AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

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President's Report

Dear Colleagues:

I am happy to write that two past and future presidents of AWM will be honored this year. The University of California Lie Theory Workshop in February was held in honor of Georgia Benkart, our president-elect. In July, the Swiss Mathematical Society's Conference on Complex Analysis will honor Linda Rothschild, a past president of AWM.

Thanks to Holly Gaff, our web editor, the list of academic institutional members on our website has been updated. I am pleased to note that it includes members from Canada (as has been the case for many years) and a new member from Germany, Georg-August-Universität Göttingen.

It is an additional pleasure to announce the recipients of several prizes and awards.

- Irina Mitrea is the second winner of the Ruth I. Michler Memorial Prize (see the press release in this issue).
- Dianne O'Leary will give the Kovalevsky Lecture at the Society for Industrial and Applied Mathematics Conference in July.
- Rebecca Goldin, last year's Michler Prize winner, will be the Falconer Lecturer at MathFest in August.
- Fan Chung will give the Noether Lecture at the Joint Mathematics Meetings next January.
- Alison Miller, one of this year's Schafer Award winners, is again a Putnam winner. She was one of the three members of Harvard's Putnam team (which finished first) and has won the Elizabeth Lowell Putnam Award for the third (!) time.

IN THIS ISSUE

Out of curiosity, I looked up how many women earn undergraduate degrees in mathematics and statistics from Harvard. The Web now makes this very easy (go to NSF's Webcaspar and use the IPEDS Completions Survey).

Undergraduate degrees in mathematics and statistics granted at Harvard

Year	1996	1998	2000	2002	2004	2006
Female	21	12	12	14	13	18
Male	63	55	50	59	59	32
Total	84	67	62	73	72	50
% Female	25%	18%	19%	19%	18%	36%

These statistics would be hard to guess from Christina Hoff Sommers's article "Why Can't a Woman Be More Like a Man?" which is about women in the physical sciences and engineering. The title comes from a song in the musical *My Fair Lady,* which is sung by "a misogynistic and snobbish phonetics professor," according to www.imdb.com. Although catchy, it doesn't quite fit the article—being a scientist or engineer is not particularly typical of being a man.

Sommers begins with a description of a Harvard honors mathematics course which sometimes has no women enrolled. From that, she proceeds to "women in the high echelons of academic math and the physical sciences" and states:

> Women comprise just 19 percent of tenure-track professors in math, 11 percent in physics, 10 percent in computer science, and 10 percent in electrical engineering.

These statistics seemed inaccurate to me, and I sent an inquiry to the magazine. Sommers was gracious enough to inform me of the source: The 2002 Nelson Diversity Survey of the "top 50" departments, with "tenure-track" substituted for "assistant." Here is a restatement, with statistics from the 2007 Nelson Survey:

> In the "top 50" departments, women comprise 28 percent of assistant professors in math, 17 percent in physics, 19 percent in computer science, and 14 percent in electrical engineering.

One might add: "45% in psychology (although women earn about 68% of the Ph.D.'s) and 21% in biology (although women earn about 46% of the Ph.D.'s)."

Many of us are aware that not all assistant professor positions are tenure track and that tenure-track slots are generally only a small proportion of all

positions in a department. For mathematics, information about these positions is reported in the Conference Board of the Mathematical Sciences Survey, and I mentioned its findings for 2005 in the January issue of the *AWM Newsletter*.

To put the statistics reported by Sommers in context, here again are the CBMS statistics for Ph.D.-granting departments together with their counterparts for faculty members in Ph.D.-granting universities. This gives me the opportunity to mention that for 2006–2007, women earned 32% of the Ph.D.'s in mathematics (see the February issue of the *Notices of the American Mathematical Society*).

Percentage of women in various academic categories in the United States

	Ph.D.'s 2006	Ph.D.'s 2006 (U.S. citizens)	Tenure-track (Ph.D.-granting institution)	Tenured (Ph.D.-granting institution)
Mathematics	32%	29%	24%	9%
All fields	45%	51%	40.9%	25.8%

Statistics for "all fields" from NORC Survey of Earned Doctorates and *AAUP Faculty Gender Equity Indicators 2006.*

Discrepancies between the rate at which women earn Ph.D.'s and the rates at which they get jobs at elite institutions do not appear to be confined to the physical sciences, or even the sciences. As various researchers point out, a variety of factors may be involved, including the availability of childcare and unconscious bias—both subjects of current discussion and sometimes policy.

Bias was one of the issues raised in a recent *Nature* editorial on double-blind refereeing. This form of refereeing was introduced in the journal *Behavioral Ecology* in 2001, and a study found a corresponding 7.9% increase in articles with a female first author. This, other studies, and various forms of refereeing are discussed in the blog that accompanies the *Nature* editorial.

Funding for childcare is a feature of several European Union early-career and re-entry opportunities for women in science. As I've written before, the AWM travel grants (which are funded by the National Science Foundation) cannot

MEMBERSHIP AND NEWSLETTER INFORMATION

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Individual: $55 Family (no newsletter): $30
Contributing: $125 New member, retired, part-time: $30
Student, unemployed, developing nations: $20
All foreign memberships: $10 additional for postage
Dues in excess of $15 and all contributions are deductible from federal taxable income when itemizing.
Institutional Members:
Level 1: $300
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See www.awm-math.org for details on free ads, free student memberships, and ad discounts.
Affiliate Members: $250
Sponsors:
Friend: $1000+ Patron: $2500+
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See the AWM website for details.

Subscriptions and back orders
All members except family members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $55/year ($65 foreign). Back orders are $10/issue plus shipping/handling ($5 minimum).

Payment
Payment is by check (drawn on a bank with a US branch), US money order, or international postal order. Visa and MasterCard are also accepted.

Newsletter ad information
AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Managing Director, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the* Newsletter *must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is $100 for a basic four-line ad. Additional lines are $12 each. See the AWM website for *Newsletter* display ad rates.

Newsletter deadlines
Editorial: 24th of January, March, May, July, September, November
Ad: 1st of February, April, June, August, October, December

Addresses
Send all **Newsletter** material **except ads and book review material** to Anne Leggett, Department of Mathematics and Statistics, Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; e-mail: leggett@member.ams.org; phone: 773-508-3554; fax: 773-508-2123. Send all **book review** material to Marge Bayer, Department of Mathematics, University of Kansas, 405 Snow Hall, 1460 Jayhawk Boulevard, Lawrence, KS 66045-7523; e-mail: bayer@math.ku.edu; fax: 785-864-5255. Send everything else, **including ads and address changes**, to AWM, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030; phone: 703-934-0163; fax: 703-359-7562; e-mail: awm@awm-math.org.

AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

AWM ONLINE

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Online Ads Info
Classified and job link ads may be placed at the AWM website.

Website and Online Forums
http://www.awm-math.org

AWM-NET

Editor: Dianne O'Leary
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To subscribe, send mail to awm-net-request@cs.umd.edu and include your e-mail address; AWM members only.

AWM DEADLINES

Sonia Kovalevsky High School Mathematics Days: August 4, 2008

AWM Workshop at JMM: August 25, 2008

Alice T. Schafer Prize: October 1, 2008

NSF-AWM Travel Grants: October 1, 2008 and February 2, 2009

AWM Noether Lecture: October 15, 2008

AWM Essay Contest: Biographies of Contemporary Women in Mathematics: November 1, 2008

AWM-SIAM Kovalevsky Prize Lecture: November 1, 2008

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fund childcare expenses, due to the regulations of the Office of Management and Budget which oversees NSF. Some countries do not have these restrictions. *Science*'s Careers Forum for March 8 lists opportunities for women in Austria, Germany, Sweden, Switzerland, and the United Kingdom. Several of these programs are government supported and allocate funds for childcare as well as research.

Part of the impetus for these European Union programs may be concern about global competitiveness. This also underlies a current effort in the United States: the National Mathematics Advisory Panel, which finished its report in March. The result, in contrast to the draft issued last spring, is extensive, consisting of a 120-page *Final Report,* a 2-page factsheet, and long reports from each of the five task groups and three subcommittees. All of these parts are posted on the Math Panel web site: www.ed.gov/about/bdscomm/list/mathpanel/index.html.

There is much that is interesting about the report, both politically and in matters of substance. I will mention just a few features of the *Final Report.*

First, gender. "Average gender differences are small or nonexistent, and our society's focus on them has diverted attention from the essential task of raising the scores of both boys and girls" (p. 33). The report also notes that research is needed on the design of test items and how design features may influence test outcomes for different groups (p. 61).

Second, educational research. The paucity and quality of educational research has been mentioned in publicity surrounding the report and in the report itself. In 1999, Alan Schoenfeld, then president of the American Educational Research Association, illustrated the level of funding for educational research at the time. "[A] single pharmaceutical company spent more than six times the amount of money studying animal health than our entire federal government spent on educational research. Just think about what this says about our national priorities." This is echoed by the Math Panel report's recommendation (p. 63): "the rigor and scale of the federal government's infrastructure for educational research must be dramatically increased."

I was pleased to see the recommendation that support should be provided to encourage the creation of cross-disciplinary research teams that include people with expertise in mathematics and mathematics education, among other fields (p. xxvii). Some of the existing support is provided by the AWM Travel Grants program, which has a component designed to encourage interaction between mathematicians and mathematics education researchers.

Finally, mathematics. I will mention only two topics: the equals sign and negative numbers.

For about ten years, I have been interested in research on students' understanding of the equals sign. If you have ever been maddened by something like:

$$g(x) = x^2 = g'(x) = 2x$$

you will probably understand why. The Learning Processes Task Group report discusses some of this research (pp. 47, 50, 129–130) and comments (p. 50):

> There are aspects of many, if not all, current textbook series in the United States that contribute to the poor preparation and background of algebra students. Modifying textbooks so that operations (arithmetical and algebraic) are presented on both sides of the equation, not just the typical operate-equals-answer format, is just one example of how textbooks can be improved.

