles Published in 2006 – 2009. Data are from the AMSPDB.

	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%

<sup>5</sup> The source of information for this table is the AMS Publication Data Base (AMSPDB). The data were extracted on February 2, 2011. JAMS = *Journal of the American Mathematical Society*. TAMS = *Transactions of the American Mathematical Society*. PAMS = *Proceedings of the American Mathematical Society*. MathComp = *Mathematics of Computation*.

For publication year 2009, only about 21% of the journal articles in the MRDB have at least one co-author from the U.S. Only a fraction of these have research support from a U.S. Federal Agency.

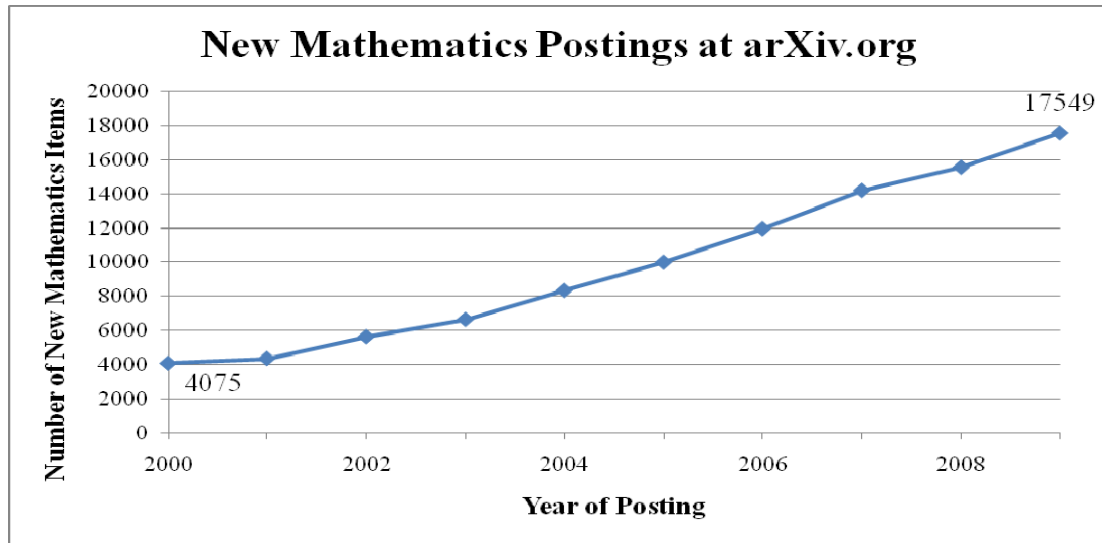


Figure 5

How much of the refereed, published mathematics literature is already freely available on the web? arXiv.org is a popular and highly valued resource among mathematicians for posting research manuscripts. Figure 5 shows how many mathematics manuscripts have been posted at arXiv.org over the years 2000 to 2009. The counts include so-called cross-listings, articles whose primary listing is in another part of the arXiv, but for which the submitter chooses to also list it in the mathematics section.

We can compare these counts to the number of mathematics articles published each year. But we should keep in mind that there is a time lag between posting a preprint to the arXiv and the time, if ever, that the article is published. Many articles posted to the arXiv are never published.

**Table 4:** Proportion of Published Articles with a Pre-publication Version Posted at arXiv.org  
 Publication Year 2009

	JAMS	TAMS	PAMS	MathComp
Number of articles	34	268	493	121
Percent with preprint at arXiv.org	70.6%	56.6%* <sup>6</sup>	27.0%*	23.5%*

Table 4 reports the percentages of articles published in JAMS, TAMS, PAMS and MathComp in 2009 have a preprint version posted at arXiv.org. The percentages vary with the character of the journal.

Figure 6 and Table 5 that follow show the longevity of the mathematics literature. Among the citations occurring in articles published in 2009, 20% were to articles published in 1984 or earlier and 50% were to articles published in 1998 or earlier. The source of these data is the MRDB.

<sup>6</sup> The Percents reported for TAMS, PAMS and MathComp are statistical estimates for which the Standard Error is less than 5%. The source of the data is the AMSPDB.

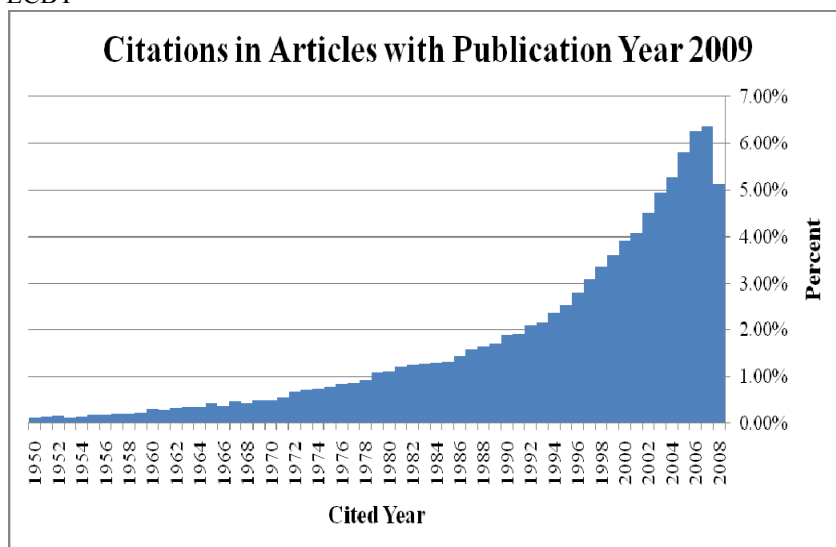


Figure 6

Table 5

Quantile	Value for Citation Database
10%	1975
20%	1984
30%	1990
40%	1995
50%	1998
60%	2001
70%	2003
80%	2005
90%	2006

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### Access and Dissemination of Mathematics Journals: A Commercial Publisher's Perspective (with some Asides on Peer Review)

David Clark,  
 Elsevier

#### *What matters in scholarly publishing?*

David's presentation focused on what we at Elsevier see as key to any discussion of journal publishing. In short:

*Quality*, which includes peer review but also extends to the efficient and transparent, the registration of research findings and the maintenance of ethic standards;

*Preservation*, to ensure usability in perpetuity, regardless of future technological changes;

*Efficiency* for authors, readers and funders;

*Value* and cost-effectiveness, ensuring both affordability and the avoidance, for instance, of currency shocks; and

*Access*, with the goal of achieving the maximum access achievable, including cutting across technological, linguistic and ability/disability barriers.

#### *What are the current clear trends?*

We identify the following as clear trends in the STM journals ecosystem:

the switch to digital is nearly complete;



there's greater openness and sharing across the system, with more use of pre-print servers (the arXiv) and significant amounts of new use of existing material;  
for Elsevier, that means most mathematics journals are accessible at more than 5,000 locations;  
submissions continue to rise, but the quality of those submissions is more mixed than ever, putting pressure on the system;  
agreements with Universities, for Elsevier at least, are increasingly driven by large licenses rather than individual journal subscriptions with much weight given to usage; and elements of the article are being aggregated to create new tools.

For publishers, this means that there are some things which have changed, such as the reduction in the physical printing and despatch of issues, while other things have expanded including :

- the preservation of journals both in existing electronic platforms and in dark archives (it was interesting to note that some in the audience did not see this as part of a publishers role while my view is that it should really be everyone's role and that one sole provider cannot fully meet the need of preservation);
- the increasing role of publishers in managing the technical running of peer review and involvement in checking and pre-screening with the introduction of tools such as cross check;
- the inclusion of new forms of material including video, tabular data, smart and deep linking;
- the maintenance of electronic services 24/7/365; and
- on-line promotion, dissemination, deep linking and search engine optimisation.

Last, but not least, Elsevier and other publishers are confronting the challenge of ever increasing numbers of submissions from new authors in countries without the same traditions of journal publishing as in the traditionally active scientific countries, placing burdens on the existing pool of editors and referees, and challenging us all to recruit and prepare referees and editors from these emerging scientific nations. This is typified by China's World article share almost doubling between 2004 and 2008.

#### *Access and dissemination*

The electronic revolution has given the publishers the opportunity to reverse some of the trends of the 90s and to broaden access significantly. Consortia agreements have given libraries more ability to maximize holdings while electronic access involves more transparency about the level of use of journals.

The consequence is that access has improved greatly from the low point of the 1990s. Despite this, there are still gaps in access which all publishers are seeking to fill through programmes such as Hinari (biomedical and related social science), Agora (Access to Global Online Research in Agriculture) and Oare (Online Access to Research in the Environment) – Elsevier now provides access to more than 1,500 of its journals to public institutions in over 100 developing countries. Participating countries have increased research output by almost 200% over the last 5 years.

#### *Open Access*

Elsevier, like many publishers, have a range of Open Access options for authors and, over time, have adjusted our policies to reflect the needs and expectations of authors, keeping in mind the needs for sustaining the core values of scholarly publishing.

These have included enabling authors to choose to post their final manuscripts, incorporating changes made during the peer review process, to pre-print servers and the option of individually sponsored open access articles. The latter has not proven so relevant for mathematics.

Some journals, particularly in the life sciences, such as the Cell Press journal have delayed access open access which is possible in fields where most of the usage and citation happens in the early period after publication. Areas such as mathematics, with very long citation half-lives, could only be offered delayed access with longer delay periods.

#### *The technological future*

Technologically, there are many exciting options on the horizon including:

- the increased role out of cross check and other technologies to identify duplicate submission and related issues early;
- technologies to improve presentation of mathematics, such as Mathjax;
- the improved ability to cite within the article, down to the proof or theorem;
- interchange of article content with external applications and data sets;
- search engines that can work with mathematical fonts;
- the aggregates of journal articles becoming useful, and
- embedded applications and contextual linking.

But there is also a need to address more fundamental issues that are not technological: simply the need to protect and assist the pool of referees, to encourage new referees and to use their time as effectively as possible.

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## **On the Exchange of Apples and Ideas**

Paolo Mangiafico  
Duke University

The title of the talk is based on a quote attributed to George Bernard Shaw that goes “If you have an apple and I have an apple and we exchange apples then you and I will still each have one apple. But if you have an idea and I have an idea and we exchange these ideas, then each of us will have two ideas.” Knowledge and ideas are non-rivalrous – they can be shared freely and consumed without diminishing the original. The ecosystem of scholarly publishing evolved by necessity to be more like the exchange of apples than of ideas because the most common container of those ideas – print publications – are rivalrous, and market-based exchanges are an efficient way to manage transfer of rivalrous goods.

As digital publication becomes more common, the physical publication is no longer the key unit of exchange, and this has led to the growth of a movement advocating for open access to scholarly publications, and treating the sharing of scholarly works more like the exchange of ideas than apples. This trend continues to grow, with universities, governments, and funding agencies increasingly requiring that scholarship they have supported be made freely available, raising questions about how the costs of publishing can be supported if subscriptions by readers or their proxies can no longer be relied on as a significant source of revenue.

There are a number of studies of funding models for supporting open access, a few of which can be found here:

<http://www.arl.org/sparc/publisher/incomemodells/>, <http://www.ithaka.org/publications/>  
<http://library.duke.edu/blogs/scholcomm/2010/09/24/the-economics-of-open-access/>

Many of these analyses rely on unbundling different aspects of scholarly publishing (for example, into registration, certification, awareness, and archiving) and examining how some aspects can be done more efficiently in a digital networked environment. For those that continue to have significant costs (notably, certification, or peer review and quality control), can the costs of these particular aspects be covered as services, funded through the mission-based funding model of the research process, rather than building them in to the overall costs

of a product that must be treated as a limited resource in order to make it worth paying for in a market-based exchange?

The SCOAP3 project is one example of an experiment that is attempting to make this change across an entire discipline at once, to reduce the risks to any individual players and avoid the key funding sources having to pay for two different models (subscription and service-based) simultaneously. SCOAP3 starts from the premise that most high energy physicists now deposit their articles in the open access arXiv preprint repository, and do most of their reading from articles found there, at no cost to them. Yet despite this, libraries continue to pay for subscriptions to journals in the field because the process of peer review performed by the journals is still valued. SCOAP3 is attempting to convert the key journals in the field to an open access model, and to redirect subscription funding to pay for peer review as a service rather than journals as a product. Such a model requires a stable and trusted coordinating body (in this case, CERN) and that agencies (libraries and research funding bodies) are willing to contribute fair share costs for peer review services that are roughly commensurate with what is being spent now on subscriptions, even though the resulting publications would now be available freely. It's not clear whether this model will succeed, even in the narrow circumstances of this experiment, but so far SCOAP3 has received pledges for approximately 70% of the required funding, and has agreements with the publishers of the journals to be included in the project.

Other examples of mission-based scholarly publishing are emerging from some universities, who are developing publishing services based in (or funded like) their libraries, including some cases of university presses merging with libraries. Libraries are a key node in the scholarly communications ecosystem, and are funded on a mission-based model. Can other aspects of scholarly communication also be funded as a public good under this model, and be considered part of the mission of a university?

Duke University is engaging in a number of projects aimed at exploring new models for scholarly communication, including an open access policy for peer-reviewed articles by its faculty, a small fund to assist Duke authors with article charges if they publish in an open access journal that requires them, a platform for publishing open access journals via the library (using the Open Journal System software), pledging support for SCOAP3, and providing consulting services to Duke researchers who wish to work more with open access. Information on these initiatives can be found here: [library.duke.edu/openaccess/](http://library.duke.edu/openaccess/). Duke sees these initiatives as an investment in promoting changes in the scholarly communications ecosystem, and supporting the university's strategic goal of putting knowledge in the service of society.

Individual scholars are encouraged to work with their librarians and provosts to participate in experiments like these and to encourage them to engage with their peers nationally and internationally to support systemic change. Are there ways publishers and societies can work with their partner scholars and institutions to adopt new models in tandem, to reduce risk while achieving rapid change?

Are there ways to successfully move toward scholarly publishing models that are based on paying for services rather than products, and are aligned more with the mission-based models of scholarship?

## **A charter for sustainable journal publishing**

Bernard Teissier  
(CNRS, Institut Mathématique de Jussieu, Paris)

The French national network of mathematics libraries ([RNBM](#)) has the originality that it is composed of librarians and mathematicians; it contains practically all the libraries of French Mathematics labs and departments. Its present director is Odile Luguern, head of the Mathematics library at ENS Paris and I am its scientific director. It was the first entity in France to initiate negotiations, with Springer, for a national consortium agreement (in 1997, for all French Mathematics libraries). It is currently engaged in promoting national acquisition of electronic Math Archives and national subscriptions to Math academic journals. It works very closely with the [Cellule MathDoc](#) which is certainly known to you through its project [NUMDAM](#). Let me point out that it has other very useful projects such as [CEDRAM](#) which gives access to journals and seminars and [MiniDML](#) which gives access to a large number of digitalized mathematical works.

The diffusion in space of mathematical results and ideas is now largely and successfully electronic. The success is so great that it tends to overshadow the validation of results and their diffusion in time (a.k.a. long-term archiving) as validated results, for which the only method is some version of journal publishing. It is not because validation by peers is not perfect that it should be disregarded, and I hope we all agree that judging the quality of a paper or book by the number of times that it is quoted is not appropriate for Mathematics.

I shall postulate that we should preserve and improve our journal publishing system, albeit with adapted goals (validation and time diffusion) and also preserve its diversity, which is not a luxury but a part of its adaptation to the diversity of mathematical inventiveness.

It is now quite clear that the big deals of some of the commercial publishers threaten to eliminate academic publishing of journals in Mathematics simply by gradually absorbing all the resources of libraries. It is also clear that their aim to sell e-only subscriptions and gradually make the printed version a luxury without providing a reliable long-term accessible archiving threatens the long-term preservation of our access to our own documentation. The big deal is not sustainable for us, scientifically or economically. We are (with our close neighbors of theoretical Physics and theoretical Computer Science) rather isolated within the scientific community, since other sciences have different methods and preoccupations concerning their documentation. We can therefore hardly hope for a spontaneous trend reversal. Nor can we continue to hope (for those who did) that tomorrow some new form of online publishing will play the same role as our current system for a nominal price. It appears that in Mathematics Open Access publishing is not really flourishing, perhaps because of the lack of guarantee of perennity and the reactions to author fees, which give to those who control the money the possibility to control publication. Anyway good publishing does have a non-negligible price, and so does long-term preservation, and subscription rates should not stray too far from that. On the other hand there is the need to make freely available to the public what it paid for in taxes is more and more recognized, and this trend can take forms which disregard the price of editing, refereeing, etc.

