

ASSOCIATION FOR
WOMEN IN MATHEMATICS

Newsletter

VOLUME 42, NO. 3 • MAY-JUNE 2012

The purpose of the Association for Women in Mathematics is

- to encourage women and girls to study and to have active careers in the mathematical sciences, and
- to promote equal opportunity and the equal treatment of women and girls in the mathematical sciences.

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PRESIDENT'S REPORT

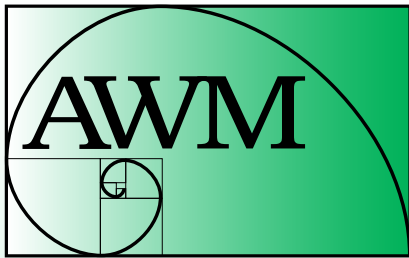
On March 8, I went to Cornell University to attend the Ruth I. Michler Memorial Prize Lecture and reception. Anna Mazzucato, Penn State University, was the 2011–2012 winner. Anna's research is in the analysis and application of partial differential equations. Her lecture highlighted her recent work in fluid mechanics, elasticity and inverse problems. This prize, endowed by the family of Ruth Michler, enables a recently tenured woman to spend a semester on research leave at the Cornell University Mathematics Department. Laurent Saloff-Coste, Chair of Mathematics, hosted a reception and dinner for Anna where I also had the pleasure of meeting some of the student leaders of Cornell's AWM Student Chapter. Congratulations to Ling Long, Iowa State University, the 2012–2013 winner of the Ruth Michler Memorial Prize.

Some women in the news. Barbara Keyfitz, Dr. Charles Saltzer Professor of Mathematics at the Ohio State University, has been chosen to give the annual AWM-SIAM Sonia Kovalevsky Lecture. Karen King, Associate Professor of Mathematics Education at New York University, will give the AWM-MAA Falconer Lecture at MathFest in August. Congratulations to 2012 Alfred P. Sloan Foundation Fellows in Mathematics: Margaret Beck of Boston University, Vera Mikyoung Hur of University of Illinois at Urbana-Champaign and Rachel Ward of University of Texas, Austin. Congratulations also to Irene Fonseca, Mennon College of Science Professor of Mathematics at Carnegie Mellon University, who was elected last fall as president of SIAM. Currently President-Elect, she will serve as President in 2013–2014 and as Past President in 2015.

New committees. AWM has restructured its Portfolios and their associated committees. These five committees are staffed by both (elected) Executive Committee members and by volunteers. AWM is pleased to welcome new volunteers Kathryn Leonard of California State University Channel Islands, Marta Lewicka of University of Minnesota, Elebeoba (Chi-Chi) May of Sandia Laboratories, Omayra Ortega of Arizona State University, Laura Potter of Syngenta Biotechnology, Heather Russell of University of Southern California, and Christina Sormani of CUNY Graduate College and Lehman College. Joining the AWM Committee on Committees are Minerva Cordero-Epperson of University of Texas, Arlington and Estelle Basor of American Institute of Mathematics. As always, AWM depends on, and is very grateful to, its many volunteers. If you'd like to get involved, or see who is volunteering, see the committee list in the "About AWM" section of the web site.

AWM is busy with plans for activities at the upcoming annual professional

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**ASSOCIATION FOR
WOMEN IN MATHEMATICS**

AWM was founded in 1971 at the Joint Meetings in Atlantic City.

The *Newsletter* is published bi-monthly. Articles, letters to the editor, and announcements are welcome.

Opinions expressed in *AWM Newsletter* articles are those of the authors and do not necessarily reflect opinions of the editors or policies of the Association for Women in Mathematics. Authors sign consent to publish forms.

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President's Report *continued from page 1*

meetings. Cammey Cole Manning, AWM Workshop Director, has finalized the mini-symposia and poster details for the 2012 SIAM Annual Meeting in Minneapolis. Maura Mast, University of Massachusetts, Boston; Jacqueline Jensen, Slippery Rock University; and AWM Executive Director Magnhild Lien, California State University, Northridge, are working together on the panel at MathFest that meets in August in Madison, Wisconsin. Planning is already well underway for 2013 JMM where AWM launches a new workshop format in which the research area is focused and the research theme changes from year to year. The AWM Workshop in San Diego will focus on algebra and number theory. Kristin Lauter, Microsoft Research, and Bianca Viray, Brown University are organizers. The 2012 and 2013 JMM Workshops are funded by a grant from the National Security Agency.