I have also long been interested in curriculum treatments of multiplication with negative numbers. "Minus times minus equals a plus, the reasons for this we need not discuss" is an unwelcome reminder of students' difficulties with this topic. So I was intrigued to see the Math Panel's recommendations (p. 20):

> By the end of Grade 6, students should be proficient with multiplication and division of fractions and decimals.
>
> By the end of Grade 6, students should be proficient with all operations involving positive and negative integers.
>
> By the end of Grade 7, students should be proficient with all operations involving positive and negative fractions.

These recommendations are intriguing for two reasons. First, the Panel recommends "streamlining" the curriculum. But, after students are proficient with arithmetic on positive rational numbers at the end of grade 6, couldn't they learn to extend it to negative integers and other negative rational numbers at the same time in the next grade? Second, the Panel's Conceptual Knowledge and Skills Task Group Report emphasizes findings about the curricula of the six "top-performing TIMSS countries": Belgium (Flemish), the Czech Republic, Hong Kong, Japan, Korea, and Singapore. But many—perhaps all—of these countries introduce multiplication with negative numbers in grade 7.

For example, according to documents from their respective ministries of education, Singapore and Japan introduce negative numbers and operations upon them in grade 7. Hong Kong introduces negative numbers at the end of grade 6, but its syllabus says, "Introducing negative numbers only; no addition and subtraction of negative numbers." I didn't manage to find official documents from the other countries; however, other descriptions of curricula suggest that arithmetic on negative numbers in Belgium and Korea does not occur until grade 7.

I look forward to finding out the details.

Curriculum documents and sources

Japan

Kodaira, Kunihiko. (Ed.). (1992). *Japanese grade 7 mathematics* (Hiromi Nagata, trans.). Chicago: University of Chicago School Mathematics Project. (Original work published 1984)

Research Center for Science Education. (1989). *Mathematics program in Japan: Kindergarten to upper secondary school.* Tokyo: National Institute for Educational Research.

Other curriculum documents in English are available from Global Education Resources: www.globaledresources.com.

Hong Kong

http://www.edb.gov.hk/index.aspx?langno=1&nodeID=2899

http://www.edb.gov.hk/FileManager/EN/Content_4941/annex%203.pdf

Singapore

http://www.moe.gov.sg/cpdd/syllabuses.htm

Cathy Kessel
Berkeley, CA
March 28, 2008

Irina Mitrea Wins Ruth I. Michler Memorial Prize

AWM press release

The Association for Women in Mathematics and Cornell University are pleased to announce that Irina Mitrea, University of Virginia, will receive the second annual Ruth I. Michler Memorial Prize. The Michler Prize is unique—it grants a mid-career woman in academe a residential fellowship in the Cornell University mathematics department without teaching obligations. This pioneering venture was established through a very generous donation from the Michler family and the efforts of many people at AWM and Cornell.

Irina Mitrea was selected to receive the Michler Prize because of her past achievements and future promise. Mitrea earned an M.S. in Mathematics from the University of Bucharest in 1993. She carried out her doctoral work at the University of Minnesota, where she investigated the spectral properties of elliptic layer potentials under the direction of Carlos Kenig and Nikhail Safonov. A postdoctoral membership at the Institute for Advanced Study, Princeton in 2000–2001 was followed by her appointment as the H. C. Wang Assistant Professor at Cornell University. In 2004, Mitrea began a tenure track appointment in the mathematics department at the University of Virginia. In 2007, she was tenured and promoted to associate professor.

Mitrea has organized several mathematics programs for girls, including Sonia Kovalevsky Days for high school girls and the Girls and Mathematics summer program for middle school girls. She is the mathematics coordinator for the Young Women Leaders Program at the University of Virginia.

Mitrea's area of expertise is at the interface between real and harmonic analysis and partial differential equations. In particular, she studies the spectral properties of integral operators associated with elliptic problem in non-smooth domains. She is highly regarded for "her excellent taste in research problems, her depth and her technical power." Mitrea is a recipient of the prestigious NSF CAREER award.

Irina Mitrea, University of Virginia

At Cornell, Mitrea plans to collaborate with Camil Muscalu on the connection between integral operators for higher order elliptic PDEs and multilinear theory. With Bob Strichartz, she will study Triebel-Lizorkin spaces on certain self-similar fractals. She also intends to continue her work with Subratu Mukherjee studying higher order elliptic boundary value problems in two and three dimensional Lipchitz domains.

Ruth Michler's parents, Gerhard and Waltraud Michler of Essen, Germany established the memorial prize with the Association for Women in Mathematics because Ruth was deeply committed to its mission of supporting women mathematicians. Cornell University was chosen as the host institution because of its distinctive research atmosphere and because Ithaca was Ruth's birthplace. At the time of her death, Ruth was in Boston as an NSF visiting scholar at Northeastern University. A recently promoted associate professor of mathematics at the University of North Texas, she was killed on November 1, 2000 at the age of 33 in a tragic accident, cutting short the career of an excellent mathematician.

Connections for Women: Workshop at MSRI

Bhama Srinivasan and Monica Vazirani

The Connections for Women workshop preceding the two Spring 2008 MSRI programs, Representation Theory of Finite Groups and Related Topics, and Combinatorial Representation Theory, was held January 16, 2008 to January 18, 2008. The co-organizers were Bhama Srinivasan and Monica Vazirani.

Nearly 60 mathematicians, ranging from graduate student to emeritus professor, registered for the workshop, and roughly that many attended, with the addition of several more MSRI members from both programs. This included roughly a dozen men and non-MSRI-member participants from as far away as Australia, Uruguay, and Spain.

The scientific part of the workshop consisted of seven talks over the three days. The first day focussed on combinatorial representation theory, the second on representation theory of finite groups and related topics, and the third on a historical overview of the field. The level of exposition in all talks was outstanding.

The first day also included a poster session. Young researchers were encouraged to showcase their work. The formal session was preceded by a "poster preview" in which participants stood up and gave a two-minute synopsis of their poster. This was very successful in both generating interest in later viewing of all the posters and in giving the

younger participants a chance to advertise themselves to the whole group. The dozen or so two-minute explanations were articulate and interesting. The poster session, at which participants went around talking to the presenters, was later that afternoon. We left the posters up for all three days so that more people could view them at leisure. One poster was pictured in an article that the *San Francisco Chronicle* ran on January 25, 2008 about the events at MSRI.

In addition to posters, participants also had the opportunity to advertise their research by submitting short (two page) research abstracts. These were made available online on the workshop web page and were also copied and distributed during the workshop. This gave participants a chance to direct their discussions and questions about each others' research more thoughtfully.

Two panel discussions were held in an informal setting, with the participants and panelists alike sitting in a circle. Both panels were extremely popular and we received copious positive feedback. On the first day was a panel, "From small colleges to large universities and everything in between." The three panelists (moderated by Berkeley's Jenny Harrison) represented three very different types of schools. Each gave a five-minute introduction about what it was like to be there and how their career paths led them there.

The second day's panel had the intriguing title "Panel—Three Things I Wish I Knew Then" and consisted of a discussion of various issues that might arise in a young researcher's early career. Again, three panelists kicked off the discussion. Some of the valuable advice given included being very honest about yourself and what you want while interviewing, how and when to bring up the two-body problem, and to make connections to senior mathematicians and maintain those contacts. There was an interesting discussion regarding teaching and how students' perceptions are affected by the expectation that women should be more maternal. We also discussed how to organize a local student AWM chapter or a "Noetherian Ring" at one's home institution. Both panels elicited a lot of enthusiastic and lively discussion.

Finally, on the third day, we viewed the film *Women and Mathematics across Cultures* produced by the EWM in 1996. According to the EWM website, "The video explores the impact of cultural differences of the female condition, allowing four women mathematicians who have studied and worked in Europe and North and South America to tell their stories. Following a five minute introduction to EWM, including some surprising statistics about women mathematicians in Europe, the four women recount their personal experiences." The discussion afterwards was directed in part to European mathematicians in the audience who uplifted our spirits by refuting some of the negative experiences of some of the women in the film, noting how much things have improved over the past 10 years.

Kathy O'Hara (Associate Director, MSRI) and Monica Vazirani (Connections Co-Organizer)

Social activities included a banquet the first night at a local Chinese restaurant. There was a lot of time for participants to mingle and get to know each other. There were several lunch and tea breaks throughout so that people who had met could engage in dialogue. Even though there were so many participants, many got to know each other in an informal space, greatly aided by the panels, as well as by including many of the participants as session chairs, moderators, and panelists. The atmosphere was very cohesive, and that feeling carried over into the much more crowded and intense scientific workshops the following weeks which were a part of the MSRI program.

In addition to many members at MSRI, we were pleased to have Cathy Kessel, AWM president, participate in our

Bhama Srinivasan (Connections Co-Organizer)

events. Also present were a former AWM president (Bhama Srinivasan) and current president-elect (Georgia Benkart).

We received positive feedback via e-mails and on surveys that MSRI Associate Director Kathy O'Hara wrote and distributed. We conclude by quoting from some of the e-mails and the survey.