I propose that we should promote with great determination a system close to our present system of academic publishing, which is a very important asset for us, and delineate and publicize such an economic and scientific model, which is clearly different from the unsustainable ones of a part of the commercial system.

We should have the goal that an increasing proportion of mathematical papers are published within the framework of such a model, so that it becomes a stronger and stronger competitor for the big deal in our field. I think that is the only way to make ourselves heard (if at all) in the boardrooms.

In order to achieve that goal, we should make the postulates of academic publishing explicit: the aim is not to maximize profit, but to have an economically and scientifically sustainable system.

Here are some of the aspects taken into account by the academic publishing system: Our measure of quality for mathematical work is not by impact factor but by the educated subjective judgment of peers in the evaluation committees and indices adapted to the particularities of our field<sup>7</sup>. Subscriptions to journals whose value/price ratio drops can be freely cancelled since clearly the absence of this possibility is scientifically noxious. Long-term preservation is guaranteed by a (probably more and more limited) number of archiving-quality printed copies in addition to the electronic archiving systems, etc.

The academic system does have its perils, such as the formation of cliques, and it is healthy that it should have some external competition. It is true also that the commercial system, which can more readily invest in scientifically meaningful but risky endeavours, has a positive role. But at this time the situation is much too unbalanced and we need to set up competition for the big deal and its business model as it stands.

The reason given to justify the very high price of some journals was the visibility which they give to their content, what I call the browsing factor and deem more significant than the impact factor for Mathematics. The validity of this argument diminishes rapidly as we get more and more of our information about recent work from the ArXiv.

The RNBM has been trying for years to encourage mathematicians (the established ones at least) to avoid dealing with journals with a low quality/price ratio. It is a long struggle, and I think part of the problem is that we cannot offer clearly defined options.

Right now we are trying to set up in France a system of permanent national subscriptions for some academic mathematics journals (not just the French ones!) and national acquisition of their archives. One of our goals is precisely to encourage academic publishers to develop by offering them some long-term stability. But we also worry that some large academic publishers, who now distribute more and more of the previously isolated academic journals, could come to be tempted by the business models of commercial publishing.

I propose that publishers of Mathematics journals should be given the possibility to adopt a precise “sustainable publishing charter” with commitments concerning in particular:

- the absence of author fees and the possibility of subscribing with appropriate rebates to selections of individual titles instead of publishers' bundlings/packages,
- the determination of prices and of their increases (in particular in comparison with the increase of the quantity of published material).

The quality of journals is maintained; no increase of volume and price by lowering the quality. Subscriptions can be freely cancelled if the value/price ratio drops. sending papers (copy of record) to an open access archive after a short time (say 3 to 5 years). providing paper copies of archiving quality or the files needed to print them, cooperation with archiving libraries and all systems of dissemination and organization of data concerning mathematical literature.

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<sup>7</sup> Ranking journals as a means of evaluating mathematicians according to their publication record is a very questionable option, encouraging the fragmentation of work for publication. Moreover the value of a mathematical journal has a local component, its usefulness to a given community, and a global one. How can a ranking take this into account?

Obviously it would not be easy to formulate such a charter, but there are competent people to do it. Indeed a part of it could be a "charter" version of the best current practices recommendations of the IMU for journals (2010) and recommendations 11 to 15 of its 2004 document on this subject (see <http://www.mathunion.org/publications/reports-recommendations>). A roundtable of mathematicians, publishers, librarians and IMU experts could produce the desired charter. By and large, many academic publishers are already within its scope as I envision it, while the business models of some commercial publishers are clearly outside of this scope. The IMU could perhaps serve as a referee to check, with the help of librarians, whether those who sign the charter really respect it.

Of course, commercial publishers would be welcome to adopt it for some (or all) of their mathematical publications and I do believe that some could, especially as the competition from sustainable publishing grows. Hopefully more mathematicians would prefer to submit to (or referee for, or be editors for) the journals which respect that charter, and one may expect that in a few years many of these would react by significantly increasing their volume of publication. This respect of the charter could also come to be important in the policies of academic libraries and a tool in the negotiations of subscriptions. It could even be, in an ideal world, of some significance to hiring and promotion committees in the case of established mathematicians.

At least a clear choice would be offered to editors, authors, referees, librarians, and publishers.

Of course the same principle could be extended to the merchandising of e-archives and e-books, for which some publishers and distributors are right now trying to create again rent-based business models which are not in the interest of users. In particular in those models libraries get less easily accessible information (catalogues) on each e-book, to encourage them to buy packages. This is not acceptable.

In time the sustainable charter publishing of Mathematics journals may converge with an evolution of some of the current open access publishing models, but right now it seems to be both the fastest and the safest way to move towards sustainability.

Experimentation of new models is extremely useful but if we do not define as clearly as we can what we deem necessary for sustainability in our field, we cannot complain if those who make universal models for publication and access, whether they are commercial publishers or government agencies, do not take our needs sufficiently into account.

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### **An Editor's view of recent challenges faced by the Annals**

David Gabai,  
Princeton

All statements that I make are my personal opinions and do not necessarily represent the opinions of the other members of the editorial board.

The Annals has a long and distinguished history. (See slides) The Annals has an editorial board of six editors and six associate editors. Editorial decisions are made by the editors but heavily rely on the opinions of the associate editors. The Annals does not have a managing editor, a situation that has several advantages and disadvantages. The main advantage is that no one editor is subjected to an inordinate amount of non mathematical work. Most of the work done by a managing editor is done by Maureen Shupsky, who is known as the journal manager, a job which entails a very wide range of duties.

By essentially any measure, the Annals is one of the premiere research journals in mathematics. It strives to set the standard for not only publishing top level research but making it available at a minimal possible cost. An examination of the cost slide shows that its cost is far less than any of the top journals. (A list which is not meant to be all inclusive.) Indeed, the cost of most other top journals is higher by multiplicative factors, indeed over an order of magnitude higher for CPAM. In the aggregate, the journal is minimally financially subsidized by Princeton University.

In recent years, as detailed in the slides, the Annals has faced many challenges. In 2003 (before my time as editor) the editors decided to make the journal freely available through Euclid. The idea was that the journal was of such high quality and so minimally priced that any rational subscribing institution would continue to support it. In 2008, the editors were jarred by the realization that many institutions simply cancelled the Annals, including some of America's most distinguished universities. Effective March 2009, Annals dropped free electronic access and its subscription numbers have recovered somewhat.

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### Mathematics Journals: who reads them?

Susan Hezlet,  
Publisher, London Mathematical Society  
[hezlet@lms.ac.uk](mailto:hezlet@lms.ac.uk)

For journals, we can identify two sources of demand: from the readers, and from the authors who want to see their research disseminated; but what happens when demand from readers and authors takes place long after *payment* for the newly published volume? At the moment all journals are paid for upfront, whether subscriber based or open access, thereafter someone is responsible for looking after the print or electronic media.

Thirty years ago, the libraries were responsible for looking after print and many publishers did not keep archive copies. Libraries still look after access to the electronic journals, and theoretically they could archive everything they buy but this doesn't seem to be happening. Readers, these days, expect to find and read the literature in the latest formats and for it to be readable on the latest machines. (think e-book readers and ipad) and this is where the responsibility has shifted; we expect the publisher to provide upgrades to the electronic versions of journals and new formats for new machines.

I illustrated the talk with data on five journals, beginning with the core LMS journals, the Proceedings, Journal and Bulletin of the LMS who share a common Editorial Advisory Board who look after the peer review, finding referees and making recommendations. The staff facilitate this process through answering author queries, moving the papers around and monitoring delays; they send out reminders to referees and alert the LMS to any serious problems before they become catastrophic. This is where the bulk of our work lies; we actually manage seven journals in house and we manage the copy-editing and typeset quality, rights and permissions and pay for the outsourced publishing services: sales, distribution, online hosting etc.

**Table 1:** Number of submissions (new and revised) handled versus number of papers accepted

	BLMS	JLMS	PLMS
# submissions	672	370	256
# accepted	100 (1152 pp)	99 (1622 pp)	50 (1830 pp)

We will also see some data on *Nonlinearity*, a more applied journal launched this journal in partnership with the Institute of Physics, and *Compositio Mathematica* which is owned by a

Dutch Foundation and we manage the business of publishing for them and look after the post acceptance stages. These journals have different access policies to the core LMS journals.

In general, all five journals have been increasing in size over the last ten years but not as fast as the number of submissions and the impact factors have also been on the increase. All the journals participate in developing countries initiatives which account in part for the very large number of countries who download the papers:

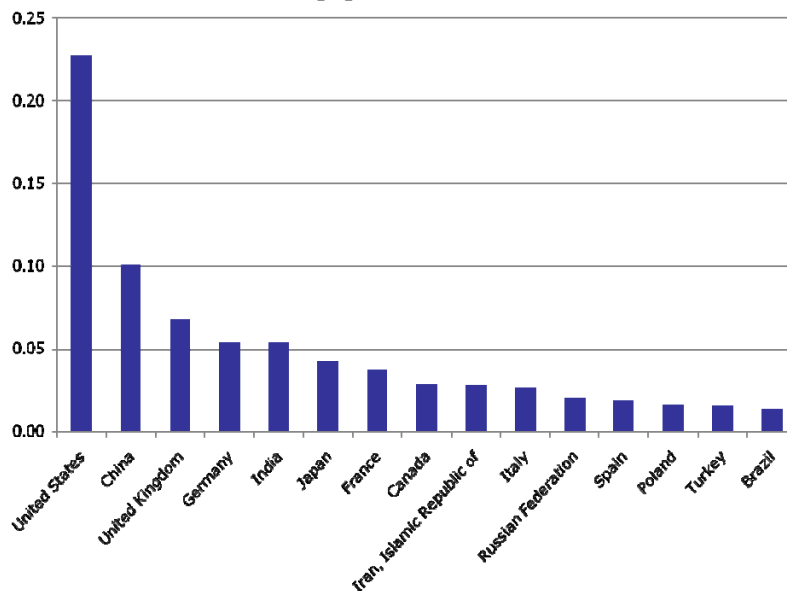


Figure 1 Journal usage for LMS journals (full graph extends to 209 countries in total)

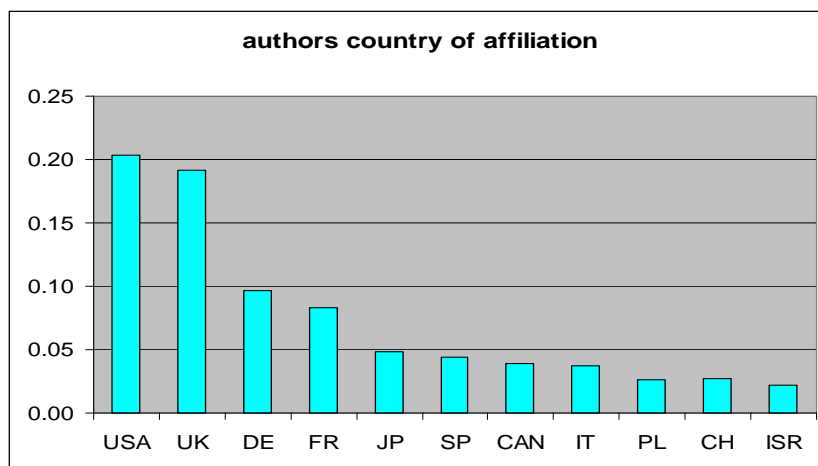


Figure 2 Author affiliation for LMS journals (full graph extends to 42 countries in total)

*Readers vs authors*

Compare Figure 1 with Figure 2, the author's country of affiliation, and you will see that there is a relationship between where the journals are read and where the papers are written.<sup>8</sup> Interestingly, the extra countries in Figure 1 that do not appear in Figure 2 until further down the graph are China, India, Iran, Russia and Brazil. Four of these are known as 'BRICs', the

<sup>8</sup> For British journals, as for any other national journals, there is a disproportionate level of locally based authors. For journals published in America, the US based authorship would be about 30% and the British would make up only about 8% of the authorship.



newly emergent nations. This may be an indication that where the journals are read today will be a source of authors in the future.

*Access policy*

The core LMS journals are free to view for the first six months and thereafter go behind a ‘reverse’ moving wall. The full archive, dating back to 1865 for PLMS, is available to current subscribers as part of the annual subscription to each journal. In contrast, *Compositio Mathematica* has no initial free access, but a moving wall of free access to the articles after five years. Much of the archive sits on a different site to the current journal articles, at NUMDAM. Nonlinearity articles are free to view just for the first month of publication; the archive is also sold separately.

It is clear from Figure 3 below that free access increases the number of downloads and this seems to be most effective when it is free during the first six months. However it also shows that readers *do* read the old material and the long tail of readership on these journals is very significant; the average number of downloads per article dating all the way back from 2000 to 1865 for the *Proceedings* has the same profile at the ‘older’ end as *Nonlinearity*, launched as recently as 1988.

Further evidence of the value of old papers in mathematics comes from Figure 4 below which shows the average number of citations; a substantial number of very old papers are still being cited. This also illustrates the problem with impact factors. Only the yellow and green columns contribute to a journal’s conventional impact factor, whereas the bulk of citations for our journals occur during the years 2001 – 2008. A ten year impact factor would seem perfect, but it has the disadvantage to being slow to change; a badly-handled journal can collapse in a shorter period of time.

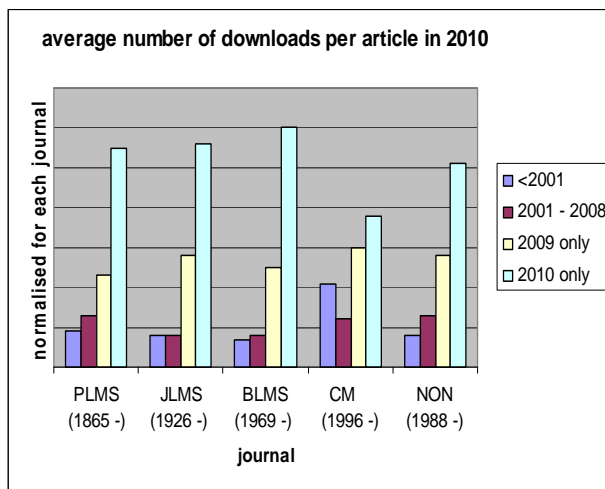


Figure 3

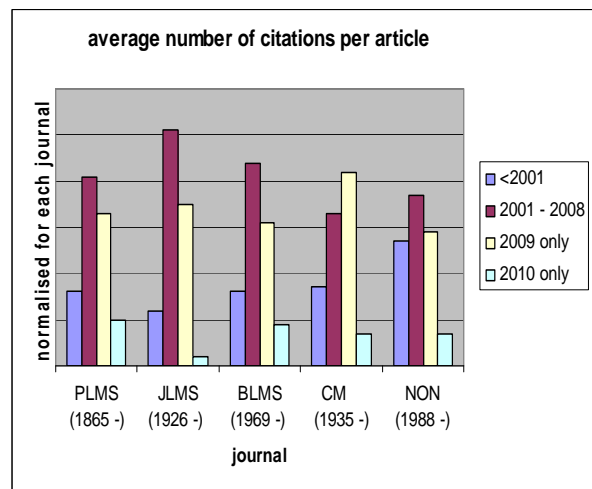


Figure 4

*Conclusions*

- Readers look at what is freely available more than what is behind a payment wall.
- Readers keep reading the old stuff. It has real value, backed up by authors citing the old material.
- Readers are more diverse than authors but same general profile, BRICS will be important.
- US has dominant position (not just for LMS), as readers and authors.
- US government policy on research dissemination is relevant to the Rest of the World.
- Almost all journals are already freely available to developing countries.

What might we do with this information? We want to keep two new services:

1. upgrading the systems as and when there's a major shift and according to where the demand lies;
2. retain enough money to support developing country initiatives.

Could we find a more direct solution for payment? The perfect answer would be to charge a submission fee to authors and charge pay-per-view to readers but this just illustrates the problem with 'perfect' models – most are unworkable in our less-than ideal world.

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## The Mill(in)er's Tale

Prof. Thomas Ward  
Pro-Vice-Chancellor (Academic)  
VCO, UEA

The Miller's tale features people sometimes holding crude caricatures of each other, and a protagonist who predicts a terrible event – a flood twice as deep as Noah's flood – but of course it turns out quite differently. Both aspects have some relevance to the issues discussed at the meeting. Many people involved with journal publishing do so wearing many different hats – hence the milliner.