The Policy and Advocacy (P&A) Committee has been very active on a variety of policy issues. You will find some carefully researched statements on the recently updated AWM P&A web page.

AWM is also busy with its many programs. Here are some snapshots and highlights of recent activity. The Travel Grant and Mentoring Travel Grant programs for women have new funding from the National Science Foundation. Selection committees have finished the February round of review of applications—there are three each year for the Travel Grants and one for the Mentoring Travel Grants. The Essay Contest received about 120 biographical essays in all three categories: middle school, high school and undergraduate. Winning entries are announced on our web pages and in the summer newsletter. As of this writing, volunteers are working with Irina Mitrea, Temple University, to prepare for the USA Science and Engineering Festival on April 28 and 29 in Washington, D.C. Irina has also been a key person handling AWM's Sonia Kovalevsky High School and Middle School Mathematics Days program, which is presently funded by the National Science Foundation. The Mentor Network 2012 report is available on the web site. This mentor-mentee matchmaking enterprise is sponsored by many of the North American mathematics institutes. The Teacher Partnership is presently managed by a team of three active volunteers who created its present model: Pao-sheng Hsu, Suzanne Lenhart, and Erica Voolich. (AWM is seeking a new team to carry on the mission of this program and we invite your inquiry.) Last year, the online application process for Student Chapters was simplified (by popular request!) and I'm happy to report that the number of Student Chapters is growing. In fact, one of my goals for this coming year is to enhance AWM's relationship with its vital group of Student Chapters.

Jill Pipher
Providence, RI
March 26, 2012



Jill Pipher

Keyfitz Named AWM-SIAM Kovalevsky Lecturer

The Association for Women in Mathematics and the Society for Industrial and Applied Mathematics have selected **Barbara Keyfitz** to deliver the prestigious Sonia Kovalevsky Lecture at the 2012 SIAM Annual Meeting. Keyfitz is the Dr. Charles Saltzer Professor of Mathematics at the Ohio State University. She was selected as the Kovalevsky Lecturer in recognition of her pioneering and seminal contributions to the field of hyperbolic conservation laws. In collaboration with Herbert Kranzer, she introduced the novel and important notion of singular (also called delta) shocks and made the original study of their properties. Furthermore, her research group spearheaded the revival of the rigorous treatment of transonic gas flow, now a very active research area.

Keyfitz received her B.S. in Mathematics from the University of Toronto and her M.S. and Ph.D. from New York University. Her dissertation was directed by Peter Lax. Keyfitz has held positions at Columbia, Princeton, Arizona State, and the University of Houston and visiting positions at Berkeley, Brown, Duke, the Fields Institute, and the Institute for Mathematics and its Applications. From July 2004 to December 2008 she was the Director of the Fields Institute in Canada.

A Fellow of the American Association for the Advancement of Science and of the Society for Industrial and Applied Mathematics, Keyfitz has given numerous invited talks on the subject of conservation laws. She gave the Presidential Address at the 33rd Annual Meeting of the Statistical Society of Canada in 2005. In 2006 she was a joint plenary speaker at the SIAM Analysis of PDE Conference and the SIAM Annual Meeting. She was an invited speaker at ICIAM 2007. In 2009, she gave a plenary lecture at the 14th General Meeting of European Women in Mathematics. In 2005, she received the Krieger Nelson Prize from the Canadian Mathematical Society, and in 2012 she delivered the AWM Noether Lecture at the Joint Mathematics Meetings in Boston.

Keyfitz has served as President of the Association for Women in Mathematics, Vice President of the Society for Industrial and Applied Mathematics and is currently President of the International Council for Industrial and Applied Mathematics (ICIAM) and Vice President of the American Mathematical Society (AMS).

The 2012 SIAM Annual Meeting will be held July 9–13 in Minneapolis, MN. The Kovalevsky Lecture honors Sonia Kovalevsky (1850–1891), the most widely known Russian mathematician of the late 19th century. In 1874, Kovalevsky received her Doctor of Philosophy degree from the University of Göttingen and was appointed lecturer at the University of Stockholm in 1883. She did her most important work in the theory of differential equations. Past Kovalevsky lecturers are Susanne Brenner, Suzanne Lenhart, Andrea Bertozzi, Dianne O’Leary, Lai-Sang Young, Irene Fonseca, Ingrid Daubechies, Joyce McLaughlin and Linda Petzold.