- I enjoyed the talks but more importantly I met a ton of interesting people, each of whom I expect to see in other conferences and workshops in the future.
- I learned a ton and the networking was priceless.
- The networking was invaluable, and the size of the meeting was large enough to meet new people, yet intimate enough to meet everyone. The talks did a great job of putting combinatorial representation theory mathematically and historically in context, and the panels gave young and old a chance to share their wisdom and give support.
- I really enjoyed talking with you today, and enjoyed today's panel session, too. Without at all saying I think the schedule should be any different, I somehow wish we would have time for more! I certainly found myself thinking of more ways to meet other participants—I'd like to say I'd at least heard everyone's name once, and the teacher/former department chair/community builder in me was looking for ways to get more people to "pipe up" to see what they are thinking and so they'd feel included. Honestly, I wasn't quite sure how I'd feel about an all (almost all) female event, and to tell you the truth, I'm surprised how fantastic I'm finding it to see an auditorium of smart women, to see these great talks, to see participants in the halls all around, chatting excitedly, and, heck, to not be the only one using the women's restroom.
- I think the conference today went very well! I liked meeting all these new and old people. I think this semester will be a lot of fun and hopefully really productive.
- Thanks again for the invitation, as I had a great time at the meeting and enjoyed chairing the session.

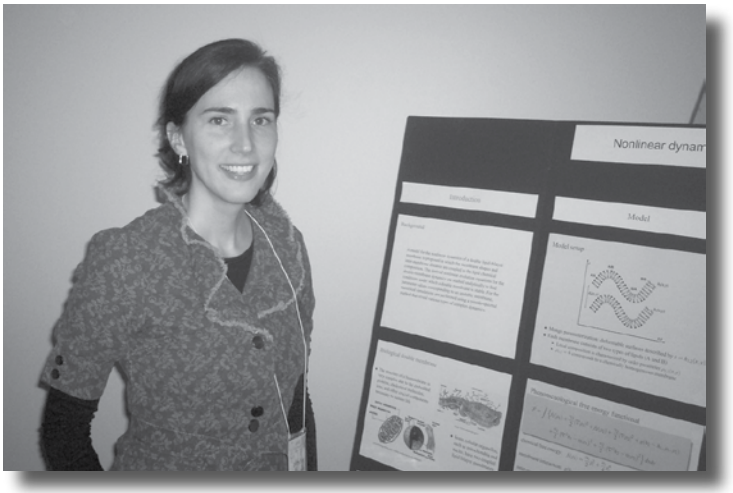
Emmy Noether Lecture in Erlangen

The annual meeting of the Deutschen Mathematiker Vereinigung (German Mathematical Society) will be held at the University of Erlangen September 15–19, 2008. Erlangen is the birthplace of Emmy Noether, and 2008 marks the 100th anniversary of the publication of her Ph.D. thesis (submitted to the University of Erlangen in late 1907).

In commemoration of these special events, Professor Karin Erdmann of the University of Oxford, renowned for her work in representation theory, will deliver the Emmy Noether Lecture at the meeting. It is hoped that the Emmy Noether Lecture will become a regular event at the DMV's annual meeting, similar to AWM's well-known Noether Lecture at the Joint Mathematical Meetings.

More information about the meeting and lecture may be found at the website http://www.dmv2008.unierlangen.de/hauptvortraege.shtml.

AWM Workshop



Christine Sample, Northwestern University, at her poster

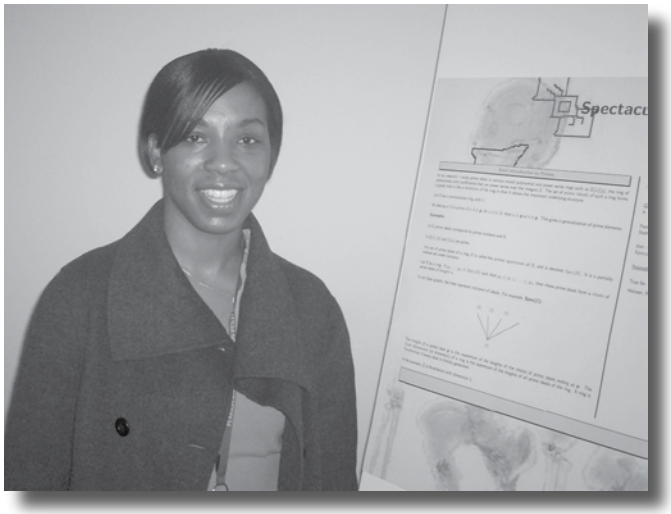
At poster of Oksana Bihum, University of Missouri

Workshop dinner

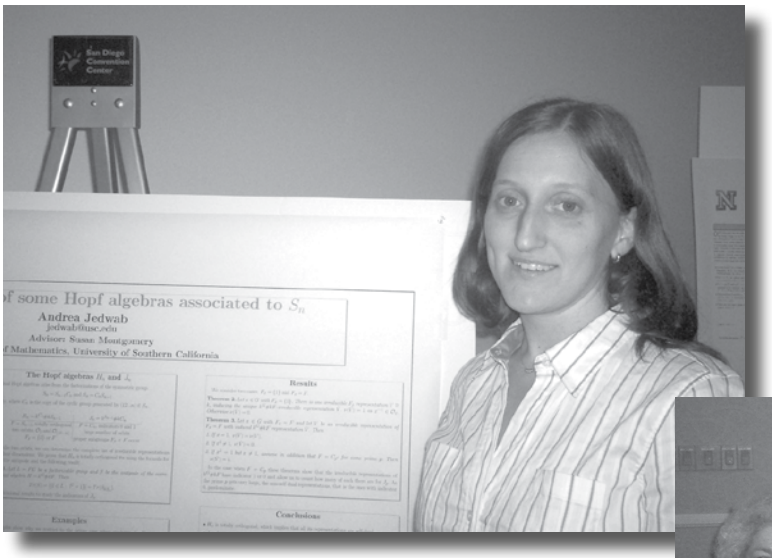
Workshop dinner

JMM in San Diego

Heidi Fuller, University of Nebraska, explaining her poster



Christina Eubanks-Turner, University of Nebrasks



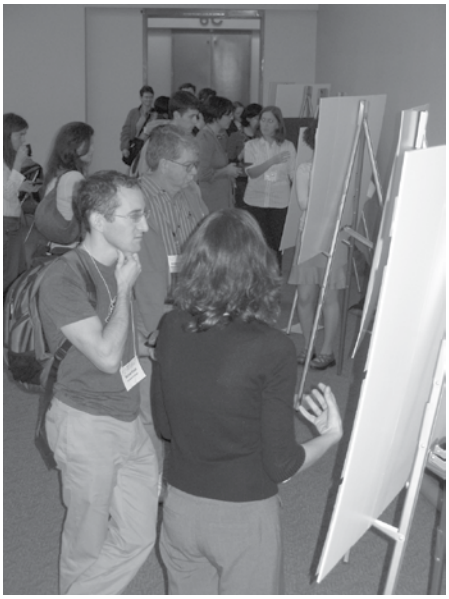
Andrea Jedwah, University of Southern California

Workshop dinner

AWM Workshop for Women Graduate Students and Recent Ph.D.s

Juliana Belding, University of Maryland, College Park

Diana White and Xinyi Zhang



Poster Session

Panel audience

Back: Organizers Magnhild Lien and Gail Ratcliff and front, AWM President Cathy Kessel

AWM Workshop for Women Graduate Students and Recent Ph.D.'s at the 2009 Joint Mathematics Meetings

Application Deadline: August 25, 2008

For many years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s in conjunction with major mathematics meetings. We anticipate support from the Office of Naval Research and the National Security Agency for the AWM Workshop to be held in conjunction with the Joint Mathematics Meetings in Washington, D.C. in January 2009.

FORMAT: Twenty women will be selected in advance of the workshop to present their work; the graduate students will present posters and the recent Ph.D.'s will give 20-minute talks. AWM will offer funding for travel and two days subsistence for the selected participants. The workshop will also include a dinner with a discussion period, a luncheon, and a panel discussion on areas of career development. Workshop participants will have the opportunity to meet with other women mathematicians at all stages of their careers.

All mathematicians (female and male) are invited to attend the talks, posters, and panel. Departments are encouraged to help graduate students and recent Ph.D.'s who are not selected for the workshop to obtain institutional support to attend the presentations and panel.

ELIGIBILITY: Applications are welcome from graduate students who have made substantial progress towards their theses and from women who have received their Ph.D.'s within approximately the last five years, whether or not they currently hold a postdoctoral or other academic position. Women with grants or other sources of suport are welcome to apply. All non-US citizens must have a current US address.

All applications should include:

- a cover letter
- a title of the proposed poster or talk
- an abstract in the form required for AMS Special Session submissions for the Joint Mathematics Meetings
- a concise description of research
- a curricultum vitae
- at least one letter of recommendation from a faculty member or research mathematician who knows the applicant's work. In particular, a graduate student should include a letter of recommendaiton from her thesis advisor.

Details about electronic submission may be found at the AWM website (www.awm.math.org/workshops.html) by June 1, 2008. Applications (including abstract submission via the Joint Mathematics Meetings website) must be completed electronically by **August 25, 2008**.

Book Review

Book Review Editor: Margaret Bayer, University of Kansas, Lawrence, KS 66045-7523, bayer@math.ku.edu

The World of Maria Gaetana Agnesi: Mathematician of God, Massimo Mazzotti. Baltimore, MD: Johns Hopkins University Press, 2007.

Reviewer: Judith V. Grabiner, Flora Sanborn Pitzer Professor of Mathematics, Pitzer College, Claremont CA 91711, jgrabiner@pitzer.edu

Before the twentieth century, only a handful of women overcame the odds and made real contributions to mathematics. Principal among them are Hypatia of Alexandria (355–415), the Marquise du Châtelet (1706–1749), Sophie Germain (1776–1831), Sofia Kovalevskaya (1850–1891), and Maria Gaetana Agnesi (1718–1799). The first four have been the subject of modern scholarly and readable books.[1] Fortunately, it is now Agnesi's turn.