I attend mathematics conferences, where we all speak a common language and broadly agree on where we are trying to go and how to value what we achieve. I attend conferences as a PVC (the UK equivalent of something like a Provost) and there the different groupings – types of university – are sometimes in entrenched conflict. The journals conference seemed to be a hybrid, with some genuine value-driven conflicts and the potential for a great deal of learning from each other.

I start with two snapshots from recent emails illustrating some of the naivety and dangers around us. The first calmly suggests that the full text of all research outputs in a certain time period should be uploaded to our institutional e-print server, with no mention of where any potential copyright liabilities might reside. The second suggests – in an email sent to every higher education institution in the UK – that we each seek legal advice on some technical questions to do with publishing data sets. If each recipient were to do so, that might divert several million dollars from education or research.

Overview: I will try to illustrate the many hats, all but one of which I have worn personally, on a simple picture (shown below) with axes indicating some of the parameters we juggle with. Conventional subscription versus "author" pays; unfiltered versus clearly edited & reviewed; costly versus "free"/open access.

*Author (Groucho Marx):* Has a paradoxical interest in publishing in journals that is better than their work. Prefers the cost to be hidden from them, and is not strongly engaged with price questions unless involved directly in a campaign on the question. Has strong irrational fears, for example may connect electronic or open access with low quality (because of the low entry barriers). Weights the stature of a journal far more highly than questions of how much it costs, how many libraries carry it and so on. If pushed, likes the idea of cheap journals of high status. "Professors don't pay subscriptions, libraries do."

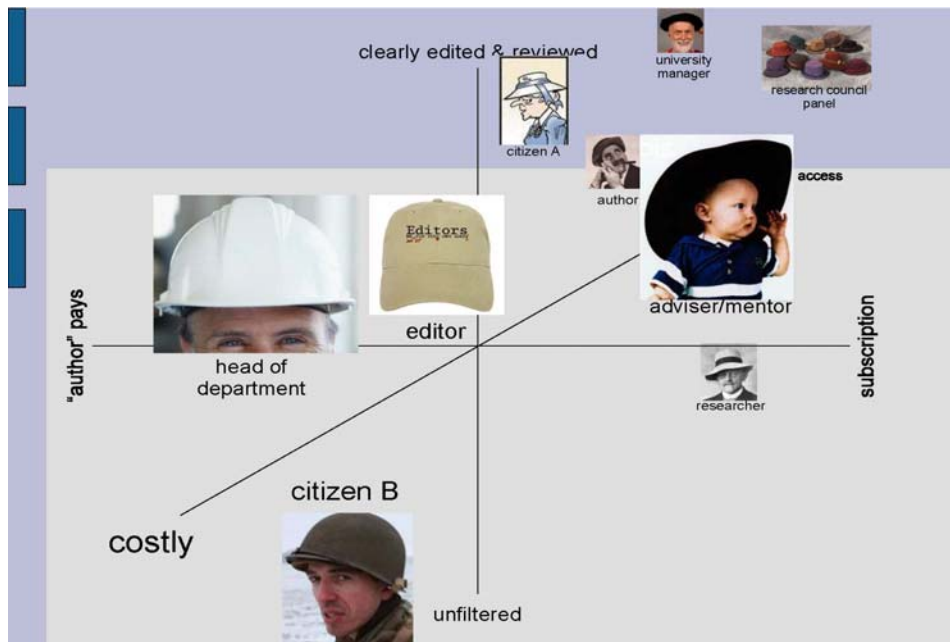
*Editor (white cap):* Clear interest in editorial/refereeing quality control. Likely to be up for reasonably high charges in two ways: as a proxy for quality and as income to a learned society. May be strongly resistant to "author pays" model.

*Researcher (David Hilbert):* This is a pure researcher, thinking about scientific problems not career advancement. Primary desire is to simply be able to search, follow threads, and access

any and all journal articles. Loves the arXiv, has a naive faith in open access. Does not understand why this has all become so complicated, and is strongly irritated by the experience of following a chain of references and suddenly not being able to access a journal. Views access to content, including the historic archive, as ideally a utility – it should just happen, and is not very engaged with how it comes about. Would love, for example, to have more and more of the historic literature in Math Reviews (with retrospective reviews and citation data, for example) without any concern about how much that might cost.

*Adviser (baby in a hat):* Wants their student protected from author charges until they have research grants. Wants the imprimatur of peer review, and wants to make sure their student publishes in very conventional safe ways that will help launch their career. Cost not a primary concern. Interested in the cultural question of how new entrants can break into a field.

*Head of Department (hard hat):* Not very concerned about journal prices until a crunch comes and they have to dragoon colleagues into decisions about cutting journals. Has a strong need for clarity about refereeing and editorial standards of a journal. Suspicious about impact factors in their own area, but sometimes has to rely on something in assessing other areas. Finds the detailed citation data from Math Reviews useful, but not when negotiating across disciplines.



*University Manager:* Fearful of escalating costs; faces strong political pressure for open access from funders and government bodies; wants clear editorial and peer review control. Particularly fears the implication of being squeezed between government/funders and publishers. Anxious about the realpolitik of lacking the institutional muscle to impose something like a Harvard amendment. Sleeps little.

*Citizen A (Lacey Davenport):* Respects peer review and understands the importance of research integrity for society. Does not understand why journals are sometimes so expensive, and would be troubled by significant funds flowing from students or taxpayer-funded research bodies to journal publishers.

*Citizen B:* Quite happy for market forces to operate, and if a journal offers a good product or a high quality is quite happy for it to be expensive. Suspicious of peer review and views consensus as innately suspect. Interested in the web's capability for supporting sceptical debate and publications.

*Research Council Panel:* Insistent on open access, willing to pay for project outputs to be made open source. Unconcerned about the impact of this on other players – willing to let universities and publishers slug it out.

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## **The economics of math journals supported by page charges**

Rob Kirby  
University of California, Berkeley

We begin with some data. The average mathematician at a top 50 university publishes about 30 pages per year. This figure was obtained by randomly picking 7 universities and sampling every other professor (not postdocs nor emeriti) to see how many pages the professor published in a journal (not proceedings or book) in 2005. The number is higher at the very best departments, lower at lower ranked departments.

It is reasonable to assume that \$30,000 of that professor's salary went to research whose result was those 30 pages, so around \$1000 per page.

Mathematical Sciences Publishers, MSP, the non-profit I am associated with, would be happy to publish those papers in an electronic only, fully open access journal, for \$20 per page, or only 2% of the cost to the university of creating the page in the first place. Universities both create knowledge but are also involved in teaching and disseminating it. Two percent for dissemination seem to me a no-brainer.

One can ask whether \$20 per page is reasonable. Hans Koelsch from Springer said that Springer was offering an open access journal supported by 800 Euros per paper. That's over \$1000 for a paper which might average around 20 pages, so let's say \$60 per page. Part of the difference between Springer's price and MSP's price is accounted for by overhead and by profit. Perhaps \$40 per page is a more reasonable price for a more typical journal.

Who pays for this? If we choose a large American state university such as Minnesota or Berkeley or Ohio State, then there might be as many as 100 faculty and postdocs for whom the university needs to pay \$40 per page for papers. Those 100 professors produce 3000 pages which will cost \$120,000. But those math libraries spend well over \$300,000 on subscriptions to journals, so there still would be a saving of \$180,000 to the university if we mathematicians switched completely to open access, electronic journals supported in this manner.

This utopia could be reached if a number of leading universities said they would support these journals by simply transferring money from the library journals budget to the open access journals. Presumably open access journals would start, grow, and gradually take over.

Such open access journals would self archive their papers, as well as make them available to whatever organizations would wish to copy the papers, and index and add value in whatever way mathematicians would pay for. In particular, at least one organization should print the papers, so as to make them available for scanning in the future. The act of archiving should be separated from the act of publishing, although some journals would do both.

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## **Random thoughts on mathematical publishing**

Robert Guralnick, USC,  
Transactions, AMS Managing Editor

### *Some issues to consider*

Mathematics is only a small part of university libraries and their decisions are going to be based more on what is going on with medical sciences, life sciences and engineering.

We should try to convince NSF and other funding agencies that there needs to be consultations regarding mandates about making funded research available.

Clearly, there are ways to publish more cheaply than the for-profit publishers and we should explore these options, but we are not going to lose the private publishers anytime soon (especially in view of the first point).

It is important to have the societies and academic publishers to help provide competition to Springer, Elsevier, etc. For example, Transactions increased the number of pages per year from 5500 to 6600 with essentially no increase in prices.

There has been increased use of the Arxiv making access to papers before being published easier than ever (as well as private web pages and google). It is not clear what the precise percentage of published material is actually on the Arxiv (statistics were mentioned earlier, roughly 17K papers posted on the Arxiv and 80K papers in MathSciNet, but many of the 17K papers on the Arxiv will never be published).

Preprint servers are not free and the community should figure out a way to regularize the funding of the Arxiv (or other such mechanisms).

One of the essential values of journals (as opposed to preprint servers) is that papers have been refereed and so are more likely to be correct than preprint. Also, the quality of the journal is used (perhaps inappropriately) in tenure and promotion cases.

As was pointed out in an earlier talk, the number of published papers is increasing rapidly. The number of potential referees is hardly increasing at all. This is a big problem that we will need to confront in the next decade (or sooner). It is getting harder and harder to get qualified referees to agree to referee, to actually referee and to do a very good job of refereeing.

There are lots of complaints about refereeing but not so much appreciation for their efforts (which are unpaid, anonymous and done out of a sense of giving back to the community). This is true as well for people serving as editors.

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## **Nonprofit Publishing: Juggling Resources and Balancing Conflicting Needs**

Mira Waller  
Project Euclid: Joint venture between Cornell  
University Library and Duke University Press

My talk focused on the challenges faced by independent and small society publishers in balancing publishing costs with the needs of customers and the desire to provide for freely available content. Since my perspective is based upon my experiences with Project Euclid, I concentrated on the primary issues and concerns raised by librarians, mathematicians, and publishers who have used and partnered with Project Euclid.

In 2000 Cornell University, with support from The Andrew W. Mellon Foundation and encouragement from Cornell faculty who wanted to see mathematics on the Web, launched a not-for-profit initiative to provide an online repository and publishing mechanism for small and independent mathematics and statistics journals. By late 2005 the project's budget was in the black with fixed costs of approximately \$300,000. Today Project Euclid, jointly managed by Cornell University Library and Duke University Press via a formal Joint Venture Agreement, includes over sixty journal titles, and the platform holds over 107,000 articles and 161 monographs. Project Euclid supports non-profit publishing and the dissemination of scholarly literature with over 70% of the content freely accessible. An eleven-member advisory board—composed of mathematicians, statisticians, publishers, and librarians—provides strategic, programmatic, and fiscal guidance for Project Euclid. Thirty-five publishers from eleven countries disseminate content through Project Euclid, including the Association for Symbolic Logic, the Belgium Mathematical Society, the Institute of Mathematical Statistics and the Mathematical Society of Japan.

In mathematics there are three current models of publishing: print only, print plus electronic, and electronic only. While Project Euclid only works with electronic materials, many of the publishers on Project Euclid still work primarily with print. In both print and electronic production, general publication costs include peer review and editorial services, production services, marketing, and customer support. Although the amount spent on each of these areas differs according to publisher and according to the publishing model (i.e. print, print plus electronic, or electronic only) these are very real costs, at least currently, to all the publishers.

In Project Euclid there are two main access models: restricted and unrestricted. Restricted access includes subscriptions, membership, and exchanges. Unrestricted access includes partial open access (a chronologically moving wall); open access with article processing fees; open access subsidized by institution, department, or government; and open access subsidized by print subscriptions. While the online environment can reduce some costs, especially if print is jettisoned, online delivery adds substantial costs such as digital content management, online platform maintenance and development, hardware and networking services, digital preservation, Crossref DOI registration, and COUNTER compliancy.

Independent and small society publishers can find it difficult to compete with larger commercial publishers unless economies of scale can be found to help offset some of the issues that are arising in the digital environment. Some of the issues for Project Euclid partners and small publishers interested in Euclid are: transitioning from the print environment to the electronic environment; securing funding for open content; increasing subscriptions in an environment increasingly made up of large bundles and consortia sales; and providing electronic exchanges. Some of these issues have been created by budgetary pressures on librarians, who often determine—in consultation with faculty--which content to purchase. These pressures include justification of purchases or cuts based on usage statistics, decreasing library budgets leading to the attractiveness of consortia sales and bundling, and the need to ensure that what is being purchased will be preserved for ongoing access. In turn these issues have translated into difficulties for the independent and small publisher who find it difficult—due to a lack of critical mass—to provide COUNTER statistics, online subscription management tools, preservation guarantees, and attractive sales options to library consortia.

On the other hand the researchers and scholars who access content on Project Euclid often request that we unblock their access or help them find a version of an article in a certain format (both print and electronic have been requested simultaneously). Sometimes the resources asked about are not even on the Project Euclid platform. Researchers and scholars in mathematics and statistics do not seem to be interested in making the distinction between restricted or unrestricted access nor do they seem to solely require the material in digital form.

If the independent and small society publishers in mathematics and statistics are to survive and even thrive in the evolving landscape of scholarly communications, we (as a society) will need to find balance and the middle ground between disseminating knowledge and generating revenue to cover the costs of the distribution. The independent and small society publishers will need to balance the need for identity and independence with strategic partnerships, learn how to navigate the evolving requirements of libraries and researchers, keep abreast of technology, operate in a global economy, and be willing to step out of what is comfortable and explore new models of scholarly communication.

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Finally, we had some impromptu presentations:

**Liber Mathematicae:  
a web-based documentation and collaboration project for mathematics**

Markus J. Pflaum and John Tuley,  
University of Colorado

The Liber Mathematicae project, <http://www.libermath.org>, looks to bring the open source model of software development to mathematics publishing by employing cutting edge XML technology, high-quality mathematics fonts for the Web from the STIX Fonts project, and relational database technology to allow for a sophisticated version control and review process for the submitted mathematical content. We have developed a web site, where members of the mathematical community can not only view articles but can additionally participate in the creative process by contributing corrections, suggest improvements, or by expanding on the original content. In contrast to traditional mathematics journals, the main goals of Liber Mathematicae are to have articles which are expandable, correctable and dynamic, with tools for collaborative writing and open access to the entire mathematics community. Moreover due to their online nature, articles on Liber Mathematicae may contain more than static text and images and may in fact hold animations, live computational demonstrations, and so forth, and may use hyperlinking to strongly cross-reference other articles. An additional goal is to create a logical dependance tree for all mathematical theorems on Liber Mathematicae. We hope that with this new environment for communicating mathematical knowledge, the openness and cooperation will help to increase both the pace and quality of new mathematical research.

**An economist's view**

Daniel Goroff,  
Sloan

Daniel Goroff discussed how economists might look at academic publishing. First, the information in an article when viewed as a commodity has the properties of a “public good” like a lighthouse or a park. Second, a journal can be viewed as operating in a “two-sided market” like those for credit cards or game consoles. He also mentioned a recent study suggesting that publishing an economics article in an open access journal does not necessarily cause it to be cited more than if it had appeared in a traditional journal.





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**INTEROFFICE MEMORANDUM**

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**TO:** DON MCCLURE  
**FROM:** BETH HUBER  
**SUBJECT:** DEVELOPING A FRAMEWORK - TREATING THE AMS WEBSITE AS A PUBLICAITON OF THE AMS  
**DATE:** 3/8/2011  
**CC:** TOM BLYTHE, MARY LETOURNEAU, GERRY LOON

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**Background:** During the “revamp” of the AMS website it became apparent that there is a need to develop a new methodology for managing the editorial focus and function of our website. Up to now staff in Business and Publications Computing Department (“BPC”) provided the framework and posting tools for the AMS website and there has been little focus on editorial coherence or review.

During the revamp the Web Advisory Group (WAG) began to look at the AMS website more like a publication and there was general support for implementing stronger editorial control similar to an AMS publication. Concerns have also been raised that the AMS website may not contain sufficient information directed to our core membership and that in order to do more input should be solicited from the “community”. To move forward with operating the AMS website along the lines of a publication the following must be addressed.

**Establishing a Broader Web Advisory Group (“WAG”).** The WAG as established to lead the revamp of the AMS website was very inwardly focused. It included the content providers from various operating areas of the AMS and the Governance area along with representation from the information architecture area.