Barbara Keyfitz

Membership Dues

Membership runs from Oct. 1 to Sept. 30

Individual: \$65 Family: \$30

Contributing: \$150

New member, affiliate and reciprocal members, retired, part-time: \$30

Student, unemployed: \$20

Outreach: \$10

Foreign memberships: \$10 add’l. for postage
Dues in excess of \$85 and all contributions are deductible from federal taxable income when itemizing.

Institutional Membership Levels

Category 1: \$325

Category 2: \$325

Category 3: \$200

Category 4: \$175

See www.awm-math.org for details on free ads, free student memberships, and ad discounts.

Sponsorship Levels

α Circle: \$5000+

β Circle: \$2500–\$4999

Other levels available.

See the AWM website for details.

Subscriptions and Back Orders—All 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 \$65/year (\$75 foreign). Back orders are \$10/issue plus S&H (\$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 Ads—AWM will accept ads 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 \$116 for a basic four-line ad. Additional lines are \$14 each. See the AWM website for *Newsletter* display ad rates.

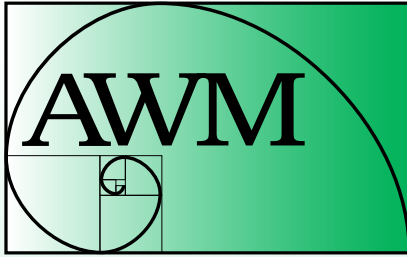
Newsletter Deadlines

Editorial: 24th of January, March, May, July, September, November

Ads: Feb. 1 for March–April, April 1 for May–June, June 1 for July–Aug., Aug. 1 for Sept.–Oct., Oct. 1 for Nov.–Dec., Dec. 1 for Jan.–Feb.

Addresses

Send all queries and all *Newsletter* material except ads and material for media and book review columns to Anne Leggett, leggett@member.ams.org. Send all book review material to Marge Bayer, bayer@math.ku.edu. Send all media column material to Sarah Greenwald, greenwaldsj@appstate.edu and Alice Silverberg, asilverb@math.uci.edu. Send everything else, including ads and address changes, to AWM, fax: 703-359-7562, e-mail: awm@awm-math.org.



ASSOCIATION FOR
WOMEN IN MATHEMATICS

AWM ONLINE

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

Website: <http://www.awm-math.org>

AWM DEADLINES

NSF-AWM Travel Grants:
May 1 and October 1, 2012

AWM Workshop at JMM:
Check website

AWM Alice T. Schafer Prize:
October 1, 2012

AWM Noether Lecture:
October 15, 2012

AWM-SIAM Kovalevsky Lecture:
November 1, 2012

Ruth I. Micheler Memorial Prize:
November 1, 2012

AWM Workshop at SIAM:
November 1, 2012

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LETTER TO THE EDITOR

We write in response to Cathy Kessel's article "The Pipeline and the Trough" (*AWM Newsletter*, March–April 2012, pp. 19–20).

First, we thank Kessel for reminding us that having a clear understanding of definitions is key to understanding what data is telling us. By clarifying the definitions, breaking out the data for "tenure-eligible" faculty, and comparing that data to the available pool of new Ph.D.'s in math, Kessel helps us see the progress that is being made in the hiring of women mathematicians into academe. This is something that we should be knowledgeable about, acknowledge and laud. In addition, Kessel's example of Huge Hypothetical University (HHU) is a great illustration of why progress is so slow to be reflected in data that combines both tenured and tenure-eligible faculty.

Still, for us, concerns remain and more questions arise. Among these are the following:

1. Because progress is difficult to detect in the data as typically reported, we all need to be even more vigilant in monitoring hiring practices, hiring results, and retention and promotion rates in our own departments and nationally. If our hiring practices yielded "proportional results," the HHU illustration seems to say the percentages of women might have advanced slightly farther than they have during the last decade and a half. Furthermore, given that the 1995–2009 data covers a period during which many institutions were attending to diversity, we might have hoped for more than "average" improvement.
2. We should also be tracking the success rates of women achieving tenure in comparison to men's at comparable institutions. Success in achieving tenure is key to improving the gender ratio in the tenured faculty category. As the 2009 AMS data reported in Kessel's article tells us, currently only about one in ten tenured faculty at Ph.D.-granting institutions is a woman. That leaves a lot of room for improvement.
3. Lumping data together for the four types of Ph.D. granting institutions may be hiding some very persistent gaps in hiring. Hiring, retention and tenure achievement data at the top tier institutions may be very different from the averages that are reported.