Maria Gaetana Agnesi was the first woman to write a textbook in mathematics. Her *Analytical Institutions* (1748) was highly regarded, and not just in Italy. Part of it was translated into French in 1775, and John Colson (1680–1760) translated the whole book into English, although his translation was published only in 1801. In 1727, at the age of nine (!), she gave and then published an *Academic Oration in Which It is Demonstrated that the Studies of the Liberal Arts by the Female Sex Are by No Means Inappropriate.*[2]

How did this amazingly talented woman successfully navigate through the mathematical and religious worlds of her society? It required a remarkable coincidence of family, social, theological, and scientific factors, all of which had to be lined up just right. Let us follow the story told by Mazzotti in this beautifully documented work.

Her father Pietro Agnesi, who came from a merchant background, was a man on the make. He wanted to enter the social establishment of Milan, and he saw the education and subsequent public performances of his talented daughters—Maria Gaetana's sister, Maria Teresa, was a musician and composer—as a way to do it. The "conversazioni" (public disputations) in which Gaetana excelled brought internationally known people into the Palazzo Agnesi to hear her.

But an ambitious father was not enough. Teaching was necessary. Fortunately, his son's tutor told Pietro how Gaetana had picked up Latin just by being in the same room during lessons, and Pietro was quick to arrange for her to be taught Latin, German, and Greek. Her first important tutor, the professor-priest Girolamo Tagliazucchi, believed that a person could oppose sinfulness by encouraging the reason to dominate the "animal" part of the mind. So he sought to develop his students' capacity for abstraction by teaching them algebra and geometry. Tagliazucchi also believed, following Nicolas Malebranche, that an act of intellection must be preceded by the will so that the act can be accurately performed. Malebranche called this deliberation "attention" and saw it as a form of "natural prayer." This implies that intellectual pursuits have an immediate spiritual significance. These ideas made Gaetana's pursuit of mathematics legitimate.

The doctrines of the particular church to which she belonged, the Theatine congregation in Milan, also promoted her mathematical interests. A central Theatine doctrine was that the disorders of the senses arise from original sin, but could be curbed by the well-trained intellect. In the study of science, the believer does this by separating the physical from its spiritual meaning, thus elevating the mind. This process is facilitated by meditation techniques. While the Theatine emphasis on ascetic spirituality encouraged Gaetana to do charitable work with the poor and sick,

[1] Maria Dzielska, *Hypatia of Alexandria* (Harvard, 1995); Judith Zinsser, *La Dame d'Esprit: A Biography of the Marquise du Châtelet* (Viking, 2006); Louis Bucciarelli and Nancy Dworsky, *Sophie Germain: An Essay in the History of the Theory of Elasticity* (Reidel, 1980); and Ann Hibner Koblitz, *A Convergence of Lives: Sophia Kovaleskaia, Scientist, Writer, Revolutionary* (Birkhauser, 1983).

[2] This has recently been published, with a fine introduction by Paula Findlen, in Rebecca Messbarger and Paula Findlen, eds., *Maria Gaetana Agnesi et alia: The Contest for Knowledge* (University of Chicago, 2005); on one Web page Agnesi charmingly appears as a co-author.

the Theatine advocacy of intellectual exercise for spiritual life encouraged her work in pure mathematics.

She was encouraged also by the more general religious trends of mid-eighteenth-century Italy, which have been characterized as the "Catholic Enlightenment." Enlightened Catholics agreed that Christianity could be combined with acquiring modern knowledge. A key figure was Lodovico Antonio Muratori (1672–1750), who admired Newton and corresponded with Leibniz. Muratori, who was called "the light of Italian science" by Pope Benedict XIV, argued that dogmatic theology had overreached in criticizing the work of Copernicus and Galileo. In her public debates, Gaetana used these ideas to justify her work in the mathematical sciences. She said that although the sense-based natural sciences were essentially fallible and debatable, in mathematics, truths can be derived with absolute certainty.

And in mathematics, Gaetana received first-rate training. One of her early tutors, Count Carlo Belloni, introduced her to l'Hospital's writings on curves and to Newton's *Principia.* Later she studied with Ramiro Rampinelli, professor at the University of Pavia, who was the first to teach the calculus of Leibniz and the Bernoullis in northern Italy. Her library

Sonia Kovalevsky High School Mathematics Days

Through a grant (*pending final funding approval*) from Elizabeth City State University and the National Security Agency (NSA), the Association for Women in Mathematics expects to support Sonia Kovalevsky High School Mathematics Days at colleges and universities throughout the country. Sonia Kovalevsky Days have been organized by AWM and institutions around the country since 1985, when AWM sponsored a symposium on Sonia Kovalevsky. They consist of a program of workshops, talks, and problem-solving competitions for high school women students and their teachers, both women and men. The purposes are to encourage young women to continue their study of mathematics, to assist them with the sometimes difficult transition between high school and college mathematics, to assist the teachers of women mathematics students, and to encourage colleges and universities to develop more extensive cooperation with high schools in their area.

AWM anticipates awarding 12 to 20 grants ranging on average from $1500 to $2200 each ($3000 maximum) to universities and colleges; more grants may be awarded if additional funds become available. Historically Black Colleges and Universities are particularly encouraged to apply. Programs targeted toward inner city or rural high schools are especially welcome.

Applications, not to exceed six pages, should include: a) a cover letter including the proposed date of the SK Day, expected number of attendees (with breakdown of ethnic background, if known), grade level the program is aimed toward (e.g., 9th and 10th grade only), total amount requested, and organizer(s) contact information; b) plans for activities, including specific speakers to the extent known; c) qualifications of the person(s) to be in charge; d) plans for recruitment, including the securing of diversity among participants; e) detailed budget (i.e., food, room rental, advertising, copying, supplies, student giveaways, etc. Honoraria for speakers should be reasonable and should not, in total, exceed 20% of the overall budget. Stipends and personnel costs are not permitted for organizers. The grant does not permit reimbursement for indirect costs or fringe benefits. Please itemize direct costs in budget.); f) local resources in support of the project, if any; and g) tentative follow-up and evaluation plans.

The decision on funding will be made in late August. The high school days are to be held in Fall 2008 and Spring 2009. If selected, the organizer(s) must submit a report of the event along with receipts (originals or copies) for reimbursement to AWM within 30 days of the event date or by May 15, 2009, whichever comes first. Reimbursements will be made in one disbursement; no funds can be disbursed prior to the event date. An additional selection cycle will be held February 4, 2009 for Spring 2009 *only if* funds remain after the August 2008 selection cycle.

Send *five* complete copies of the application materials to: Sonia Kovalevsky Days Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. For further information: phone 703-934-0163, e-mail awm@awm-math.org, or visit www.awm-math.org. Applications must be received by **August 4, 2008**; applications via e-mail or fax will not be accepted.

included Newton's *Universal Arithmetic,* leading scientific journals from Bologna, Leipzig, and England, books on probability by De Moivre and Jakob Bernoulli, and works on analytic geometry and calculus by Ozanam, Charles Reyneau, Varignon, Fontenelle, and the Bernoulli brothers. Thus her background represented the cutting edge of early eighteenth-century mathematics.

Gaetana soon moved beyond being a mere consumer of mathematical ideas. The association with Rampinelli, together with her belief that l'Hospital's analytic geometry needed fuller explanation, made her decide to write a systematic introduction to algebra, analytic geometry, and the differential and integral calculus. This became the *Analytical Institutions.* Her father Pietro, still ambitious and hoping for a prestigious publication, installed a printing press at their house, so Gaetana was able to help the printers correctly typeset the unfamiliar symbols of calculus.

In her book, she tried to explain every step of the mathematical reasoning. Beginning with algebraic equations and analytic geometry, she introduced differential calculus, integral calculus, and the solving of differential equations. She drew on contemporary research by men like Riccati, the Bernoullis, and Euler, as well as on earlier textbooks like those of Reyneau and l'Hospital. Reyneau's textbook expressed the same view she had found in her enlightened Catholicism, that the perfect truths of reason need to be protected from the material contamination of the senses. So in her book, mathematical analysis was detached from mechanical and empirical considerations. But she did not follow the purely analytic approach characteristic of Euler. Even modern analysis, she thought, should preserve the simplicity, rigor, and self-evidence characteristic of geometry. Still, this was a state-of-the-art textbook, with the material presented with great clarity, and it gave the first systematic presentation of Italian terminology for the concepts of the calculus.

Her name is, unfortunately, best known in connection with the "witch of Agnesi," the curve called the "versiera" by Guido Grandi in 1718 because of its construction by "turning." John Colson, in his translation of her book, seems to have confused "versiera" with "avversiera" (she-devil), translating it as "witch." Colson also "translated" the differential notation Agnesi used into Newtonian fluxional notation, in order to appropriate the prestige of a Continental work to combat the English critics of fluxions—a goal which testifies to the perceived quality of the *Analytical Institutions.* Meanwhile, in Italy, the book brought her great renown. Pope Benedict XIV wanted to appoint her to a mathematics chair at the University of Bologna. And François Jacquier, co-author of the annotated edition of Newton's *Principia* which legitimized Newtonianism in the Catholic world, praised her having provided a solid geometric foundation for the calculus. This recognition seemed to have transcended gender.

In eighteenth-century Italy, in conversazioni, academies, and universities, especially around Milan, Bologna, and Venice, women's intellectual achievement was not at all unprecedented. Other Italian female intellectuals of the period included the Bologna physics professor Laura Bassi, the musician (and Gaetana's sister) Teresa Agnesi, and the dramatist and poet Francesca Manzoni.[3] Their success, like Gaetana's, had both intellectual and social causes.

Intellectually, the ideas of the Catholic Enlightenment were crucial. The views of Muratori promoted women's education. Descartes' distinction between mind and body encouraged the idea that women could be intellectually equal to men, famously expressed by Poullain de la Barre's words "The mind has no sex." The influential Italian cleric Giovanni Bandiera agreed, arguing that the spiritual dimension of a human being cannot be trumped by the corporeal. Of course he didn't go so far as to argue for higher education for all women, only for those who are wives of "honorable citizens." But childless widows and "wealthy virgins" in their own houses should be able to study everything they wish, he said, including mathematics, the "most noble" of the sciences. As Gaetana put it in 1728, it is a philosophical error to claim that the weakness of the female body might produce a weakness of the female mind.