With the revamp behind us it is time to reorganize the WAG to support the AMS website as a publication of the Society. The new WAG needs representation from the highest level of staff leadership as well as representation from the community and will meet at least twice per year to discuss the “big picture” as it affects communication through the Web. The internal staff members will meet as needed to keep the web functioning effectively. A *possible* configuration of the WAG is:

**Chair**

AMS Executive Director

**Internal Staff Members**

Chief Information Officer

Associate Executive Director, Meetings and Professional Services Division

Associate Executive Director, Publishing Division

**External Representation**

Faculty/Researcher

Student and/or Early Career mathematician

Secretary of the AMS

**Add the Review of the AMS Website to the Responsibilities of the Committee on Publications (CPUB).**

CPUB's charge currently includes the high-level oversight of the Society's publications. Part of their charge is to conduct periodic reviews all aspects of the publications program on a continuing basis, reporting its findings to the Council along with possible recommendations. Review of the AMS website should be added to CPUB's responsibilities. Review of AMS web can be added to the review of member publications which happens in Year 4 of CPUBs current review cycle.

**Creation of a Web Editorial Position.** A need has been identified to have day-to-day editorial review of the AMS website. Recently Tom Blythe, Gerry Loon, Mary Letourneau and Beth Huber met to establish the core competencies and responsibilities for such a position. A copy of the job description is attached to this memo.

Early discussion of the position considered carving out the position within the existing staff in Production. After carefully reviewing the position we feel strongly that the position requires a full time commitment, at least initially. There is considerable work to be done to establish and document the necessary operating procedures associated with consistent editorial control. With sound editorial practices documented and in place the web editor will then have to convey these standards to content providers to establish a more cohesive presentation of the Society on the web. This phase will also be very time consuming.

We recognize that having an understanding of the complexities of the community served by the AMS website could be difficult to find outside of the AMS. For that reason, Mary Letourneau will be the direct supervisor of this position. Mary is a long term employee who understands our community from a wide perspective and she will provide the necessary leadership to a new employee.

We feel strongly that the position should be posted internally for some time before advertising outside to see if a current employee could meet a sufficient portion of the position requirements.

**Summary:** Managing the online presence of the AMS has become a very important component of our overall messaging as a Society and Publisher. This proposed structure represents a renewed commitment to maintaining a dynamic website that conveys content that is up to date and relevant to our target audiences.

# Background on Fiduciary Responsibilities

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The 403 (a) and 403 (b) retirement plans sponsored by the American Mathematical Society are regulated by the Employee Retirement Income Security Act (ERISA) which is overseen by the Department of Labor (DOL). Teachers Insurance and Annuity Association-College Retirement Equity Fund (TIAA-CREF) is the current service provider and record keeper for the plans and the investment menus for each plan are currently comprised solely of TIAA-CREF investment options.

Fiduciaries must meet the following standards:

- Act solely in the interest of plan participants and their beneficiaries for the exclusive purpose of providing them with plan benefits;
- Carry out their duties prudently; and
- Administer the plans in accordance with the plan documents unless those documents are inconsistent with regulatory requirements.

In meeting these responsibilities, one of the key requirements is that fiduciaries should be prudent in selecting and monitoring investment options for plan assets. Among the specific tasks involved are:

1. Creating and managing the plan's investment policy statement (IPS). Although an IPS is not required by ERISA it is considered a best practice by the Department of Labor and both TIAA-CREF and Angell Pension (our third-party Plan Administrator) have recommended that one be created.
2. Designing and reviewing the plan's investment menu.
3. Proactive monitoring and documentation of each plan's investment performance.
4. Providing appropriate regulatory notices, and education and advice to plan participants.
5. Ongoing communication to assist participants in making effective investment decisions.

Angell Pensions recommends that the AMS establish a *Retirement Plan Investment Committee* to carry out these duties and to be compliant with current DOL regulations. The Retirement Plan Investment Committee will be responsible for creation of the IPS (with assistance from Angell Pension and TIAA-CREF) and will need to decide how best to make decisions regarding the investment menu and monitoring/documenting the each plan's investment performance. This will likely involve the use of an outside investment advisor.

The Retirement Plan Investment Committee members have full responsibility – including personal liability – for decisions they make in their capacity as members of the Retirement Plan

Investment Committee. Although the Retirement Plan Investment Committee acts autonomously, the Board has a duty to ensure that Committee members act in accordance with all applicable laws and with the Society's own goals and objectives. The Retirement Plan Investment Committee will provide the Board of Trustees with a report at least annually.

A draft Resolution to establish a Retirement Plan Investment Committee and designate its members is appended to this attachment.

*Tammy King Walsh*  
*Director, Human Resources*

RESOLUTION  
RETIREMENT PLAN INVESTMENT COMMITTEE  
BOARD OF TRUSTEES

A meeting of the Board of Trustees of American Mathematical Society (the “Employer”) was held on the 21 day of May, 2011, at which a quorum of members was present and acting throughout.

At the meeting, there was considerable discussion with respect to the establishment of a Retirement Plan Investment Committee in connection with the American Mathematical Society Tax-Deferred Annuity Plan and the American Mathematical Society Retirement Plan (the “Plans”).

Upon successive motions duly made, and seconded, it was

VOTED: That the Director of Human Resources (presently Tammy King Walsh), the Chief Financial Officer (presently Emily D. Riley), the Associate Treasurer (presently John Franks) and the fifth year elected member of the Board of Trustees (presently Carol Wood) shall be appointed to serve as the Retirement Plan Investment Committee in connection with the Plans.

VOTED: That the Director of Human Resources (presently Tammy King Walsh) shall be appointed to serve as the Chair of the Retirement Plan Investment Committee.

VOTED: That the Employer indemnify and hold harmless each member of its Board of Trustees and the Retirement Plan Investment Committee from liability and expenses arising from his/her official capacity with respect to said Plans, except to the extent that his/her conduct amounts to willful misconduct or gross negligence.

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Secretary



**TRUSTEE LIAISON ASSIGNMENTS TO DIVISIONS FOR 2011**

<b>Division (Director)</b>	<b>Board Liaisons</b>
<b>Executive Director</b> (McClure) Development Human Resources	Bus Jaco Ron Stern
<b>Editorial</b> (Sergei Gelfand) Acquisitions	Mark Green Karen Vogtmann
<b>Finance</b> (Emily Riley) Facilities and Purchasing Fiscal	John Franks/Ziggy Nitecki Jane Hawkins Karen Vogtmann
<b>Information Services</b> (Tom Blythe) Business and Publications Computing Systems and Operations	John Franks/Ziggy Nitecki Mark Green
<b>Mathematical Reviews</b> (Graeme Fairweather) Administration Associate Editors Bibliographic Services Copy Editors Reviewer Services/ Production Slavic Languages Systems Support	John Franks/Ziggy Nitecki Carol Wood
<b>Meetings and Professional Services</b> (Ellen Maycock) Meetings and Conferences Membership and Programs Public Awareness	Bus Jaco Carol Wood
<b>Publishing</b> (Beth Huber) Distribution Member and Customer Services Printing Production (includes Electronic Prepress and Creative Services) Sales Administration	Mark Green Ron Stern
<b>Washington Office</b> (Sam Rankin)	Jane Hawkins Ron Stern

**EXECUTIVE DIRECTOR DIVISION**  
**Highlights of 2010 Activities**  
**Donald McClure, Executive Director**

This Division contains three Departments:

- Executive Director Department (the ED and his immediate support staff)
- Deputy Executive Director Department (dissolved in mid-2010)
- Human Resources Department

The summary of 2010 activities for the latter two Department follows.

**DEPUTY EXECUTIVE DIRECTOR DEPARTMENT**

**Summary**

In mid-2010, the Deputy Executive Director (DED), Gary Brownell, retired. The Department was dissolved at that point. The DED's responsibilities and associated support staff were transferred to other departments. Development responsibilities and Joanne O'Meara (1 FTE) were transferred to the Executive Director Department. Business continuity, records management, and Karen Mollohan (.8 FTE) were transferred to the Information Services Department. Karen also continued to spend a portion of her time supporting the Chief Financial Officer. Joanne O'Meara resigned in September 2010 and the development work she handled was transferred to the Executive Director Department until new development staff are hired (planned for mid-2011).

As a result of this reorganization, the Department's expenses closed the year at 61.4% of budget.

Any new planned activities for development were put on hold until new staff is hired.

*Prepared May 6, 2011*

**HUMAN RESOURCES DEPARTMENT**  
**Tammy King Walsh, Director**

**Summary**

2010 Human Resources activities and functions were generally on-going and routine. A number of planned activities were not completed by the end of the year, primarily due to the unfilled position in the department. Some unplanned staffing changes within the organization resulted in the Department's 2010 expenses closing the year over budget by 18.4%.

**Highlights**

**Human Resources Information System**

2010 activities focused on department staff becoming familiar with the web-based ADP Human Resources Information System (HRIS) that we began using in 2009. Each staff member has electronic access to pay statements and W-2s. When the system is fully functional managers and staff will have increased access to information and additional functionality via the self-service web portal. Additionally,



this system will enable us to simplify management of the recruitment process for the organization, from posting positions, to applicant flow to hiring managers, to creation of employee record at time of hire.

### **Electronic Documents**

Significant effort was made to scan paper documents for electronic storage, in accordance with current record retention policies and practices. Going forward this will reduce the space needed to file large quantities of paper, as well as the time needed to retrieve information. When ADP employee self-service is fully functional, electronic documents will provide staff with faster, easier access to forms, documents, and records. We investigated options for providing department and division heads with the ability to digitally sign forms and paperwork to simplify the process of obtaining signatures. Once digital certificates are issued to those with signatory authority we will be able to electronically route paperwork for approval.

### **Benefits**

During 2010 procedural and administrative compliance with 403 (b) regulations affecting the AMS Tax-Deferred Annuity Plan was reviewed in advance of the 2009 Plan Year audit performed in June 2010. In addition, we discussed options available to the Society for simplify administration of the retirement plans. With our 403 (b) plan now subject to the same degree of federal oversight as our 403 (a) plan, our fiduciary responsibilities have increased along with the cost of administering the plans. In 2010 we hired a third-party administrator to assist with the administrative duties for our plans and to provide additional guidance for streamlining administration of the AMS sponsored retirement plans.

In late 2009 a 16+ year department member retired. The position (0.80 FTE) went unfilled for all of 2010 as department needs were evaluated. We expect to fill the position during 2011 at a reduced FTE level of 0.60.

*Prepared April 6, 2011*

**EDITORIAL DIVISION**  
**Highlights of 2010 Activities**  
**Sergei Gelfand, Publisher**

**Journal Program**

As part of their review cycle of all AMS publications, the Committee on Publications (CPub) conducted a review of the AMS primary research journals: *Journal of the AMS* (JAMS), *Mathematics of Computation* (MCOM), *Proceedings of the AMS* (PAMS), and *Transactions of the AMS* (TAMS), in 2010. The review included assessment of the primary journals in the areas of journal quality, backlog and journal efficiency, manuscript submission software, appropriateness of coverage, acceptance/rejection rates, and author geographic demographics. The review found that, overall, the primary journals are doing a good job of meeting their objectives and the standards as set for them by the AMS in the areas assessed.

Due to the generosity of an anonymous benefactor, the backfile digitization project for the AMS primary journals, which began in 2009, was completed in May 2010. All issues of the *Journal of the AMS*, *Mathematics of Computation*, *Proceedings of the AMS*, and *Transactions of the AMS* are now available and fully searchable on the AMS website via each journal's home page. Additionally, all pre-2006 back issues have been made freely available for download in electronic format.

Beginning with the first AMS journal and proceedings volumes of 2010, AMS switched from traditional delivery of paper offprints via postal mail to providing authors with electronic access to their offprints in pdf format. Immediately following publication, printable and downloadable pdf versions are now available to authors through their AMS web user accounts, providing them with permanent, secure, and free access to their offprints. AMS also benefits from this change in offprint delivery method by saving on expenses related to the preparation, printing, and distribution of paper offprints, while at the same time reducing environmental impacts.

**Book Program**

In their role as Acquisitions Editors, Sergei Gelfand, Ed Dunne, and Ina Mette made about 25 trips to various locations; attending 18 national and international meetings, 8 AMS Sectional meetings and visiting more than 20 mathematics departments in the US and abroad.

Notable books published in 2010 include:

- *An Introduction to Complex Analysis and Geometry* by J. P. D'Angelo (AMS Pure and Applied Undergraduate Texts)
- *Differential Topology* by V. Guillemin and A. Pollack (AMS Chelsea Publishing)
- *Opera de Cribro* by J. Friedlander and H. Iwaniec (Colloquium Publications)
- *Partial Differential Equations: Second Edition* by L. C. Evans (Graduate Studies in Mathematics)
- *The Scientific Legacy of Poincare* edited by É. Charpentier, É. Ghys, and A. Lesne (History of Mathematics)

- *Thirty-three Miniatures: Mathematical and Algorithmic Applications of Linear Algebra* by J. Matoušek (Student Mathematical Library)
- *Ricci Flow and Geometrization of 3-Manifolds* by J. W. Morgan and F. T.-H. Fong (University Lecture Series)
- *Mathematics Under the Microscope: Notes on Cognitive Aspects of Mathematical Practice* by A. V. Borovik (Miscellaneous Books)

Other important activities of the Editorial Division/Department (EDD) in 2010 included the following:

- The comprehensive review of all current co-publication agreements. Decisions made regarding modifications needed to these agreements are now in the process of being implemented and are expected to be finalized by the end of 2011.
- In the last couple of years, the AMS has published several trade-type titles (*Five-Minute Mathematics* by Behrends, *Riot at the Calc Exam and Other Mathematically Bent Stories* by Adams, *Famous Puzzles of Great Mathematicians* by Petković, *Mathematics Under the Microscope* by Borovik, *A Mathematical Medley* by Szpiro). We are currently evaluating the performance of these books in order to determine the appropriate scope of this part of the AMS book publishing program.
- In addition, EDD worked on “assignments” from the 2009 Program Plan for Books. Several steps have been taken to maintain the AMS position as a top publisher in mathematics. These include:
  - a) Creating lists of topics often taught at upper undergraduate and first/second year graduate courses at selected mathematics departments in the US and around the world.
  - b) Establishing and maintaining relations with people in first and second tier mathematics departments in the US.
  - c) Using various Web resources to stay informed about new developments in mathematics. This includes monitoring relevant mathematics-related blogs, ArXiv and other preprint servers, and websites of leading mathematics departments and institutions in the US and abroad.

*Prepared April 14, 2011*

**FINANCE DIVISION**  
**Highlights of 2010 Activities**  
**Emily Riley, Chief Financial Officer**

The Finance Division consists of the following two departments, under the supervision of Chief Financial Officer, Emily Riley.

- Facilities and Purchasing, Patricia Hickey, Director
- Fiscal, William Olson, Controller

The majority of the functions performed by the departments comprising the Finance Division are on-going and routine in nature. However, there were several significant events and activities accomplished in 2010, often through the combined efforts of departments both inside and outside of the division. These events and activities included:

- The Facilities & Purchasing and Fiscal Departments were involved in the implementation of the paperless, payables records system, Doclink. This was part of the Epicor accounting software implementation. In 2011, the implementation of the budgeting tools, business intelligence, and royalties modules remain to be accomplished.
- The Division experienced the turnover of the CFO position. This resulted in a development opportunity for the Controller to take on many of the day-to-day routine Fiscal Department activities that the CFO performed. In addition, other staff was trained to take on more responsibility and increase cross-training within the department.
- The Fiscal Department began a comprehensive review of foreign sales tax issues that will be completed in 2011.
- The renovation of the Hille and other conference rooms was completed.
- Patricia Hickey, Director of Facilities and Purchasing, lead a team of staff representing all AMS locations in developing a program plan that was completed in the first quarter of 2011. The plan includes activities to maintain and improve all AMS facilities, focusing on areas such as reduction of building costs, accessibility, safety, and replacement of aging systems. The plan will be revisited in one year intervals.
- The organization continues to experience a reduction in building operation costs due to the improvements that the Facilities & Purchasing Department have implemented, such as new HVAC units and upgrades in lighting fixtures.

*April 2011*

**INFORMATION SERVICES DIVISION**  
**Highlights of 2010 Activities**  
**Thomas Blythe, Chief Information Officer**

**Summary**

The Information Services Division consists of two departments under the Chief Information Officer, Tom Blythe:

Business and Publication Computing, Gerry Loon, Director  
Systems and Operations, Shannon Reall, Director

The Information Services Division functions primarily to support the two departments contained within it by coordinating planning and reporting functions and assisting in large projects. This year divisional staff was involved in the implementation of the Personify association management system and in preparing our existing database for conversion to Personify.

The Business and Publications Computing Department continued with its ongoing support of the software systems that support the business and publications operations of the AMS. Important projects this year include continued work on the implementation of Personify, the online publication of back volumes of our primary journals as part of the Journal Digitization project, and the design and development of a new home page for the AMS website.

The Systems and Operations Department continued to support, maintain and enhance the Society's computing infrastructure. Projects of note include the replacement of old departmental printers with more functional and cost effective multipurpose printers, expansion of the virtual server environment, replacement of aging switches with new gigabit-capable switches that improve the internal network, and the installation of a disk-to-disk backup solution.

**Implementation of Personify**

The project to implement the Personify association management system is progressing. During 2010, staff worked with TMA Resources to complete the analysis and design of system modifications necessary for the Personify software to meet the Society's needs. A list of modifications that will be developed by TMA Resources, using the budget set aside for the project, has been created. Additional development work will either be performed by AMS staff or reevaluated at a later date. Work has also been done to convert data from our existing system for loading into Personify's database. The project continues to operate within the budget approved by the ECBT. The most recent project schedule that takes into account work to be done by TMA Resources as well as the workload of AMS staff indicates that implementation will occur in the spring of 2012. A detailed report on this project can be found in item 3.7 of the ECBT agenda.

**Technology Research**

Computing staff was involved in two projects whose primary goals were to research technology in preparation for possible new Society offerings. Preliminary discussions took place with the book and journal program planning group regarding the technological readiness of AMS intellectual property in preparation for future distribution to unspecified e-publishing channels. This work resulted in a 2011 project to analyze the Society's book production workflow taking into account possible e-book requirements. Secondly, computing staff participated in an internal Social Media Working Group established by the Executive Director. The working group's mission is to investigate the current social media environment and identify

projects and experiments of well-defined scope for implementation as a precursor to developing a master strategy for social networking.

#### **AMS Website Home Page Content Redesign**

The AMS website home page was completely redesigned to contain dynamic content regions that portray fundamental AMS mission objectives, business activities related to Publications, Membership, and the Mathematics Community, and topical news and announcements related to our mathematical constituents. This activity also included providing the necessary content management tools, computing infrastructure, and user training to support the redesigned home page.

#### **Digitization of AMS Primary Journal Back-files**

Over 34,000 files received from APEX were processed and published into the Society's online journal environment available from the AMS website. All back issues, starting with each journal's inaugural issue through 2005, are now freely available in electronic format for *Journal of the AMS*, *Mathematics of Computation*, *Proceedings of the AMS*, *Transactions of the AMS*, and *Bulletin of the AMS*.

#### **COUNTER-compliant Journal Statistics**

Staff began work on developing a process to capture & report AMS electronic journal subscription statistics that are compliant with the Project COUNTER standards. This work lays the foundation for the possibility of making COUNTER-compliant statistics available to subscribers.

#### **Replacement of Departmental Printers**

A total of five multifunction printers and two color printers were purchased in 2010 to complete a project to consolidate and replace aging printers, copiers, scanners, and fax machines. A single contract covers both service and supplies at a significant savings.

#### **Expansion of the Virtual Server Environment**

In preparation for a 2011 project to establish an offsite virtual environment for business continuity and disaster recovery, two new servers were purchased. These servers will be setup internally first for testing and will be moved to an offsite location at a later date. In addition, the Society's virtual environment was expanded with the purchase of a new server, additional disk space and virtual server software.

#### **Replacement of Aging Network Switches**

A significant amount of time in 2010 was spent planning for the replacement of our aging switches to improve network performance and better support future projects. Vendors and products were evaluated and a purchase was made in October. The network architecture was redesigned and the switches were configured in December. The new switches were put into production in January 2011.

#### **Disk-to-Disk-to-Tape Backup Solution**

Staff has been considering disk-to-disk backup solutions over the past two years but these solutions have always been too expensive to justify. This year a new vendor proposed a solution that only required us to purchase an additional license for our existing backup software and to rebuild existing hardware. All servers now backup to disk where we maintain all of our short-term backups. Disk backups are then cloned to tape for disaster recovery. This eliminates the need to continue purchasing additional tape libraries and licenses to meet our short-term retention period and reduces times necessary to restore files from backup.

**MATHEMATICAL REVIEWS DIVISION**  
**Highlights of 2010 Activities**  
**Graeme Fairweather, Executive Editor**

The following table offers a comparison of the number of items and the number of reviews added to the MRDB in the calendar year 2010 with the corresponding data for 2009. In 2010, the Mathematical Reviews Database (MRDB) increased by 152,103 bibliographic items and added 79,165 reviews. The number of reviews added represents an all-time high. Through an agreement with ProQuest, MathSciNet now contains bibliographic entries and direct links for Ph.D. theses in mathematics, applied mathematics and statistics from the ProQuest Dissertation & Thesis Database. The first batch of listings comprised over 59,000 items, and monthly updates are being added. The listings are entered into the MR Database in a manner similar to the treatment of Digital Mathematics Library items and are reported as such in the table.

	<b>2010</b>	<b>2009</b>
<b>Items added to the MRDB</b>	<b>152,103</b>	<b>108,913</b>
<b>Regular items</b>	<b>92,519</b>	<b>108,913</b>
<b>IO items</b>	20,256	16,890
<b>DBX items</b>	2,757	3,533
<b>DML items</b>	<b>59,584</b>	<b>0</b>
<b>Reviews added to the MRDB</b>	<b>79,165</b>	<b>69,005</b>

IO items: Index Only items - classified but not reviewed

DBX items: Database Expansion items - neither classified nor reviewed

DML items: Digital Mathematics Library items - neither classified nor reviewed; no author work

The volume of the mathematics literature continues to grow relentlessly. In 2010, MR added 43 new journal titles including 10 high density journals and 2 database expansion journals. Currently, 137 journal titles are pending; these are awaiting an editorial decision or are part of the backlog of journals awaiting bibliographic work.

The latest version of MathSciNet was released in October 2010. In it, the display of mathematics in MathSciNet is greatly improved with the use of MathJax, an open source platform displaying mathematics in a wide range of browsers. The new release also contains direct links to books and series using DOIs registered by publishers, and the aforementioned ProQuest data.

The processing of journals at MR continues to be affected by the growing number of journals that are processed from online versions. Currently, 898 journals are being downloaded, which is up from 717 journals one year ago. During 2010, substantial progress was made in establishing agreements with major publishers to permit delivery of journal articles to reviewers in electronic form. Approximately 70% of reviewers have indicated their willingness to accept papers in this form. The ability to send PDFs to reviewers is a time and paper saver, but the effort involved in acquiring these items, indexing them and reviewing them continues to be slowed by having more journals delivered electronically. Better electronic tools help accelerate the process. In 2010, the Online Editors Box was released to the editors. This does for electronic journal publications what the regular Editors Box, with its multicolored strips, does for paper publications: it enables the first pass of treatment decisions by editors of individual journal

papers (to take or not, what classes, whether to review, what sort of review). After a little fine tuning, it was an instant success, and makes this initial work much more efficient. In essence, it makes the electronic prescanning tool developed in 2009 into a “decorating” tool, saving the duplication of this work.

The most visible physical change at MR during 2010 was the installation of security cameras and the adoption of an improved security system.

*Prepared April 2011*



**MEETINGS AND PROFESSIONAL SERVICES DIVISION**  
**Highlights of 2010 Activities**  
**Ellen J. Maycock, Associate Executive Director**

The mission of the division is to provide professional meetings, programs, services and public awareness materials that support the continuing professional development of the membership, both individuals and institutions, and the mathematical community at large. A central theme of all the activities within this division is outreach not only to members of the profession but also to a general audience. The phone call with Trustee liaisons William Jaco and Carol Wood took place on April 8, 2011.

The **Meetings and Professional Services Department** functions primarily to support the three departments contained within it. However, the AED and her assistant also do a number of things independently. The AED oversees the Mathematics Research Communities program, whose funding was renewed by the National Science Foundation. The AED and her assistant are the staff support for two policy committees, the Committee on the Profession and the Committee on Meetings and Conferences, in addition to the Joint Committee on Women. They also administer the Book and Journal Donation Program. The AED provides supervision or oversight for several activities, including setting dues for individuals and institutions, administering the NSA grant proposal program, and approving AMS actions regarding the CML, the Professional Directory and mass emailings. The AED is the primary individual in the AMS to write and administer grant proposals funded by NSF and the NSA. The AED and her assistant provide staff support for short-term task forces. They occasionally organize one-time conferences and support specific projects on an occasional basis.

Highlights of 2010 included receiving funding from the National Science Foundation for three more years of the Mathematics Research Communities program and receiving funding from the Simons Foundation for a new program, AMS-Simons Travel Grants, which will provide funding for early career mathematicians. A Working Group proposed major changes in the Nominee program, which were endorsed by the Committee on the Profession and the Council and will be implemented beginning in 2011. The large number of new programs that will now be handled in the Division prompted the request of an additional staff member, which has been approved by Executive Director Don McClure.

The **Meetings and Conferences Department** continued with its ongoing support for the recurring meetings and conferences of the AMS. The Joint Mathematics Meetings (JMM), held in San Francisco, CA in 2010, was successful with an impressive attendance of 5795. The department worked on the 2011 JMM to be held in New Orleans, LA during most of 2010. The department provided support for the Mathematics Research Communities (MRC) program held in Snowbird, UT. The department also provided support for the Eighth Joint International Meeting of the AMS, held in Pucón, Chile and the Sociedad Matemática Mexicana, held in Berkeley, CA. There were four Sectionals held in the spring of 2010 and four in the fall of 2010. The department underwent some staffing changes during the mid to latter part of 2010, due to a retirement and a resignation. The new Conference/Audio Visual Coordinator is Peter Smith and the new Conference/Logistics Coordinator is Melissa Colton. Kimberly Birrell was again contracted temporarily from September 1 through the end of the year to assist the Service Bureau for the 2011 JMM.

The **Membership and Programs Department** has numerous ongoing activities. The department has the responsibility for membership recruitment and retention. The department also administers the AMS employment services, including EIMS and the Employment Center at the JMM, and provides user support for MathJobs.org. Members of this department conduct the Annual Survey for the Mathematical Sciences and provide support for the CBMS survey, done on a 5-year cycle. The online application

service MathPrograms.org was launched in the fall of 2009 to handle applications for a variety of programs such as travel grants programs, REUs and a few graduate programs. The department also handles various small programs, such as the Young Scholars Program and the AMS China Exchange Program. The selection process for the grants program for the National Security Agency is managed primarily in this department.

During 2010, the Membership and Programs Department handled travel grants funded by NSF for the 2010 ICM, held in Hyderabad, India and the Joint International Meeting held in Pucón, Chile. Planning began in 2010 to implement the AMS-Simons Travel Grants and the travel grants program for graduate students to attend Sectional Meetings. Background work was begun in order to prepare for the AMS Fellows Program, which will be on the ballot in fall 2011. Staff members are now working on the last section of projects described in the Career and Employment Services Operating Plan. In 2010, the department redesigned the way the Annual Survey is reported, with a summary presented in the *Notices* and a full report posted on the AMS web site. Work on the Annual Survey in 2011 will focus on changing the data collection. Despite the difficult job market, the use of MathJobs.org continues to increase. The department is working with staff members throughout the Society to increase our use of social networking.

The **Public Awareness Office** maintained and expanded its programs to promote the Society and its programs and to promote mathematics. The PAO continued to run the popular *Who Wants to Be a Mathematician* games around the country; issue *Headlines & Deadlines* and *Headlines & Deadlines for Students*; promote awareness about the Society (in Member Newsletters, calendars, semi-annual series of posters promoting AMS Sectional Meetings, spots on WRNI radio, *Headlines & Deadlines*, AMS website); issue news releases and post announcements on the AMS home page, newswires and social networks; attend the annual AAAS, SACNAS, and SIAM meetings; add albums to Mathematical Imagery; maintain relationships with now five past Media Fellows (who contributed summaries for Math Digest), Feature Column writers, artists, and journalists; mail to NCTM high school teachers and fulfill their poster requests; manage Math in the Media and Feature Column; post Math Moments podcast interviews and translations; and send PAO materials to AMS and other meetings and events.

Notable or new activities in 2010: the first national *Who Wants to Be a Mathematician* game, held at JMM in San Francisco; the new *Women Doing Mathematics* poster; launch of AMS on Facebook, Twitter, and YouTube (to which the PAO posted most of the content, including a significant number of game videos on the AMS YouTube Channel); extensive suggestions, testing, and troubleshooting on the new AMS website--its organization, files and staging tools; and the management and implementation of monthly Math Digest (as Allyn Jackson resigned from doing that).

*Prepared April 13, 2011*

**PUBLISHING DIVISION**  
**Highlights of 2010 Activities**  
**Beth Huber, Associate Executive Director**

Beth Huber met via conference call with Publishing Division trustee liaisons Mark Green and Ron Stern on April 7, 2011 to review the 2010 division performance. The following summarizes that discussion.

**Financial Results Summary:**

Book **revenue** fell short of budget by approximately \$226,000. The shortfall was attributed to a combination of publishing 8 fewer books than budgeted and a revenue budget that was too aggressive. Even though revenue was below 2010 budget there was strong revenue growth compared to the prior year, with 2009 revenue exceeded by about \$316,000. It is important to note that back list book sales (books published more than three years) accounted for approximately \$1.36 million in 2010.

Notable **sales** were from the GSM series where we published a new version of *Partial Differential Equations* by Evans. This is our best selling individual title and the revised edition had stronger sales than average. The new AMSTEXT series contributed a little more than 5% of total revenue and we published two titles in the series in 2010. Even though there was no price increase for AMS journals in 2010, subscription revenue exceeded budget by over \$272,000. It appears that the attrition rate used to develop the revenue budget was much higher than it should have been. 2010 revenue was approximately \$68,000 less than 2009 due to the lack of a price increase, attrition and a large number of subscribers moving to electronic only subscriptions which sell at a 10% list price discount.

Overall **expenses** were below budget for 2010 including both personnel and operating related expenses. Noteworthy variances included a negative variance in depreciation expenses of about \$21,000. This negative variance is attributed to the new printing press and new vehicle for the Distribution Department not being reflected in the budget. Postage costs associated with the delivery of books, journals and author off-prints were under budget by greater than \$110,000. This is attributed to a shortfall in the number of books published, a smaller increase from the US Postal Service than anticipated and the elimination of paper off-prints for journals and proceedings volumes. A new policy which no longer allows subscription renewals to be paid by credit card resulted in a reduction in credit card processing fees of approximately \$50,000.

**Departmental Activity Summary:**

**Production Department** – The digitization of back issues of the AMS primary research journals published prior to 1996 was completed in 2010. Over 34,000 articles are now posted on the journals web pages, encompassing every issue since each journal's inaugural volume. All of the back issues are now included in the Society's searchable electronic archive, which allows free electronic access to this significant body of work. This important contribution to our free electronic archive was fully funded by a contribution from the mysterious benefactor.

In 2010, Creative Services began incorporating social networking and internet advertising into promotional plans as part of an initiative to drive product sales and optimize the advertising budget. We are now regularly advertising with Google and FaceBook. In addition, we are posting announcements of new publications on FaceBook, highlighting new publications and providing direct links to the AMS Bookstore.

**Printing Department** - The Printing Department produced a total of 226 publications in 2010. These publications included both AMS and sale-of-service journals as well as new and reprinted books. Completion of this work resulted in 4,301,113 impressions being printed on our sheet-fed presses during 2010. The number of overall impressions was up slightly from 2009; attributed to the new 4-color press and our ability to print color books and other work that was previously sent to outside printers.

To support our new color printing capability and improve the overall quality of output from our color presses, new print-proofing procedures have been established. We were able to negotiate very favorable pricing on the software and hardware required by this new process.

**Sales Administration** - We continued to expand the Indian Editions Program by adding another 17 titles to the program in 2010. The Program offers a select list of AMS titles to the Indian mathematical community at prices that are more consistent with the expectations of the Indian market (\$15 to \$25 per unit). The goal of the Program is to increase awareness (and sales) of AMS titles in India.

The unofficial launch of the Indian Editions Program was at ICM-Hyderabad, the 30 titles that were available for exhibit and sale were met with great enthusiasm. Over 700 units of Indian Editions titles were sold during ICM. We continue to discuss the merits of expanding this specialty pricing strategy to other world markets where price appears to be a barrier to expanded sales.