On the social side, enlightened Catholics wanted to mobilize new social groups into the Church's institutional network to compensate for the urban patricians whose support for

[3] For a list and information about a dozen more such women, see Messbarger and Findlen, *op. cit.,* pp 7–11.

the Church was diminishing. These new groups included the merchant and professional classes—and women. For example, Benedict XIV modified canon law so that women as well as men could produce evidence in favor of canonization.

In Gaetana's case, though, her father had played a crucial role. When he died in 1752, his daughters made a new set of choices. Teresa quickly got married. And Gaetana, who as early as 1740 had asked her father for permission to withdraw from his showy social life to volunteer at a hospital, gave up the study of mathematics. She renounced her rights to the family estate, drafted her will, and for the rest of her life devoted herself completely to charitable work on behalf of the poor and sick of Milan. (Because of this, there has recently been an attempt to canonize her.) Although Gaetana's mathematical reputation endured—in 1762 the newly founded Academy of Turin, whose members included the young Lagrange, sent her their collected works for criticism and encouragement—her mathematical career was over.

A weakness of Mazzotti's biography is that he does not give examples or quotations of Agnesi's mathematical work, nor for that matter say much about the content of anybody else's mathematics. The book is social history, granted, but a few passages from the *Analytical Institutions* would have made this study much more valuable to readers interested in women in the sciences.[4] Nonetheless, this is an original, thoroughly researched, and illuminating work. It makes clear how many different social and intellectual factors had to fall into place for women to become mathematicians before the opening of access to higher education. And it paints a rich picture of the life of the first woman to write a textbook in higher mathematics.

[4] A good, albeit brief, description of some of her key results on optimization and integration may be found in Victor J. Katz, *A History of Mathematics: An introduction* (Addison-Wesley, 1998), pp 566-567.

Call for Nominations: The 2009 Kovalevsky Prize Lecture

AWM and SIAM established the annual Sonia Kovalevsky Prize Lecture to highlight significant contributions of women to applied or computational mathematics. This lecture is given annually at the SIAM Annual Meeting. Sonia Kovalevsky, whose too-brief life spanned the second half of the nineteenth century, did path-breaking work in the then-emerging field of partial differential equations. She struggled against barriers to higher education for women, both in Russia and in Western Europe. In her lifetime, she won the Prix Bordin for her solution of a problem in mechanics, and her name is memorialized in the Cauchy-Kovalevsky theorem, which establishes existence in the analytic category for general nonlinear partial differential equations and develops the fundamental concept of characteristic surfaces.

The mathematicians who have given the prize lecture in the past are: Linda R. Petzold, Joyce R. McLaughlin, Ingrid Daubechies, Irene Fonseca, and Lai-Sang Young.

The lectureship may be awarded to anyone in the scientific or engineering community whose work highlights the achievements of women in applied or computational mathematics. The nomination must be accompanied by a written justification and a citation of about 100 words that may be read when introducing the speaker. Nominations should be sent to the AWM office (*five* copies to: Kovalevsky Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030; phone: 301-405-7892) or electronically to awm@awm-math.org, to arrive by **November 1, 2008**.

The awardee will be chosen by a selection committee consisting of two members of AWM and two members of SIAM. Please consult the award web pages www.siam.org/prizes/kovalevsky.htm and www.awm-math.org/kovalevskylectures.html for more details.

Education Column

Homework, Kindergarten through College: Then and Now

Patricia Clark Kenschaft, Professor Emerita, Montclair State University and Distinguished Visiting Professor, Bloomfield College

Might it be that as students are assigned more homework when they are children, they become less motivated to do their college assignments? Do they become, effectively, "all homeworked out" before their individual efforts are maximally productive? How might we test such a hypothesis? Are the underlying assumptions correct—that children are getting more homework in recent decades and college students are doing less?

My concern about college students has been growing for some time. As I remember, I became concerned a couple of decades ago that they were working more hours, and thus, apparently, were spending less time doing "my" homework. More recently, I have become aware of what seems like a significant shift in the attitudes of college students toward time spent preparing for class. At the same time, I have become aware of the increasing amount of homework done by little children. Is there a connection? It is time to explore that question and its implications. My conclusions can hardly be deemed conclusive, but I want to stimulate discussion.

Different cultures have radically varying attitudes toward homework. In Finland, according to a recent report, high school students rarely get more than a half-hour of homework a night. Yet on the recent PISA tests Finland's student placed first in science and near the top in math and reading, in stark contrast to the overworked Americans' modest scores.[1]

That homework for children has increased during my career is well documented. A large long-term nationwide survey found that the proportion of six-to-eight-year-olds who reported having homework on a given day climbed from 34 percent in 1981 to 58 percent in 1997 and to 64 percent in 2002.[2] This supports my suspicions about children, along with the fact that, as I remember, in the mid-1970s homework for children in the primary grades was unthinkable in my world.

When I was a child in the 1940s, homework was a status symbol for "big kids." I had no homework through grade six. I remember my older friends lugging their books home from junior high, lording it over me for being a child while they bore the grown-up burden of homework. During elementary school I went out to play every afternoon when the weather was decent. Otherwise, we played games with dice and logic, learning math without realizing it.

In the evenings I read book after book. Maybe this could have been considered "homework." Our third grade teacher had us each draw a "bookcase" on which we put the titles of just-read books on the spines of blank "books" on our "bookcase." The teacher did not encourage competition, but those of us who were book-greedy did notice who filled in the most book spines each week. If we wanted, we were allowed to tell the class about a book we read; others then might read it too. We were also allowed to give a science lesson after a binge on reading about a particular topic. A friend and I planned and performed "plays" for the class; we both still remember my Perseus rescuing her Andromeda from the rock as she lay there tied by the bad guys but glamorous in her aunt's nightie, which looked like a Grecian outfit.

Throughout elementary school we wrote essays, filled in work sheets, practiced math skills, and did some challenging problems during "seat-work" time. We expected seat-work time every day, during which the teacher worked with small groups. If we did our seat-work quickly, we could read any book of our choice. I emerged from elementary school well practiced in basic skills and hungry to learn. The burden of homework was accepted as a path toward that goal, and often was.

[1] Ellen Gamerman, "What Makes Finnish Kids So Smart?" Finland's teens score extraordinarily high on an international test. American educators are trying to figure out why," *Wall Street Journal* Online, February 29, 2008, page W1.

[2] Sandra Hofferth and John F. Sandberg, "How American Children Spend Their Time," *Journal of Family and Marriage,* 63 (2001), 295–308.

My children began having homework in fourth grade. They rebelled, but I was busy starting my career and did not consider their homework my responsibility. It was their problem. I disapproved of parents who meddled with their children's homework. I listen with interest to comments from today's parents who speak of "our homework," obviously expecting to be involved daily with their children's assignments. One wrote, "If material is new and there is little student generated reference to help complete the work, we may not do the assignment. We maintain very good communication with our children's teachers." Another parent wrote about a teacher who expects parents to check her website every day. How much does such involvement contribute to the "helicopter parent" syndrome, which has become a nuisance to college administrators?

Today's children are afflicted with homework much younger than mine were, at an age where parental participation might seem justified. But is the homework defensible? One parent began home schooling after his firstborn completed kindergarten in the Montclair public schools, often considered (rightly, I think) one of the best public school systems in the country. Why? "There was too much test-prep." When I asked if homework were a factor, he said, "Yes, about four times a week. It was mostly too easy for her. If she did more advanced problems, the teacher marked down the assignment."

One parent complained to me that his middle school daughter was refusing to do math homework she considered a waste of time. His conversation with her teacher revealed that the teacher was assigning less homework than he was "supposed to." In his acknowledgements in his book *The Homework Myth,* Alfie Kohn writes, "Thanks … especially to all the teachers and parents who generously shared their thoughts and experiences. The fact that many of them feel … alone in questioning the conventional wisdom makes their stance even more courageous, but the good news is that they actually have plenty of company."

Despite a life-long interest in education at all levels, I was not aware of controversy reported in Kohn's book, published in 2006, until I sent out an inquiry to Montclair's listserve, which has about 2,500 members, and one respondent pointed me in his direction. I now know of another book, *The Case Against Homework: How Homework Is Hurting Our Children and What We Can Do About It* by Sara Bennett and Nancy Kalish, also published in 2006. So now I realize I'm joining, rather than starting, a movement, but it seems that nobody has questioned the potential link between too much

Call for Nominations: The 2010 Noether Lecture

AWM established the Emmy Noether Lectures to honor women who have made fundamental and sustained contributions to the mathematical sciences. This one-hour expository lecture is presented at the Joint Mathematics Meetings each January. Emmy Noether was one of the great mathematicians of her time, someone who worked and struggled for what she loved and believed in. Her life and work remain a tremendous inspiration.

The mathematicians who have given the Noether lectures in the past are: Jessie MacWilliams, Olga Taussky Todd, Julia Robinson, Cathleen Morawetz, Mary Ellen Rudin, Jane Cronin Scanlon, Yvonne Choquet-Bruhat, Joan Birman, Karen Uhlenbeck, Mary Wheeler, Bhama Srinivasan, Alexandra Bellow, Nancy Kopell, Linda Keen, Lesley Sibner, Ol'ga Ladyzhenskaya, Judith Sally, Olga Oleinik, Linda Rothschild, Dusa McDuff, Krystyna Kuperberg, Margaret Wright, Sun-Yung Alice Chang, Lenore Blum, Jean Taylor, Svetlana Katok, Lai-Sang Young, Ingrid Daubechies, Karen Vogtmann and Audrey Terras.

The letter of nomination should include a one-page outline of the nominee's contribution to mathematics, giving four of her most important papers and other relevant information. *Five* copies of nominations should be sent by **October 15, 2008** to: The Noether Lecture Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. If you have questions, phone 703-934-0163 or e-mail awm@awm-math.org. Nominations via e-mail or fax will not be accepted.

homework in children and the undermining of collegiate intellectual effort.

From Montclair's listserve I received complaints about too much homework, the inconsistency of homework, and the abundance of "busy work." The last issue, raised by many, keyed into one of my major concerns, the lack of mathematical preparation of elementary school teachers, which was highlighted in my article "Racial Equity Requires Teaching Elementary School Teachers More Mathematics" in the February 2005 *Notices of the AMS,* http://www.ams.org/notices/200502/fea-kenschaft.pdf.

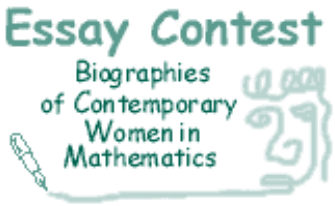
If mathematics is so poorly taught during school hours, what justification is there for inflicting more on children when they should be playing and reading? My concern was heightened last year when I was told of a teacher drilling fifth graders in a nearby "white" district (not Montclair) in adding fractions by adding across the numerators and then across the denominators. How satisfactory is her homework? Perhaps I digress. Perhaps not.

One parent from the Montclair list-serve reported that her child looks forward to the weeks of standardized testing because they provide a reprieve from homework. Another wrote that homework was a response to teachers' not being able to teach in class because of the misbehavior of students these days. (If emotionally disturbed youngsters are undermining the education of the minority, perhaps we should reconsider mainstreaming.) Two teachers pleaded that homework can be useful and that they, like most teachers, try to make it so. They point out that it keeps parents in touch with their children's school work (which was not an expectation in my childhood or my children's). One parent observed dryly that homework keeps her in touch with her children's education, the quality of which she is skeptical.

Some educators have told me that homework is given because parents demand it. When I submitted a second query asking if any parents would confess to asking for more homework, I received no affirmative responses. Probably the most horrifying response to my queries was the following.

"My daughter, a senior at the high school, averages 10 HOURS of homework per night. Yes, you read that correctly. It is totally ridiculous. My poor child comes home from school around 3, walks the dog, has a snack and then does homework all night, with a half-hour break for dinner. She then goes to sleep between midnight and 12:30 and then sets her alarm and wakes up at 4 a.m. to continue doing homework."

Does all this stress result, as alleged, in better self-discipline later? When I began teaching non-major courses where it was reasonable to do a survey on campus to explore the pitfalls of the survey process somewhat over a decade ago, I would suggest asking Montclair State students how much homework they do per week. The class always deep-sixed that suggestion. No way! They would cheerfully, however, survey how many hours a week students worked for money. The median was typically between 25 and 40 hours a week. On top of 16 hours of class and commuting!



To increase awareness of women's ongoing contributions to the mathematical sciences, the AWM is (*pending funding*) sponsoring an essay contest for biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers. The essays will be based primarily on an interview with a woman currently working in a mathematical career. This contest is open to students in the following categories: **grades 6–8**, **grades 9–12**, and **undergraduate**.

At least one winning entry will be chosen from each category. Winners will receive a prize, and their essays will be published online at the AWM Web site. Additionally, a grand prize winner will have his or her entry published in the AWM *Newsletter*. For more information, contact Dr. Victoria Howle (the contest organizer) at vehowle@sandia.gov or see the contest Web page: www.awm-math.org/biographies/contest.html. The deadline for receipt of entries is **November 2, 2008**. *(To volunteer as an interview subject, contact Howle at the e-mail address given.)*

If the student indulges in some social time, how much time remains for study? No wonder I was observing troubles.

I'm an eternal optimist. Last spring at Bloomfield College I again made my oft-rejected proposal to do a campus survey of time spent doing homework.

"Let's do it now!" was the response.

"What? In public?"

"Yes!"

"You are willing to answer the question in public?" They all insisted they were. So we surveyed the class to get a set of data from which we could compute the range, median, mode, and mean. The median, mode, and mean were all seven hours a week.

I told them that when I was in college, we were told to spend two hours of preparation for each hour of class. They laughed.

"We're told that too."

"I did it." They looked at me in obvious disbelief. It's unsettling to think your professor could lie so convincingly.

As I was preparing to write this article, I told my current students, who had not revealed to me their study time, that back in my college days I actually spent two hours of preparation for each hour of class. They rewarded me with an audible gasp and a long, long silent stare. They believed me, and marveled that such a world could exist.

Meanwhile, I told a sociologist at another state university (not Montclair State) about my discovery that my students were doing only seven hours a week of homework. He nodded sadly. He and his students had done a similar, but much larger and professionally serious, survey at his institution as part of a sociology course. They had concluded that students there study a median of five hours per week—for all their courses. He is roughly the age of my children, and he was shocked. "Imagine!" he exclaimed. "Only five hours of preparation total for fifteen hours of class!"

I believe that our country has two related academic problems. Because of homework, children have much too little time for playing in nature (which studies indicate is as effective an antidote for ADD as ritalin), for cultivating friendships, for enjoying their families, for just being, and for free reading, which I suspect is the basis of a full intellectual life. In particular, time for reflection is key to understanding mathematics. Secondly, college students spend far too little time doing "homework," admittedly partially for reasons beyond their control.

How much, however, is it due to their being burned out on non-classroom assignments? How much does childhood homework foster negative attitudes about learning in general? How much positive intellectual enthusiasm do children lose by not spending every spare moment of their elementary school years exploring nature and gobbling up books as my friends did? Mathematically, I am concerned about the increased exposure to woefully underprepared elementary school teachers. Until we remedy this national problem, I'd be happier seeing mathematics instruction postponed until whenever adequately prepared teachers are available to a student, hopefully no later than middle school. Admittedly, it's hard to separate the effects of these issues and the effects of test-prep with its emphasis on key words and other techniques designed to subvert logical thinking.

An even more damaging effect of early homework may be the forced dependency of today's children on their parents in the context of their academic life. This contrasts dramatically to my generation's and my children's development of an academic life separate from our parents, supervised only by teachers who changed every year. We didn't become academically dependent on our parents' supervision. It seems to me (and I don't trust anyone's memory too much in this type of comparison) that my early students expected to take more responsibility for their class preparation than those of the past decade or so. Today's college students simply shrug if they don't like some assignment. It doesn't seem that their own conscience is prodding them. That was someone else's job.

I was one of the rare lucky Americans who had a scholarship to go to college. However, in many (most?) countries, college admission brings with it free tuition. Back in the United States, a higher percentage of the age cohort now goes to college than in my youth, but a smaller percentage graduates from high school—assuming we can believe the results of professional surveys. How much is this due to expectations upon parents that busy, distressed and/or irresponsible parents can't fulfill, so no matter how motivated

the children, their grades suffer because their parents don't directly participate in their homework?

What can be done? I agree with Alfie Kohn that the default for children should be no homework. A special assignment occasionally is acceptable, but teachers should not be expected to give homework regularly. When homework hits in middle school, parents should not be expected to participate except on very special occasions. I also believe that our country is rich enough to provide free tuition for all students accepted to college (if we would refrain from nation-building in other parts of the world), and that a partial subsidy for living expenses would be desirable so that students are not forced to work so many hours while in college. I remember craving a little paid work when I was in college, and I think ten hours a week of paid, useful work is compatible with good study habits.

An impossible dream? I'm a persistent optimist. I remember when no women were on the boards of the AMS or MAA and smoke filled all meeting rooms. Before that, I remember a time when having a handicapped child was considered a punishment from God for a mother's sins, and she was expected to pay with a life of confinement taking care of the consequences of her sins. (For an account of my mother's efforts in starting the special education movement, see http://pages.csam.montclair.edu/~kenschaft/Success.html.)

I believe that our culture can change. Children again can have time for play and unsupervised intellectual exploration. College students again can be motivated and free to spend more time learning outside class. Perhaps there is a connection, but the possible relationship is less important than the two separate issues.

Science Debate 2008 and Science Funding

In the January–February issue of this newsletter, we reported on a call for a presidential debate on science and America's future: "Given the many urgent scientific and technological challenges facing America and the rest of the world, the increasing need for accurate scientific information in political decision making, and the vital role scientific innovation plays in spurring economic growth and competitiveness, we call for a public debate in which the U.S. presidential candidates share their views on the issues of the environment, health and medicine, and science and technology policy."

As the website http://www.sciencedebate2008.com/ says, this concerned citizens initiative is now cosponsored by the AAAS, the Council on Competitiveness, the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine and has been signed by over 160 leading American universities and other organizations, representing over 125 million Americans. In March the Executive Committee of AWM approved the addition of AWM as a signatory.

In the July–August 2007 issue of this newsletter, we reported on bills in the House of Representatives and the Senate which resulted in the America COMPETES Act. The recommended funding level in that legislation for the NSF in FY 2009 is $7.326 billion. The funding levels in FY 2007 and FY 2008 fell far short of the amounts recommended by the COMPETES Act. At this time it seems likely that the FY 2009 level will again fall short of the goal. As Bob Park says in the February 14 issue of *What's New,* his online newsletter:

> VALENTINES DAY MASSACRE: WHO MURDERED COMPETES? In today's *Science,* Jeff Mervis describes a House Science Committee hearing held on Valentines Day. The purpose was to compare the 2009 budget request with the goals laid out in the America COMPETES Act, passed overwhelmingly by Congress last summer and signed by the President. The 2008 science budget, however, turned out to be a disaster for science. It bears no trace of America COMPETES, and 2009 seems no different. The White House appears to attach little importance to the science authorization process, since it picked Jack Marburger, the invisible science advisor, to make the administration case for science.