Nearly 400 new participants were added to the MathSciNet consortia program in 2010. Following through with a decision to only sell access to Math Review products through AMS controlled products, we cancelled our agreement with OVID (the former SilverPlatter). This action eliminated a product marketed exclusively by OVID, *OVID/MathSci on SilverPlatter*. Not only were we able to convert former OVID customers to MathSciNet, but we were able to expand the number of consortia participants in Brazil and Argentina. In addition, 102 participants were added by the formation of a new, very large consortium in Mexico. There are now close to 2,500 MathSciNet subscribers in consortia and almost 1,500 of these are new subscribers to the product.

**Member and Customer Services (“Macs”)** – As of the 2010 renewal cycle we modified our terms and conditions to no longer accept credit cards for payment of subscription products. Over the past few years many of the subscription agents moved to paying renewal fees via credit card which significantly increased expenses associated with these transactions. Our Fiscal Department also negotiated lower overall transaction fees for credit cards. This policy change was met with little resistance from customers.

Overall, the Society has had few credit problems and little to no losses associated with non-payment of receivables. In an effort to make sure that our credit policies remain effective, the Fiscal, Sales Administration and Member and Customer Services Departments collaborated in the development and implementation of revised credit policies during 2010. The new policy has been put in place and is operating very well.

**Distribution** - Maintaining a facility that is well organized is vital to keeping fulfillment costs at the lowest possible level. The warehouse where our bulk inventory is housed is undergoing a multi-year project to replace obsolete shelving. So far we have replaced 20 bays in 2008 and 22 bays in 2010. This project will continue until all of the older shelving has been replaced and has a planned completion date of 2013.

The successful movement of more than 36,000 individual journal issues and 31,000 packing slip orders were executed in the Distribution Department in 2010.

**WASHINGTON DIVISION**  
**Highlights of 2010 Activities**  
**Samuel M. Rankin, Associate Executive Director**

The FY 2011 Federal Budget Request was made public in February of 2010. Finally on April 14, 2011 an FY 2011 federal budget was approved. The government has been running on a series of Continuing Resolutions since October 1, 2010. While on CRS, agencies, programs, and projects are budgeted at FY 2010 levels.

The November election changed the congressional dynamics as the Republicans became the majority party of the House of Representatives while the Democrats maintained control of the Senate. This change will have a huge effect on what bills are considered in the next Congress.

During the 2010 Joint Meetings held in San Francisco, the Washington Office was involved in several activities.

- Department Chairs Workshop: Thirty-one chairs representing undergraduate, masters, and doctorate departments participated in the Workshop. Larry Gray, University of Minnesota; John Meakin, University of Nebraska; and Stepehn Robinson, Wake Forest University led the Workshop.
- AMS Conversation on Non-Academic Employment: This session was moderated by James Glimm with panelists Allen Butler, Daniel H. Wagner Associates Inc; Christina Bahl, National Security Agency; Rick Chartrand, Los Alamos National Laboratory; Dale Smith, Vicis Capital LLC; and Rebecca Wasyk, Metron Inc.
- Committee on Science Policy Panel: The session was a panel discussion on the Board of Mathematical Sciences and Their Applications Report "Evaluation of NSF's Program of Grants and Vertical Integration of Research and Education (VIGRE) in the Mathematical Sciences." Ron Stern moderated the session with panelists Efraim Armendariz, University of Texas; Craig Evans, University of California, Berkeley; Peter March, NSF; and Karen Vogtmann, Cornell University.
- Congressional Fellowship Session: This session featured presentations by Katherine Crowley, 2009-2010 AMS Congressional Fellow; David Weinreich, 2005-2006 AMS Congressional Fellow; and Katherine Socha, 2009-2010 AAAS Executive Branch Fellow.
- Committee on Education Panel: This session was titled "The Common Core Standards: will they become our national K-12 curriculum?" Larry Gray moderated the session with panelists Scott Baldridge, Louisiana State University; Bert Fristedt, University of Minnesota; William McCallum, University of Arizona; and Robin Ramos, Ramona Elementary School, Los Angeles, CA

Katherine Crowley completed her term as AMS Congressional Fellow and Hugh MacMillan began his term. Katherine worked in Senator Al Franken's office and Hugh is in Senator Robert Menendez's office.

Ben Pittman-Polletta was the 2010 AMS-AAAS Mass Media Fellow, spending his fellowship at The Oregonian.

The AMS Congressional Lecture was given by Andrea Bertozzi, UCLA. Her talk titled “The Gulf Oil Spill: How Can We Protect our Beaches in the Future?” was well received by congressional staffers. Andrea was introduced by AMS President, George Andrews.

Anita Benjamin organized the Coalition for National Science Funding (CNSF) Hill Exhibition. As usual the Exhibition drew a large audience of Hill staffers and several Members of Congress. The AMS sponsored Susan Minkoff, University of Maryland – Baltimore County. Her exhibit was titled “Industrial Modeling and Simulation: The Wave of the Future.” The day of the Exhibition, Susan and Sam made office visits to Susan’s senators and representative.

Sam wrote the mathematical sciences chapter for the AAAS FY 2011 Research and Development Report, which is based on the FY 2011 Federal Budget Request. The information is compiled from agency program staff and agency documents.

Sam was asked to serve on the Advisory Board of the Professional Science Master’s program. The Professional Science Master’s (PSM) is an innovative, new graduate degree designed to allow students to pursue advanced training in science or mathematics, while simultaneously developing workplace skills highly valued by employers. PSM is under the auspices of the Council of Graduate Schools. The Washington Office organized the annual meetings of the Committees on Science Policy and Education. Each of the meetings are a day-and-a-half long and mathematics department chairs are invited to attend.

The Washington Office continues to be active working with coalitions advocating for science, technology, engineering, and mathematics (STEM) research and education. The coalitions include the Task Force for American Innovation, CNSF, and the Government Affairs Task Force (GATF). Sam is chair and Anita manages CNSF activities. GATF, a group of representatives of science publishers, is concerned about government mandates of open access of journal articles that are based on federally funded research. Bills that have been put forth on open access have not recognized publishers’ contributions to promulgating research results.

At the request of the House Research and Development Caucus, CNSF organized a congressional luncheon briefing titled “NSF: Investing in America’s Future.” Representatives Judy Biggert (R-IL) and Rush Holt (D-NJ) are co-chairs of the Caucus. The briefing depicted how the NSF contributes to innovation through its support of basic research and STEM education. Sam Rankin, as chair of CNSF, worked with NSF to establish the topic of the briefing and find speakers. Anita Benjamin took care of all the logistical planning and execution of the event.

In May, CNSF, and therefore the Washington Office, organized a reception for Arden Bement who stepped down as Director of NSF at the end of May 2010. Arden served as Director of NSF for six years.

*April 21, 2011*

# IRS Form 990 & Conflict of Interest

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On November 19, 2010, the Audit Committee met and discussed modifications made to the Form 990 in 2009 relating to conflict of interest policies for officers, trustees and directors of 501(c)(3) organizations. At the end of the November meeting, the committee asked the CFO and Executive Director to propose a disclosure and monitoring procedure that would be sufficient to meet IRS guidelines. The proposed procedure, consisting of a statement of policies relating to financial conflicts and of an acknowledgement of compliance to be signed by “any director, principal officer, or member of a committee with governing board delegated powers,” is included in this attachment.

It is in the interest of the Society to adopt the proposed procedure so that we are in compliance with IRS guidelines and so that the information we report on our annual Form 990 presents us in a most positive light.

The Form 990 asks a three-part question in the section titled *Governance, Management, and Disclosure*. Question 12 in Part VI, Section B asks:

- a. Does the organization have a written conflict of interest policy?
- b. Are officers, directors or trustees, and key employees required to disclose annually interests that could give rise to conflicts?
- c. Does the organization regularly and consistently monitor and enforce compliance with the policy?

The AMS can answer “yes” to part a, but our current procedures fall short of IRS guidelines and we currently answer “no” to parts b and c.

When these questions were added, there was a great deal of discussion among CESSE organizations about approaches being adopted so that organizations could answer “yes” to parts b and c. The most common approach has been to adopt a procedure and statement of policy suggested by the IRS as part of Instructions for Form 1023, the application for recognition as a 501(c)(3) organization. Certainly the template suggested by the IRS is sufficient for meeting their guidelines.

The Executive Director and CFO suggest that the Audit Committee and Board of Trustees adopt the procedure included herein and titled *IRS Conflict of Interest Annual Update*. The body of the two page document is extracted verbatim from the IRS Instructions for Form 1023. A statement of acknowledgement and compliance and a signature line have been added to the end of the IRS template.

Currently, the people who would need to agree to this *Annual Update* are the Trustees, the Executive Director and the CFO.

*Don McClure*

## American Mathematical Society

# IRS Conflict of Interest Annual Update (Extracted from IRS Instructions for Form 1023, June 2006)

### Article I Purpose

The purpose of the conflict of interest policy is to protect this tax-exempt organization's (Organization) interest when it is contemplating entering into a transaction or arrangement that might benefit the private interest of an officer or director of the Organization or might result in a possible excess benefit transaction. This policy is intended to supplement but not replace any applicable state and federal laws governing conflict of interest applicable to nonprofit and charitable organizations.

### Article II Definitions

#### 1. Interested Person

Any director, principal officer, or member of a committee with governing board delegated powers, who has a direct or indirect financial interest, as defined below, is an interested person.

#### 2. Financial Interest

A person has a financial interest if the person has, directly or indirectly, through business, investment, or family:

- a. An ownership or investment interest in any entity with which the Organization has a transaction or arrangement,
- b. A compensation arrangement with the Organization or with any entity or individual with which the Organization has a transaction or arrangement, or
- c. A potential ownership or investment interest in, or compensation arrangement with, any entity or individual with which the Organization is negotiating a transaction or arrangement.

Compensation includes direct and indirect remuneration as well as gifts or favors that are not insubstantial.

A financial interest is not necessarily a conflict of interest. Under Article III, Section 2, a person who has a financial interest may have a conflict of interest only if the appropriate governing board or committee decides that a conflict of interest exists.

### Article III Procedures

#### 1. Duty to Disclose

In connection with any actual or possible conflict of interest, an interested person must disclose the existence of the financial interest and be given the opportunity to disclose all material facts to the directors and members of committees with governing board delegated powers considering the proposed transaction or arrangement.

#### 2. Determining Whether a Conflict of Interest Exists

After disclosure of the financial interest and all material facts, and after any discussion with the interested person, he/she shall leave the governing board or committee meeting while the determination of a conflict of interest is discussed and voted upon. The remaining board or committee members shall decide if a conflict of interest exists.

#### 3. Procedures for Addressing the Conflict of Interest

- a. An interested person may make a presentation at the governing board or committee meeting, but after the presentation, he/she shall leave the meeting during the discussion of, and the vote on, the transaction or arrangement involving the possible conflict of interest.
- b. The chairperson of the governing board or committee shall, if appropriate, appoint a disinterested person or committee to investigate alternatives to the proposed transaction or arrangement.
- c. After exercising due diligence, the governing board or committee shall determine whether the Organization can obtain with reasonable efforts a more advantageous transaction or arrangement from a person or entity that would not give rise to a conflict of interest.
- d. If a more advantageous transaction or arrangement is not reasonably possible under circumstances not producing a conflict of interest, the governing board or committee shall determine by a majority vote of the disinterested directors whether the transaction or arrangement is in the Organization's best interest, for its own benefit, and whether it is fair and reasonable. In conformity with the above determination it shall make its decision as to whether to enter into the transaction or arrangement.

#### 4. Violations of the Conflicts of Interest Policy

- a. If the governing board or committee has reasonable cause to believe a member has failed to disclose actual or possible conflicts of interest, it shall inform the member of the basis for such belief and afford the member an opportunity to explain the alleged failure to disclose.
- b. If, after hearing the member's response and after making further investigation as warranted by the circumstances, the governing board or committee determines the member has failed to disclose an actual or possible conflict of interest, it shall take appropriate disciplinary and corrective action.



**Article IV**  
**Records of Proceedings**

The minutes of the governing board and all committees with board delegated powers shall contain:

- a. The names of the persons who disclosed or otherwise were found to have a financial interest in connection with an actual or possible conflict of interest, the nature of the financial interest, any action taken to determine whether a conflict of interest was present, and the governing board's or committee's decision as to whether a conflict of interest in fact existed.
- b. The names of the persons who were present for discussions and votes relating to the transaction or arrangement, the content of the discussion, including any alternatives to the proposed transaction or arrangement, and a record of any votes taken in connection with the proceedings.

**Article V**  
**Compensation**

- a. A voting member of the governing board who receives compensation, directly or indirectly, from the Organization for services is precluded from voting on matters pertaining to that member's compensation.
- b. A voting member of any committee whose jurisdiction includes compensation matters and who receives compensation, directly or indirectly, from the Organization for services is precluded from voting on matters pertaining to that member's compensation.
- c. No voting member of the governing board or any committee whose jurisdiction includes compensation matters and who receives compensation, directly or indirectly, from the Organization, either individually or collectively, is prohibited from providing information to any committee regarding compensation.

**Article VI**  
**Annual Statements**

Each director, principal officer and member of a committee with governing board delegated powers shall annually sign a statement which affirms such person:

- a. Has received a copy of the conflicts of interest policy,
- b. Has read and understands the policy,
- c. Has agreed to comply with the policy, and
- d. Understands the Organization is charitable and in order to maintain its federal tax exemption it must engage primarily in activities which accomplish one or more of its tax-exempt purposes.

**Article VII**  
**Periodic Reviews**

To ensure the Organization operates in a manner consistent with charitable purposes and does not engage in activities that could jeopardize its tax-exempt status, periodic reviews shall be conducted. The periodic reviews shall, at a minimum, include the following subjects:

- a. Whether compensation arrangements and benefits are reasonable, based on competent survey information, and the result of arm's length bargaining.
- b. Whether partnerships, joint ventures, and arrangements with management organizations conform to the Organization's written policies, are properly recorded, reflect reasonable investment or payments for goods and services, further charitable purposes and do not result in inurement, impermissible private benefit or in an excess benefit transaction.

**Article VIII**  
**Use of Outside Experts**

When conducting the periodic reviews as provided for in Article VII, the Organization may, but need not, use outside advisors. If outside experts are used, their use shall not relieve the governing board of its responsibility for ensuring periodic reviews are conducted.

**Acknowledgement pursuant to Article VI:**

I have received a copy of this conflict of interest policy. I have read and understand the policy. I agree to comply with the policy. I understand that the American Mathematical Society is charitable and in order to maintain its federal tax exemption it must engage primarily in activities which accomplish one or more of its tax-exempt purposes.

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Print Name





**AMERICAN MATHEMATICAL SOCIETY**

Financial Statements

December 31, 2010 and 2009

(With Independent Auditors' Report Thereon)



Attachment 30  
Item 3.0  
Page 2 of 20  
May 2011 AMS ECBT

**KPMG LLP**  
6th Floor, Suite A  
100 Westminster Street  
Providence, RI 02903-2321

## **Independent Auditors' Report**

The Board of Trustees  
American Mathematical Society:

We have audited the accompanying balance sheets of the American Mathematical Society (the Society) as of December 31, 2010 and 2009, and the related statements of activities and cash flows for the years then ended. These financial statements are the responsibility of the Society's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Society's internal control over financial reporting. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements, assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the Society as of December 31, 2010 and 2009, and the changes in its net assets and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

**KPMG LLP**

June 20, 2011

**AMERICAN MATHEMATICAL SOCIETY**

Balance Sheets

December 31, 2010 and 2009

<b>Assets</b>	<b>2010</b>	<b>2009</b>
Cash and cash equivalents (note 2)	\$ 1,084,237	474,913
Short-term investments (note 4)	15,897,241	14,145,500
Accounts receivable, net of allowances of \$347,279 and \$348,000 in 2010 and 2009, respectively	853,254	744,115
Deferred prepublication costs	632,570	649,414
Completed books	1,328,076	1,408,873
Prepaid expenses and deposits	1,256,912	1,464,754
Land, buildings and equipment, net (note 3)	5,031,887	5,093,183
Long-term investments (notes 4 and 5)	79,406,346	69,094,463
Total assets	<u>\$ 105,490,523</u>	<u>93,075,215</u>
<b>Liabilities and Net Assets</b>		
Liabilities:		
Accounts payable and accrued expenses	\$ 2,960,535	2,307,216
Severance and study leave pay (note 6)	829,582	997,038
Deferred revenue	12,822,888	11,279,588
Postretirement benefit obligation (note 7)	4,770,464	4,543,155
Total liabilities	<u>21,383,469</u>	<u>19,126,997</u>
Net assets:		
Unrestricted:		
Undesignated	4,146,972	4,305,781
Designated (notes 4, 5 and 8)	68,885,038	59,543,414
	<u>73,032,010</u>	<u>63,849,195</u>
Temporarily restricted (notes 4, 5 and 9)	6,207,920	5,346,374
Permanently restricted (notes 4, 5 and 10)	4,867,124	4,752,649
Total net assets	<u>84,107,054</u>	<u>73,948,218</u>
Total liabilities and net assets	<u>\$ 105,490,523</u>	<u>93,075,215</u>

See accompanying notes to financial statements.