2009 EWM Meeting

The 14th general meeting of European Women in Mathematics (EWM) will take place in Novi Sad, Serbia, August 25–28, 2009. You are warmly invited to participate in the conference.

For more than 20 years EWM has organized biennial conferences which are open to members as well as nonmembers of EWM. The most recent, the 13th general meeting, took place in September 2007 at the University of Cambridge, UK, gathering more than 100 women mathematicians from various fields of research.

In August of next year, the 14th general meeting of EWM will be held at the Department of Mathematics and Informatics, Faculty of Sciences, University of Novi Sad.

The 2009 European Mathematical Society lecturer will be Professor Ingrid Daubechies, and she will give some of her EMS lectures at the EWM meeting in Novi Sad. Professor Jelena Kovačević has also agreed to give a plenary lecture at the meeting. The complete list of invited speakers and the scientific program will be planned in collaboration with the Scientific Committee, consisting of twelve internationally leading women mathematicians, which has been recently established jointly by the EMS and EWM.

Located on the Danube River, Novi Sad is the urban center of northern Serbia, its second largest city and the capital of the Autonomous Province of Vojvodina. Novi Sad is a hospitable town; we hope that you will enjoy its open-hearted welcome.

Further information, including the first announcement for the meeting, may be found via links at the web page http://womenandmath.wordpress.com/the-14th-general-meeting-of-ewm/. The organizers would like to hear from possible participants as soon as possible.

Angoss Software Corporation Funds Fields Math Circles

Fields Institute, March 2008

The Fields Institute for Research in Mathematical Science is pleased to announce that Angoss Software Corporation has generously donated $10,000 to support weekly Mathematics Circles for high school students in the Toronto area. The funds will be used to expand the program, maintain strong leadership, and allow more students the opportunity to participate.

Mathematics Circles are held each Saturday at the Fields Institute and are open to high school students from throughout the Toronto area. The program helps to maintain the interest of bright students in mathematics by offering them challenging mathematics problems outside their regular curriculum. The Math Circles allow students the opportunity to improve their skills and prepare for local competitive mathematics contests. Some of the students who have gone through this program have gone on to represent Canada at the International Mathematical Olympiad, the most elite and prestigious of mathematics competitions.

The Fields Math Circles have been organized and run by volunteers Larry Rice and Rad de Peiza for one year and have become increasingly popular with local students. "The students really enjoy being challenged with new mathematics problems and mathematics competitions," says de Peiza. "They improve their skills, increase their confidence and make new friends. These kids show great promise for math-related careers."

About 50 students currently attend the Fields Math Circles each week. The generous grant from Angoss Software Corporation will allow more students from various schools in Toronto to participate in the program. It will also allow some students the opportunity to participate in mathematics competitions outside of the city.

MAA Awards at the JMM

Annalisa Crannell and Lida K. Barrett received prestigious awards from the Mathematical Association of America at the Joint Prize Session at the Joint Mathematics Meetings in San Diego in January. Congratulations! The citations and responses below are reprinted from the prize booklet (see "January 2008 Prizes and Awards" online at www.ams.org/ams/prizebooklet-2008.pdf).

Haimo Award

In 1991, the MAA instituted the Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics in order to honor college or university teachers who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have had influence beyond their own institutions.

Citation for Annalisa Crannell

Annalisa Crannell is well known for her boundless energy and enthusiasm for all things mathematical. While still a graduate student at Brown, she was chosen to design and run the first-ever mathematics segment of Brown's "A Running Start," a summer program for gifted high school students. As a newly minted faculty member at Franklin & Marshall, she immediately began including writing assignments in her mathematics courses. Her goal was to teach students how to read, write, and speak mathematics. She encapsulated her experiences in her first paper on the subject, "How to Grade 300 Math Essays and Survive to Tell the Tale."

Depending on the course, the writing projects she assigns vary. In some courses the students take a recent research paper and describe the main results, the ideas of the proofs, and how the results sit within the larger field. In abstract algebra each student adopts a group at the beginning of the semester and describes the properties and attributes that it has. In certain courses the students write grant proposals.

In 2004 she coauthored the MAA book *Writing Projects for Mathematics Courses: Crushed Clowns, Cars and Coffee to Go.* She has given a variety of talks around the country on this topic to mathematics groups, to high school and middle school teachers, and to Writing-Across-the-Curriculum programs.

Call for Nominations: Alice T. Schafer Mathematics Prize

The Executive Committee of the Association for Women in Mathematics calls for nominations for the Alice T. Schafer Mathematics Prize to be awarded to an undergraduate woman for excellence in mathematics. All members of the mathematical community are invited to submit nominations for the Prize. The nominee may be at any level in her undergraduate career, but must be an undergraduate as of October 1, 2008. She must either be a US citizen or have a school address in the US. The Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in Washington, D.C., January 2009.

The letter of nomination should include, but is not limited to, an evaluation of the nominee on the following criteria: quality of performance in advanced mathematics courses and special programs, demonstration of real interest in mathematics, ability for independent work in mathematics, and performance in mathematical competitions at the local or national level, if any.

With letter of nomination, please include a copy of transcripts and indicate undergraduate level. Any additional supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, recommendation letters from professors, colleagues, etc.) should be enclosed with the nomination. Send five complete copies of nominations for this award to: The Alice T. Schafer Award Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. Nominations must be received by **October 1, 2008**. If you have questions, phone 703-934-0163, e-mail awm@awm-math.org, or visit www.awm-math.org. Nominations via e-mail or fax will not be accepted.

Dr. Crannell also has actively pursued the connections between mathematics and art, having given talks on the subject at a variety of levels, including to high school students, at MAA meetings, and at NASA's "Take Your Daughter to Work Day." She and her colleague Marc Frantz have received over $300,000 in grants to develop materials and support workshops at Franklin & Marshall. More than 120 math and art instructors have attended since 2000.

Their book *Viewpoints: Mathematical Perspective and Fractal Geometry in Art* will be published by Princeton University Press in the near future.

At Franklin & Marshall she has supervised fifteen independent research projects, five of which have resulted in publications. Two students have won EPADEL Section student paper awards. She continues to search for innovative ways to excite those around her about mathematics, making her eminently deserving of the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics.

Biographical Information

Annalisa Crannell earned a B.A. magna cum laude with honors in mathematics from Bryn Mawr College and a Ph.D. under Walter Craig from Brown University. Because she graduated during the turbulent job market of the early 1990s, she developed a deep appreciation for the power of volunteer groups (like the Young Mathematician's Network). She remains active in governance in both the MAA and the AMS. Since graduating, she has professed mathematics at Franklin & Marshall College, where she pursues research in topological dynamical systems, focusing particularly on classes of functions that are mildly discontinuous. She claims this works well with her family life, which includes a small conglomeration of children of the natural, step, and adopted variety.

Response from Annalisa Crannell

I've spent my last fifteen years at an institution that long ago traded in its "and" for an ampersand. As a frugal professor who hates to see a good conjunction go to waste, I've recycled the "and" and put it to good use in my own life, bringing together math and art, math and writing, not to mention research and teaching and service, as well as friends and family. I am very grateful to Franklin & Marshall College for supporting me in all my "and-eavors." And I am especially flattered to be honored with an award named for the Haimos: Deborah and Franklin.

Gung and Hu Award

The Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics, first presented in 1990, is the endowed successor to the MAA's Award for Distinguished Service to Mathematics, first presented in 1962. This award is intended to be the most prestigious award for service offered by the Association. It honors distinguished contributions to mathematics and mathematical education, in one particular aspect or many, and in a short period or over a career.

Citation for Lida K. Barrett

Lida K. Barrett's solid mathematical background and her ability to get at the heart of problems and to find bold solutions led her into positions in mathematical policy: as a senior administrator at several universities, as president of the Mathematical Association of America, as senior staff associate at the National Science Foundation, and as professor of mathematics at the U.S. Military Academy at West Point. To this day, she continues to serve on many committees and boards and to contribute to mathematics, to mathematics education, and to increasing the participation of members of underrepresented groups in mathematics.

Her first administrative role was in 1973 as head of the mathematics department at the University of Tennessee at Knoxville, the first female department head in the College of Arts and Sciences and one of the first women to head a doctoral mathematics program. (It was not until 1970, after her husband's death, that she was able to hold a tenured position, becoming only the third female full professor in the college.)

As associate provost at Northern Illinois University (NIU), Dr. Barrett formed a blue ribbon committee to review the entire undergraduate experience. She next served as dean of Arts and Sciences at Mississippi State University. In these

positions, she remained an active supporter of the MAA Illinois and Louisiana-Mississippi Sections, respectively.

Lida Barrett served on the MAA's Audit and Budget Committee from 1984 until 1989, when she became president-elect of the Association. She advocated keeping the MAA headquarters at its current location and supporting its historical preservation. As the second female president of the MAA, Barrett sought to increase minority membership and involvement in the MAA and within the mathematics community. She helped initiate and/or enhance MAA programs and committees highlighting minority interests. She supported national awareness initiatives such as Mathematics Awareness Week (later Mathematics Awareness Month) and strengthened the relationship between the MAA and the AMS that remains to this day.

Throughout her life Professor Barrett has championed the causes of the teaching and learning of exemplary mathematics in the schools and colleges of our nation and of increasing the representation of underrepresented groups in mathematics. In 1988–1989 she served as a member of the Committee on the Mathematical Sciences in the Year 2000 (a committee of the National Academy of Sciences) and in 1989–1992 as a member of the Mathematical Science Education Board. Through her work at the National Science Foundation as senior staff associate for precollege education for the Directorate of Education and Human Resources (EHR), she helped develop and sharpen EHR's investments in K–12 science and mathematics education. She contributed to a ramped-up K–12 effort at the NSF and was instrumental in developing the K–12 subgroup report that became part of the federal government's first five-year plan (1994–1998) as laid out in the Federal Coordinating Council for Science, Engineering, and Technology (FCCSET) report. At the NSF she organized three major national invitational conferences on science and technology education, which provided important tools for moving the NSF to the forefront of national education initiatives in areas of mathematics, science, engineering, and technology.