**AMERICAN MATHEMATICAL SOCIETY**

Statements of Activities

Years ended December 31, 2010 and 2009

	<u>2010</u>	<u>2009</u>
Changes in unrestricted net assets:		
Operating revenue, including net assets released from restrictions (notes 4, 5, and 9):		
Mathematical Reviews	\$ 10,307,693	10,485,695
Journals	4,716,428	4,740,486
Books	4,093,467	3,568,473
Other publications-related revenue	372,322	470,728
Dues, services, and outreach	3,885,074	3,902,037
Grants, prizes and awards	1,101,874	838,029
Investment earnings available for spending (notes 4 and 5)	1,480,151	1,429,500
Meetings	1,143,373	990,503
Short-term investment income	626,227	983,777
Other	60,299	78,146
Total operating revenue	<u>27,786,908</u>	<u>27,487,374</u>
Operating expenses:		
Mathematical Reviews	6,855,152	6,744,036
Journals	1,523,701	1,719,214
Books	3,791,325	3,477,316
Publications indirect	904,832	934,624
Customer services, warehousing and distribution	1,363,163	1,362,366
Other publications-related expense	216,322	186,673
Membership, services and outreach	4,116,641	3,773,845
Grants, prizes and awards	1,198,463	971,076
Meetings	1,181,320	922,803
Governance	428,949	416,424
Member and professional services indirect	569,596	575,833
General and administrative	3,752,580	3,576,026
Other	75,839	57,389
Total operating expenses	<u>25,977,883</u>	<u>24,717,625</u>
Excess of operating revenue over operating expenses	1,809,025	2,769,749
Investment income in excess of investment earnings available for spending (note 4)	7,493,555	11,774,829
Post retirement benefit-related changes other than net periodic cost (note 7)	(119,765)	(67,200)
Change in unrestricted net assets	<u>9,182,815</u>	<u>14,477,378</u>

**AMERICAN MATHEMATICAL SOCIETY**

Statements of Activities

Years ended December 31, 2010 and 2009

	<u>2010</u>	<u>2009</u>
Changes in temporarily restricted net assets:		
Contributions	\$ 271,547	195,470
Investment income (note 4)	1,322,495	1,680,174
Net assets released from restrictions (note 9)	<u>(732,496)</u>	<u>(583,936)</u>
Change in temporarily restricted net assets	<u>861,546</u>	<u>1,291,708</u>
Change in permanently restricted net assets:		
Contributions	<u>114,475</u>	<u>160,255</u>
Change in permanently restricted net assets	<u>114,475</u>	<u>160,255</u>
Change in net assets	10,158,836	15,929,341
Net assets, beginning of year	<u>73,948,218</u>	<u>58,018,877</u>
Net assets, end of year	<u>\$ 84,107,054</u>	<u>73,948,218</u>

See accompanying notes to financial statements.

**AMERICAN MATHEMATICAL SOCIETY**

Statements of Cash Flows

Years ended December 31, 2010 and 2009

	<u>2010</u>	<u>2009</u>
Cash flows from operating activities:		
Change in net assets	\$ 10,158,836	15,929,341
Adjustments to reconcile change in net assets to net cash and cash equivalents provided by operating activities:		
Depreciation	626,672	559,970
Net realized and unrealized gains on long-term investments	(8,017,363)	(12,945,220)
Contributions restricted for permanent investment	(114,475)	(160,255)
Loss on disposal of equipment	1,076	—
Changes in assets and liabilities:		
Accounts receivable, net	(109,139)	278,917
Deferred prepublication costs	16,844	(81,106)
Completed books	80,797	(136,935)
Prepaid expenses and deposits	207,842	147,353
Accounts payable and accrued expenses	485,863	(570,125)
Deferred revenue	1,543,300	(963,906)
Postretirement benefit obligation	227,309	198,290
	<u>5,107,562</u>	<u>2,256,324</u>
Net cash and cash equivalents provided by operating activities		
Cash flows from investing activities:		
Change in short-term investments	(1,751,741)	1,861,897
Purchases of property and equipment	(566,452)	(1,120,620)
Sales of long-term investments	4,427,453	5,702,073
Purchases of long-term investments	(6,721,973)	(9,648,626)
	<u>(4,612,713)</u>	<u>(3,205,276)</u>
Net cash and cash equivalents used in investing activities		
Cash flows from financing activities:		
Contributions restricted for permanent investment	114,475	160,255
	<u>114,475</u>	<u>160,255</u>
Net cash and cash equivalents provided by financing activities		
Net increase (decrease) in cash and cash equivalents	609,324	(788,697)
Cash and cash equivalents at beginning of year	474,913	1,263,610
Cash and cash equivalents at end of year	<u>\$ 1,084,237</u>	<u>474,913</u>

See accompanying notes to financial statements.



## AMERICAN MATHEMATICAL SOCIETY

Notes to Financial Statements

December 31, 2010 and 2009

### (1) Description of Business and Summary of Significant Accounting Policies

#### (a) *Description of Organization*

The American Mathematical Society (the Society) was created in 1888 to further mathematical research and scholarship. It is an international membership organization, currently with over 30,000 members. The Society fulfills its mission with publications and professional programs that promote mathematical research, increase the awareness of the value of mathematical research to society and foster excellence in mathematics education.

#### (b) *Basis of Financial Statement Presentation*

The accompanying financial statements are presented on the accrual basis of accounting in accordance with U.S. generally accepted accounting principles (GAAP) and have been prepared to focus on the Society as a whole and to present balances and transactions according to the existence or absence of donor-imposed restrictions.

The preparation of the financial statements in conformity with U.S. generally accepted accounting principles requires management to make estimates and assumptions that affect the reported amounts of assets and liabilities, and disclosures of contingent assets and liabilities, as of the dates of the financial statements and the reported amounts of revenues and expenses during the reporting periods. Actual results could differ from those estimates.

The Society defines operating income as the net increase in unrestricted net assets derived from the activities related to the accomplishment of its mission, such as publications, programs, meetings and conferences, and member services. Investment earnings appropriated by the Board of Trustees on unrestricted long-term investments are presented as an operating revenue. Any excess investment earnings (losses) are presented as a nonoperating item.

#### (c) *Classifications of Net Assets*

The Society's net assets and activities that increase or decrease net assets are classified as unrestricted, temporarily restricted, or permanently restricted.

The Society is incorporated under the laws of the District of Columbia and is therefore subject to the provisions of the Uniform Prudent Management of Institutional Funds Act (the Act). Under the Act, the Society has classified its net assets as follows in 2010 and 2009:

- Permanently restricted net assets are those which must be permanently invested to provide a source of support for the activities of the Society and which are commonly referred to as endowments. Permanently restricted net assets consist of (1) the original value of gifts donated to the permanent endowment; (2) the original value of any subsequent gifts to the permanent endowment, and (3) if required, accumulations to the permanent endowment made in accordance with the terms of the applicable donor gift instrument at the time the accumulation is added to the fund.
- Temporarily restricted net assets include (1) those whose use is restricted by donor-imposed limitations which will lapse upon the passage of time, use of the asset for its intended purpose, or the meeting of other donor-imposed stipulations, and (2) any remaining portion of a true

## AMERICAN MATHEMATICAL SOCIETY

### Notes to Financial Statements

December 31, 2010 and 2009

endowment fund that is not classified as permanently restricted net assets. This remaining portion of true endowment funds, if any, shall remain in temporarily restricted net assets until appropriated for expenditure by the Board in accordance with the standard of prudence prescribed by the Act.

- Unrestricted net assets are those without any donor-imposed or other restrictions as to their use and which are available for the general operations of the Society.

The original amount of endowment gifts has been included in permanently restricted net assets in 2010 and 2009, as none of the gifts require subsequent accumulations.

#### **(d) Contributions and Net Assets Released from Restrictions**

The Society records as contribution revenue unconditional promises to give. All other contribution revenue is recorded as received. If the contribution is made in assets other than cash, the amount of the contribution is measured at the fair value of the asset contributed at the date the contribution or unconditional promise to give is made by the donor.

Contributions of cash and other assets are reported as temporarily restricted support if they are received with donor stipulations that limit the use of the donated asset for some specific purpose or time period and as permanently restricted support if the donated asset must be invested in perpetuity.

When a donor restriction expires, that is, when a stipulated time restriction ends or purpose restriction is accomplished, temporarily restricted net assets are reclassified to unrestricted net assets and reported in the accompanying statements of activities as net assets released from restrictions.

If a donor-imposed restriction is met for the full amount of the contribution within the year, the related revenues and expenses are recorded solely in the unrestricted net assets category in the accompanying statements of activities.

The Society receives contributed services from its members, principally as volunteer leaders in the governance structure of the Society and as volunteer members of editorial committees for the Society's various publications. The latter category of contributed services qualifies for recognition as income and expense under GAAP, as the members of the editorial committees must possess specialized skills. However, the Society has no practical way of measuring the fair value of the services received from its volunteer editorial committee members, and accordingly, no such estimate is included as revenue or expense in the accompanying financial statements.

#### **(e) Investments**

The Society's investments, both short term and long term, are carried at fair value, as determined by quoted market prices. Investments in mutual funds are carried at the quoted net asset value of the fund, which approximates fair value. Certain investments, such as money market funds and certificates of deposit, are carried at cost, which approximates fair value.

Under the Act, the total return (interest, dividends, and realized and unrealized gains or losses) derived from all donor-restricted endowment fund investments is recorded as investment return (loss) in temporarily restricted net assets. As the purpose restriction is met, the income derived from

## AMERICAN MATHEMATICAL SOCIETY

### Notes to Financial Statements

December 31, 2010 and 2009

true endowment funds whose use of income is restricted is reclassified from temporarily restricted net assets to unrestricted net assets as net assets released from restrictions. This totaled \$475,430 and \$332,638 in 2010 and 2009, respectively.

As expenditures are incurred that meet the criteria established by the Board of Trustees for use of the income derived from true endowment funds whose use of income is not restricted, the income is reclassified from temporarily restricted net assets to unrestricted net assets as net assets released from restrictions. This totaled \$257,066 and \$251,298 in 2010 and 2009, respectively.

The Board also appropriates funds to support the Society's mission-driven activities. The total so appropriated from Board-designated funds and included in operating revenue as earnings available for spending was \$1,480,151 in 2010 and \$1,429,500 in 2009. Earnings related to the Operations Support Fund totaled \$1,451,100 and \$1,399,500 in 2010 and 2009, respectively, and earnings related to the Young Scholars Fund totaled \$29,051 and \$30,000 in 2010 and 2009, respectively.

**(f) Fair Value Measurements**

Investments, are reported at fair value in the Society's financial statements. Fair value represents the price that would be received upon the sale of an asset or paid upon the transfer of a liability in an orderly transaction between market participants as of the measurement date. GAAP establishes a fair value hierarchy that prioritizes inputs used to measure fair value into three levels:

- Level 1 – quoted prices (unadjusted) in active markets that are accessible at the measurement date for assets or liabilities;
- Level 2 – observable prices that are based on inputs not quoted in active markets, but corroborated by market data; and
- Level 3 – unobservable inputs are used when little or no market data is available.

The fair value hierarchy gives the highest priority to Level 1 inputs and the lowest priority to Level 3 inputs. In determining fair value, the Society utilizes valuation techniques that maximize the use of observable inputs and minimize the use of unobservable inputs to the extent possible. See note 4 for further discussion.

**(g) Deferred Prepublication Costs**

Prepublication costs, consisting of translation, editorial, composition and proofreading costs, are deferred until publication. Upon publication, prepublication costs related to books are transferred into completed books inventory and prepublication costs related to journals are expensed to offset subscription revenue for the journals.

**(h) Completed Books**

Publication costs of books, consisting of paper, printing, and prepublication costs, are deferred and charged to expense as the books are sold. Completed books are recorded in the accompanying balance sheets at the lower of average cost or market.

**AMERICAN MATHEMATICAL SOCIETY**

Notes to Financial Statements

December 31, 2010 and 2009

**(i) Land, Buildings, Equipment, and Accumulated Depreciation**

Land, buildings, and equipment are recorded at cost less accumulated depreciation. Depreciation is provided over the estimated useful lives of the assets using straight-line or accelerated methods.

<u>Asset classifications</u>	<u>Estimated useful life</u>
Land and improvements	10 – 20 years
Building and improvements	10 – 35 years
Furniture, equipment, and software	3 – 10 years
Transportation equipment	3 – 15 years

Depreciation expense was \$626,672 and \$559,970 for the years ended December 31, 2010 and 2009, respectively.

**(j) Membership Journals**

Members are provided certain journals at no charge as these journals are considered to be benefits of membership in the Society.

**(k) Revenue Recognition**

Advance collections for dues, subscriptions, and publications are deferred and generally recognized as income when the services are rendered or the publications shipped. For subscriptions to current year journals for which all of the issues have not yet been published but for which substantially all of the costs have been incurred, the Society accrues estimated completion costs and recognizes the related revenues. For sales of books and journals, revenue is recognized upon shipment. In addition, the Society reserves for its estimate of book returns.

**(l) Income Taxes**

The Society is a tax-exempt organization as described in Section 501(c)(3) of the Internal Revenue Code (the Code) and is generally exempt from income taxes pursuant to Section 501(a) of the Code. Rules and regulations regarding unrelated business income tax apply to the Society, but no activities resulting in a material amount of taxes due occurred in 2010 or 2009. The Society believes it has taken no uncertain tax positions.

**(m) Grant Income**

The Society receives various grants that are subject to audit by the grantors or their representatives. Such audits could result in requests for reimbursement for expenditures disallowed under the terms of the grant; however, management believes that these disallowances, if any, would be immaterial.

**(2) Cash and Cash Equivalents**

Bank accounts, money market funds and petty cash comprise the cash and cash equivalents balance as of December 31, 2010 and 2009. The Society's bank accounts are federally insured to a maximum of \$250,000 each.

**AMERICAN MATHEMATICAL SOCIETY**

Notes to Financial Statements

December 31, 2010 and 2009

**(3) Land, Buildings, and Equipment**

The following comprise the Society's investments in land, buildings, and equipment as of December 31:

	<u>2010</u>	<u>2009</u>
Land and improvements	\$ 462,978	462,978
Building and improvements	7,311,980	7,220,017
Furniture, equipment and software	4,870,656	4,724,506
Transportation equipment	62,384	62,384
Software in progress	694,469	456,701
	<u>13,402,467</u>	<u>12,926,586</u>
Less accumulated depreciation	<u>(8,370,580)</u>	<u>(7,833,403)</u>
	<u>\$ 5,031,887</u>	<u>5,093,183</u>

Progress payments for new Association Management Software to replace numerous in-house developed software applications comprise the software in progress at December 31, 2010. The Society accounts for costs incurred for software developed or obtained for internal use in accordance with FASB ASC Topic 350-40 *Internal Use Software*, including capitalizing costs incurred during the application development stage with amortization on a straight line basis beginning when the computer software is ready for its intended use. The software in progress is anticipated to begin amortization during fiscal 2011.

**AMERICAN MATHEMATICAL SOCIETY**

Notes to Financial Statements

December 31, 2010 and 2009

**(4) Investments**

The following table summarizes the Society's investments as of December 31, 2010 and 2009, as well as related strategy:

	<u>2010</u>	<u>2009</u>
Certificates of deposit	\$ 2,090,000	3,318,000
Fixed income mutual funds	4,938,815	4,615,188
U.S. government bonds	—	572,452
Convertible securities mutual fund	1,531,592	1,284,408
Domestic corporate stock	15,422	11,124
Money market mutual funds	7,321,412	4,344,328
Total short-term investments	<u>15,897,241</u>	<u>14,145,500</u>
Cash and cash equivalents	153,261	315,052
Domestic common stocks	—	4,482,258
Fixed income mutual funds	13,451,038	12,359,712
Equity mutual funds:		
Domestic common stocks	49,364,751	37,368,299
Domestic real estate investment trusts	4,730,534	3,702,802
International common stocks	11,706,762	10,866,340
Total long-term investments	<u>79,406,346</u>	<u>69,094,463</u>
Total investments	<u>\$ 95,303,587</u>	<u>83,239,963</u>

The investments are classified in Level 1 in the fair value hierarchy because of the Society's ability to obtain quoted prices and redeem its interest on a daily basis.