Dr. Barrett later went on to the U.S. Military Academy at West Point, where she taught undergraduate mathematics and was involved in the professional development of the Academy's instructors.

Lida Barrett received her bachelor's degree from Rice University at the age of eighteen, but her interest in mathematics began much sooner as a member of her junior high school mathematics team in Texas. Perhaps her concern for the plight of women and minority students in mathematics dates back to her college days. When she arrived as a graduate student in mathematics at the University of Texas, she and Mary Ellen Rudin were the only female graduate students. She met and married a fellow graduate student, John H. Barrett, and followed him to the University of Pennsylvania. Although her mathematical development was influenced by R. L. Moore, she finished her Ph.D. under John Kline at the University of Pennsylvania. She suffered from the effects of the "anti-nepotism" rules that plagued many women for many decades until they were slowly abandoned during the 1970s and 1980s. But she persevered, saying, "You take the hand that's dealt you; you look at the challenges that are there, and you meet them, head on." Her husband died at an early age, leaving her with a family of three children to raise while she pursued a rigorous career in mathematics. All of these experiences made her an exemplary mentor and role model for many young women in mathematics.

It is a pleasure to present her with the 2008 Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics.

Biographical Information

Lida K. Barrett holds a B.A., Rice University (1946); an M.A., University of Texas (1949); and a Ph.D., University of Pennsylvania (1954). In 1950 she married John H. Barrett, a fellow graduate student at Texas. He died in 1969. She has three children, four grandchildren, and one great-grandchild.

Professor Barrett was a faculty member/administrator at the University of Utah, the University of Tennessee (head, 1973–1980), Northern Illinois University (associate provost), and Mississippi State University (dean of Arts and Sciences). After retiring from MSU, she was a senior administrator in the Education and Human Resources Directorate of the NSF and then returned to teaching at West Point. She has published in general topology, applied mathematics (while consulting at Oak Ridge), and mathematics education.

Response from Lida K. Barrett

I am honored to have received this prize. The Mathematical Association of America has been an important part of my life. The many activities offered have contributed significantly to my career: the hour addresses that kept me aware of the vast scope of mathematics, the panel discussions and other presentations on current professional topics, and the opportunities to meet and discuss mathematics and educational activities with my fellow mathematicians. Working on committees and projects within MAA and within the broader mathematical community has enriched my professional life. Friendships with the many fine folks in MAA have provided a special plus. I am especially grateful to Professor Harlan Miller, who pushed me to work on a Ph.D. at Texas, and to my late husband, John Barrett, who, after he completed his degree, insisted I finish mine and kept house for us while I did.

AAUP Report on Faculty Salaries

AAUP, April 2008

After a short-lived recovery in 2006–07, faculty salaries are lagging behind inflation again this year. Yet the salaries paid to head football coaches, presidents, and other top administrators do not seem to reflect an economic downturn. Over the past three decades, the ranks of contingent faculty, nonfaculty professionals, and administrators have swelled while the number of tenured and tenure-track faculty stagnated. These are the central findings of *Where Are the Priorities? The Annual Report on the Economic Status of the Profession, 2007–08,* released by the American Association of University Professors (AAUP) in April. The AAUP's annual report has been an authoritative source of data on faculty salaries and compensation for decades.

Here are some of the highlights:

- Overall average salaries for full-time faculty rose 3.8 percent this year, the same as the increase reported last year. But with inflation at 4.1 percent for the year, the purchasing power of faculty salaries has declined for the third time in four years.
- Long-term salary trends also indicate a widening differential between the average salaries of faculty members at private colleges and universities and the average salaries of their colleagues at public institutions. When public institutions struggle to attract (and keep) the best faculty, our nation faces the risk of creating separate but unequal systems of higher education.
- The salaries paid to head football coaches at Division I-A universities are ten times as high as the salaries of senior professors. What does this say about the priorities of these universities?
- The gap between faculty salaries and salaries paid to administrators continues to grow. What does that tell us about institutional priorities? This year's report builds on previous discussions of presidents' salaries by including data for other top administrators.
- Over three decades, employment patterns in colleges and universities have been radically transformed. While the number of tenured and tenure-track faculty has grown 17 percent, the ranks of contingent faculty (both part and full time) and full-time nonfaculty professionals have each tripled, and the count of administrators has doubled.

The primary author of this year's report is Saranna Thornton, Elliott Professor of Economics at Hampden-Sydney College in Virginia and chair of the AAUP's Committee on the Economic Status of the Profession.

Opportunities

NSF-CBMS Regional Research Conferences

The National Science Foundation has announced support for nine NSF-CBMS Regional Research Conferences to be held during 2008. These nine bring to 317 the total number of such conferences since the NSF-CBMS Regional Research Conference Series began in 1969.

These conferences are intended to stimulate interest and activity in mathematical research. Each five day conference features a distinguished lecturer who delivers ten lectures on a topic of important current research in one sharply focused area of the mathematical sciences. The lecturer subsequently prepares an expository monograph based upon these lectures, which is normally published as a part of a regional conference series. Depending upon the conference topic, the monograph is published by the American Mathematical Society, the Society for Industrial and Applied Mathematics, or jointly by the American Statistical Association and the Institute of Mathematical Statistics.

Support for about 30 participants is provided and the conference organizer invites both established researchers and interested newcomers, including postdoctoral fellows and graduate students, to attend.

The nine conferences to be held in 2008 are: Imaging in Random Media, May 12–16, Rice University; Water Waves—Theory and Experiment, May 13–18, Howard University; Inverse Scattering for Radar Imaging, May 27–31, University of Texas at Arlington; Convex Duality Method in Mathematical Finance, June 22–27, University of California, Santa Barbara; Ergodic Ramsey Theory: A Dynamical Approach to Static Theorems, June 22–28, Eastern Illinois University; Knots and Topological Quantum Computing, July 9–13, University of Central Oklahoma; Malliavin Calculus and its Applications, August 7–12, Kent State University; Tropical Geometry and Mirror Symmetry, December 13–17, Kansas State University; and Topology, C*-Algebras, and String Duality, May 17–22, 2009 (date change), Texas Christian University.

Further information on the conferences is available at http://www.cbmsweb.org/NSF/2008_conf.htm.

Joint International Meeting of AMS and SMB

The first joint meeting of the American Mathematical Society (AMS) and the Sociedad Brasileira de Matematica (SMB) will be held at the Instituto Nacional de Matematica Pura e Aplicada (IMPA) in Rio de Janeiro, Brazil, June 4–7, 2008. The meeting, organized by representatives of both societies, will include plenary speakers from each society.

The plenary speakers are Ruy Exel (Universidade Federal de Santa Catarina), "Noncommutative dynamics"; Velimir Jurdjevic (University of Toronto), "Integrable Hamiltonian systems on symmetric spaces"; Andre Nachbin (IMPA), "Wave dynamics: Asymptotics with differential operators and solutions"; Richard M. Schoen (Stanford University), "Riemannian manifolds of positive curvature"; Ivan P. Shestakov (University of Sao Paulo), "Automorphisms of free algebras"; and Amie Wilkinson (Northwestern University), "Partially hyperbolic dynamics." There are fifteen Special Sessions confirmed to date.

For up-to-date information on the program, timetable, and accommodations, see http://www.ams.org/amsmtgs/2142_program.html. The website hosted by IMPA at http://w3.impa.br/~amssbm/home.html lists the organizing committee and has registration and travel information.

Since the AMS's first joint international meeting with the London Mathematical Society in 1992, the AMS has co-sponsored 22 meetings with sister societies in their host countries (and another 2008 meeting will be held in Shanghai, People's Republic of China, December 17–21). International meetings are a valuable component of the Society's programs that foster contacts and collaborations, and mathematicians at all levels are invited to participate.

Access and Developmental Education

The National Center for Developmental Education (NCDE) is sponsoring the 4th International Conference on Research in Access and Developmental Education on September 24–27, 2008 at the Condado Plaza Hotel in San Juan, Puerto Rico. Details about the conference and the NCDE as well as online submission forms for Call for Proposals are accessible at www.ncde.appstate.edu. We hope you and your colleagues will join us!

Woodrow Wilson Indiana Teaching Fellowships

This fall the Woodrow Wilson National Fellowship Foundation, known since 1945 for highly competitive fellowships, will offer a new fellowship opportunity for recent college graduates, as well as individuals—from midlife professionals to retirees—who might wish to change careers. This new award, the Woodrow Wilson Indiana Teaching Fellowship, seeks to attract talented, committed college graduates and professionals with significant work experience in math- and science-related fields into teaching in high-need high schools. Funded through a $10 million grant from the Lilly Endowment, the Fellowship offers rigorous preparation, extensive clinical experience, and ongoing mentoring.

The Woodrow Wilson Indiana Teaching Fellowship will provide Fellows in science, technology, engineering, and math (STEM) fields with a $30,000 stipend during a master's degree program at one of four Indiana universities. The master's program will prepare Fellows in urban and rural high schools that serve primarily disadvantaged students. In exchange, Fellows will commit to teach math or science for three years in an Indiana secondary school. Upon completing the master's degree and teaching certification, Fellows will be placed in teaching jobs in participating districts, where they will receive continued support and mentoring. More details about the program are available at www.woodrow.org/indiana.

The Fellowship application will be available online this summer, with a submission deadline of **December 1, 2008**.

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For further information or to join at these levels, see www.awm-math.org.

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