The Society's long-term investments are segregated into seven separate portfolios (including mutual funds), each with its own investment manager and investment objective. The overall investment strategy is determined by the Investment Committee of the Board of Trustees and is approved by the Board of Trustees annually. The primary investment objective of the long-term investment portfolio is an average real total return (net of investment fees and the effects of consumer inflation) of at least 6% over the long term. To achieve this result, the investment portfolio is allocated approximately 75% to equity investments and 25% to fixed income investments. The equity investments are further diversified into domestic, international, and real estate holdings. Additionally, the entire portfolio is diversified across economic sectors, geographic locations, industries, and size of investees.

**AMERICAN MATHEMATICAL SOCIETY**

Notes to Financial Statements

December 31, 2010 and 2009

The long-term investment portfolio is allocated among the three categories of net assets as of December 31 as follows:

	<u>2010</u>	<u>2009</u>
Unrestricted net assets:		
Board-designated purposes	\$ 68,885,038	59,543,414
Total allocated to unrestricted net assets	<u>68,885,038</u>	<u>59,543,414</u>
Total allocated to temporarily restricted net assets	5,654,184	4,798,400
Permanently restricted net assets:		
Unrestricted use of income	1,565,181	1,565,181
Restricted use of income	<u>3,301,943</u>	<u>3,187,468</u>
Total allocated to permanently restricted net assets	<u>4,867,124</u>	<u>4,752,649</u>
Total long-term investments, at fair value	<u>\$ 79,406,346</u>	<u>69,094,463</u>

The following schedule summarizes the investment return and its classification in the accompanying statements of activities for the years ended December 31:

	<u>2010</u>	<u>2009</u>
Dividends and interest, net of management fees of \$21,863 and \$29,953, respectively	\$ 2,278,838	1,939,283
Net realized and unrealized gains	<u>8,017,363</u>	<u>12,945,220</u>
Investment income	10,296,201	14,884,503
Less investment income classified as temporarily restricted	(1,322,495)	(1,680,174)
Less investment earnings available for spending:		
Spendable income from Operations Support Fund	(1,451,100)	(1,399,500)
Spendable income from Young Scholars Fund	<u>(29,051)</u>	<u>(30,000)</u>
Investment income in excess investment earnings available for spending	<u>\$ 7,493,555</u>	<u>11,774,829</u>

**(5) Endowments**

The Society's endowment consists of approximately 30 individual funds established for a variety of purposes, including both donor-restricted endowment funds (true endowment) and funds designated by the Board of Trustees to function as endowments. Net assets associated with endowment funds, including funds designated by the Board of Trustees to function as endowments, are classified and reported based on the existence or absence of donor-imposed restrictions.

**AMERICAN MATHEMATICAL SOCIETY**

Notes to Financial Statements

December 31, 2010 and 2009

Net assets comprising true endowment funds and funds designated by the Board of Trustees to function as endowments were as follows at December 31:

	<u>Unrestricted</u>	<u>Temporarily restricted</u>	<u>Permanently restricted</u>	<u>Total</u>
2010:				
Donor-restricted endowment funds	\$ —	5,500,923	4,867,124	10,368,047
Board-designated endowment funds	<u>68,885,038</u>	<u>—</u>	<u>—</u>	<u>68,885,038</u>
Total endowment net assets	<u>\$ 68,885,038</u>	<u>5,500,923</u>	<u>4,867,124</u>	<u>79,253,085</u>
2009:				
Donor-restricted endowment funds	\$ (70,137)	4,647,380	4,752,649	9,329,892
Board-designated endowment funds	<u>59,543,414</u>	<u>—</u>	<u>—</u>	<u>59,543,414</u>
Total endowment net assets	<u>\$ 59,473,277</u>	<u>4,647,380</u>	<u>4,752,649</u>	<u>68,873,306</u>

The following table summarizes the changes in endowment net assets for the year ended December 31, 2010:

	<u>Unrestricted</u>	<u>Temporarily restricted</u>	<u>Permanently restricted</u>	<u>Total</u>
Endowment net assets, January 1, 2010	\$ 59,473,277	4,647,380	4,752,649	68,873,306
Donor-restricted contributions	—	—	114,475	114,475
Investment income	8,973,706	1,320,254	—	10,293,960
Release of endowment net asset restrictions	(1,480,151)	(466,711)	—	(1,946,862)
Additions from operations	<u>1,918,206</u>	<u>—</u>	<u>—</u>	<u>1,918,206</u>
Endowment net assets, December 31, 2010	<u>\$ 68,885,038</u>	<u>5,500,923</u>	<u>4,867,124</u>	<u>79,253,085</u>



**AMERICAN MATHEMATICAL SOCIETY**

Notes to Financial Statements

December 31, 2010 and 2009

The following table summarizes the changes in endowment net assets for the year ended December 31, 2009:

	<u>Unrestricted</u>	<u>Temporarily restricted</u>	<u>Permanently restricted</u>	<u>Total</u>
Endowment net assets, January 1, 2009	\$ 43,354,651	3,472,017	4,592,394	51,419,062
Donor-restricted contributions	—	—	160,255	160,255
Investment income	13,204,329	1,674,959	—	14,879,288
Release of endowment net asset restrictions	(1,429,500)	(499,596)	—	(1,929,096)
Additions from operations	4,343,797	—	—	4,343,797
Endowment net assets, December 31, 2009	<u>\$ 59,473,277</u>	<u>4,647,380</u>	<u>4,752,649</u>	<u>68,873,306</u>

**(a) Interpretation of Relevant Law**

The portion of the donor-restricted endowment fund that is not classified in permanently restricted net assets is classified as temporarily restricted net assets until those amounts are appropriated for expenditure by the Society in a manner consistent with the standard of prudence prescribed by the Act. In accordance with the Act, the Society considers the following factors in making a determination to appropriate or accumulate donor-restricted endowment funds:

1. The duration and preservation of the fund
2. The purposes of the Society and the donor-restricted endowment fund
3. General economic conditions
4. The possible effect of inflation and deflation
5. The expected total return from income and the appreciation of investments
6. Other resources of the Society
7. The investment policies of the Society

**(b) Funds with Deficiencies**

From time to time, the fair value of assets associated with individual donor-restricted endowment funds may fall below the level that the donor or the Act requires the Society to retain as a fund of perpetual duration. Deficiencies of this nature were funded by operations and amounted to \$70,137 as of December 31, 2009. These deficiencies resulted from the significant market losses on long-term investments that occurred in 2008, which occurred shortly after the investment of new permanently restricted contributions and continued appropriation for certain programs that was deemed prudent by the Board of Trustees. Subsequent gains occurred in 2010 due to the recovery in

## AMERICAN MATHEMATICAL SOCIETY

### Notes to Financial Statements

December 31, 2010 and 2009

the financial markets that restored \$70,137 of the fair value of the assets of the affected endowment funds to their required level, which have been classified as an increase in unrestricted net assets.

**(c) *Return Objectives and Risk Parameters***

The Society has adopted investment and spending policies for endowment assets that attempt to provide a predictable stream of funding to programs supported by its endowment while seeking to maintain the purchasing power of the endowment assets. Endowment assets include those assets of donor-restricted funds that the organizations must hold in perpetuity or for a donor-specified period as well as board-designated funds. Under this policy, as approved by the Board of Trustees, the endowment assets are invested in a manner that is intended to produce an average annual real rate of return of approximately 6% over the long term. Actual returns in any given year may vary from this amount.

**(d) *Strategies Employed for Achieving Objectives***

To satisfy its long-term rate-of-return objectives, the Society relies on a total return strategy in which investment returns are achieved through both capital appreciation (realized and unrealized) and current yield (interest and dividends). The Society targets a diversified asset allocation that places emphasis on investments in equities (allocation in the portfolio between 65% to 85%, with foreign equities comprising no more than 25% of the equity total), fixed income securities (allocation in the portfolio between 15% to 25%) and alternatives (currently real estate investment trusts with an allocation in the portfolio of no more than 10%) to achieve its long-term return objectives within prudent risk constraints.

**(e) *Spending Policy and How the Investment Objectives Relate to Spending Policy***

The Society has a policy of appropriating for distribution each year 5% of its true endowment funds' average fair value using the average of the prior four years' ending fair value, normalized for intervening contributions and appropriations, through the calendar year-end immediately preceding the fiscal year in which the distribution is planned. The Society has a policy of appropriating for distribution each year 5% of the Board-designated Operations Support Fund's average fair value using the average of the prior four years' ending fair value through the calendar year-end one year preceding the fiscal year in which the distribution is planned. In establishing these policies, the Society considered the expected return on its endowment. Accordingly, the Society expects the current spending policy to allow its endowment to maintain its purchasing power by growing at a rate, on average over time, equal to planned payouts. Additional real growth will be provided through new gifts and any excess investment return.

**(6) *Severance and Study Leave Pay***

Certain employees of the Society receive vested rights to severance and study leave pay based upon salary and years of service. The Society provides for this obligation over the related years of the employees' service. The provision for severance and study leave pay charged to expense totaled \$116,081 and \$114,584 in 2010 and 2009, respectively.

**AMERICAN MATHEMATICAL SOCIETY**

Notes to Financial Statements

December 31, 2010 and 2009

**(7) Pension and Postretirement Benefits**

- (a) The Society has contributory retirement plans (the Plans) covering substantially all full-time employees. The Plans are administered by, and related assets are maintained with, Teachers Insurance and Annuity Association and College Retirement Equities Fund. The Society's retirement expenses for the Plans totaled approximately \$1,248,256 and \$1,194,584 in 2010 and 2009, respectively.
- (b) The Society sponsors a defined benefit postretirement medical plan that covers substantially all full-time employees. Under the plan provisions, employees who retire from the Society at age 62 or older with at least 12 years of service are eligible for benefits under the plan. Plan benefits consist of health insurance coverage under a Medicare Supplement Plan and reimbursement of Medicare Part B premiums. Employees who retire before age 62 may qualify for coverage under the plan according to a longer service requirement schedule established by the Society. Spouses of eligible retirees are not covered. The plan is noncontributory and is unfunded.

In 1998, this plan was amended to include the prior service of employees previously leased from the University of Michigan as eligible service when such persons became Society employees. The resulting prior service cost of these employees is being amortized over their estimated average future service period until retirement.

Effective January 1, 2007, the plan was further amended to limit the annual benefit per retiree to \$4,000 with no other limits applied to the Medicare Part B or "Medigap" insurance premiums. The amendment also limits the eligible population to retirees eligible under the prior provisions at June 30, 2006 and Society employees as of June 30, 2006. There is no provision for this maximum benefit amount to increase over time. This amendment resulted in a prior service credit of approximately \$2,975,000.

Net postretirement benefit cost for the years ended December 31, 2010 and 2009, consisted of the following components:

	<b>2010</b>	<b>2009</b>
Service cost	\$ 114,963	127,206
Interest cost	252,346	243,104
Amortization of prior service cost, pre-2007 amendment	1,722	1,722
Amortization of prior service credit, 2007 amendment	(247,980)	(246,258)
Amortization of net experience losses	93,900	99,678
Net postretirement benefit cost	<u>\$ 214,951</u>	<u>225,452</u>

The prior service cost (credit) and net loss (gain) expected to be recognized as components of net periodic postretirement benefit cost for the year ending December 31, 2011 are approximately (\$246,258) and \$89,100, respectively.

**AMERICAN MATHEMATICAL SOCIETY**

Notes to Financial Statements

December 31, 2010 and 2009

The following table reconciles the plan's funded status with the amounts presented in the Society's financial statements at December 31, 2010 and 2009:

	<u>2010</u>	<u>2009</u>
Projected postretirement benefit obligation, beginning of the year (and funded status)	\$ 4,543,155	4,344,865
Service and interest cost for the year	367,309	370,310
Benefits paid	(105,033)	(94,362)
Actuarial gain recognized in the year incurred	<u>(34,967)</u>	<u>(77,658)</u>
Projected postretirement benefit obligation, end of year	<u>\$ 4,770,464</u>	<u>4,543,155</u>
Net liability recognized in the balance sheet	\$ 4,770,464	4,543,155

The following table presents additional information relating to the plan for the years ended December 31, 2010 and 2009:

Discount rate	5.50%
Healthcare cost trend rate assumed for next year	Not applicable
Rate to which the cost trend rate is assumed to decline (the ultimate trend rate)	Not applicable
Year that the rate reaches the ultimate trend rate	Not applicable

The expected future benefit payments under plan provisions for the next ten years are as follows:

Year-end:	
2011	\$ 139,000
2012	142,000
2013	144,000
2014	139,000
2015	137,000
2016 – 2020	617,000

**(8) Designated Unrestricted Net Assets**

The Board of Trustees of the Society has designated components of unrestricted net assets to support certain purposes. All such designated funds within unrestricted net assets are supported by the unrestricted portion of the long-term investment portfolio. The Economic Stabilization Fund is designated to provide support for the Society in future years should an unexpected need arise. The Operations Support Fund is designated to provide current operating support to the Society via use of a 5% spending rate applied to the three-year moving average value of the fund. The Journal Archive Fund is designated to accumulate funds to support changes that may be necessary for electronic files to be available for future use due to as-yet-unforeseen technological changes. The Young Scholars Fund was created by the Board of Trustees in 2000 to augment the funds in Epsilon Fund for Young Scholars, a true endowment fund that supports programs for high school mathematics students.

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The following comprise the balances in these designated funds within unrestricted net assets as of December 31:

	<u>2010</u>	<u>2009</u>
Economic Stabilization Fund	\$ 23,732,898	23,114,000
Operations Support Fund	43,636,273	35,124,438
Journal Archive Fund	873,003	719,177
Young Scholars Fund	642,864	585,799
Total	<u>\$ 68,885,038</u>	<u>59,543,414</u>

**(9) Temporarily Restricted Net Assets**

Temporarily restricted net assets consist of amounts restricted by donors for the following purposes as of December 31:

	<u>2010</u>	<u>2009</u>
Restricted purpose:		
Prizes and scholarships	\$ 285,920	254,780
Lectures and symposia	44,002	36,124
Fellowships	80,026	116,940
Epsilon awards	110,607	90,590
Book/Journal donation project	10,493	10,493
Graduate student travel program	101,691	36,691
National Mathematics Game	2,161	42,500
Journal Digitization	—	37,537
Other miscellaneous	37,015	47,637
Unspent spendable income from unrestricted use true endowment funds	35,082	25,702
Accumulated gains on true endowment gifts	5,500,923	4,647,380
Total	<u>\$ 6,207,920</u>	<u>5,346,374</u>

Net assets released from restrictions related to true endowment funds whose use of income is restricted by donors and other temporarily restricted funds totaled \$475,430 and \$332,638 in 2010 and 2009, respectively, entirely due to the accomplishment of the designated purposes. Assets released from restrictions related to true endowment funds whose use of income is unrestricted, but which the Board appropriates to support specific activities, totaled \$257,066 and \$251,298 in 2010 and 2009, respectively, entirely due to the accomplishment of the Board-approved projects' purposes.

**(10) Permanently Restricted Net Assets**

Permanently restricted net assets must be invested in perpetuity and are supported by the long-term investment portfolio as well as other assets of the Society. The Society has two types of these donor-restricted endowments: gifts with no donor designations as to the use of income derived therefrom and gifts whose donors have designated a specific purpose in the gift instrument.

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These endowments consisted of the following at December 31:

	<u>2010</u>	<u>2009</u>
Endowment without donor designation on use of income	\$ 1,565,181	1,565,181
Endowment with donor designation on use of income:		
Prizes	867,156	866,581
Scholarships and fellowships	252,130	252,130
Symposia and lectures	270,000	270,000
China collaboration	366,757	366,757
Epsilon Fund for Young Scholars	1,545,900	1,432,000
	<u>\$ 4,867,124</u>	<u>4,752,649</u>

**(11) Subsequent Events**

For purposes of determining the effects of subsequent events on these financial statements, the Society has evaluated events subsequent to December 31, 2010 and through June 20, 2011 the date on which the financial statements were available to be issued.

There were no subsequent events to be disclosed based on this evaluation.