To sum up, while we celebrate the improvements Kessel's article brought to our attention and note her call to be careful when interpreting the data in the form it is often presented to us, we urge continued watchfulness on the part of individuals and the AWM with regards to hiring practices and improvement in tenure profiles.

Sincerely,

Jackie Dewar
Professor of Mathematics
Loyola Marymount University

Patricia Hale
Professor of Mathematics
California State Polytechnic University, Pomona

The AWM Newsletter Archives

Sarah J. Greenwald, Associate Editor

While AWM was celebrating its 40th anniversary, I was getting to know the early years of the organization courtesy of the *Newsletter* archives. Past President Jean Taylor graciously donated the funds that enabled AWM to make full issues of the *Newsletter* archive (1971–2010) public as PDF files on DriveHQ, accessible from the AWM website <http://awm-math.org/>. Recent issues are available to members online as password protected PDF files on the AWM *Newsletter* pages there. One of my responsibilities as Associate Editor is to work on a table of contents for the *Newsletter*, and thanks to Michelle Melton, Lead CMS Migration Specialist at Appalachian State University, Anne Leggett and I have created a searchable database site that will eventually contain titles, authors and other data for all back issues: <http://awmtoc.mathsci.appstate.edu/>. A few articles are listed with keywords and abstracts; we welcome keyword or abstract suggestions for others.

In the very first issue, in discussing the challenges of being called upon to name great women mathematicians, AWM chairman Mary Gray says: “a better response is to list a number of present and past women mathematicians who have made significant contributions.... Young women in mathematics need to be encouraged to think of themselves as potential Fields medal winners” [2]. I find those words still very relevant today, and where else but in the AWM *Newsletter* archives can we find so many tributes to women mathematicians, whether as winners of mathematics prizes, in articles titled “In Memoriam,” or in the very way the archives make it clear that so many individuals worked to make things better for the rest of us.

While working on the table of contents, I also became interested in the history of the *Newsletter* itself. Mary edited the *Newsletter* from its beginnings in May 1971, the same year that AWM was founded. As Lenore Blum noted [1]:

The *Newsletter* has since become the very embodiment of the AWM. From the start, it was our forum for discussing the role of women in mathematics, for exposing discrimination, for exchanging strategies, encouraging political action and affirmative action, for informing, supporting, honoring, and of course, for job listings (which first appeared in the February 1972 issue). It has been our key linkage with each other, with credit due largely to Mary and subsequent editors, Judy Roitman and Anne Leggett.

However, a small mystery arose, which is that Mary’s final issue was January 1975 while Judith Roitman began as editor with the July–August issue. That left three issues between when Mary edited her final issue and when Judy took over as the elected editor. With a bit of detective work in the archives and a lot of help from Mary, Judy and Anne, we have decided to designate Alice T. Schafer as the primary editor from March to May–June 1975. I had found a clue to the identity of the editor of those issues in the archives. Alice had written: “Since the Boston Area AWM members are publishing the *Newsletter* this spring, please send all news articles, letters, etc. to me at the above address” [5]. In trying to figure out whom to acknowledge, Judy noted: “Having known Alice, I suspect listing it as Alice T. Schafer would have a pretty good chance of being correct” [4]. Anne was appointed as editor after Judy and she has edited the newsletter since 1977. Anne has shared many interesting tidbits with me and it is a privilege to continue to work with her.

In addition to the newsletter editors there are so many others who have helped with the newsletter, such as

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	FIRST ISSUE EDITED	FINAL ISSUE EDITED
Mary Gray	May 1971 (Volume 1, No. 1)	January 1975 (Volume 5, No. 1)
Alice T. Schafer	March 1975 (Volume 5, No. 2)	May–June 1975 (Volume 5, No. 4)
Judith Roitman	July–August 1975 (Volume 5, No. 5)	July–August–September 1977 (Volume 7, No. 4)
Anne Leggett	September–October 1977 (Volume 7, No. 5)	Present Editor

Margaret Munroe, who first worked with Alice and Judy at Wellesley and later became AWM's part-time administrative assistant from 1978–1987. Mary credits her with “keeping the newsletter going” [3]. There have also been numerous typists over the years, Jeanne LaDuke was Associate Editor for a time starting in 1982, Cindy Dyer of Dyer Design has worked on the *Newsletter* in recent years, a Newsletter Team was created in 2009, and many more individuals submitted articles or edited columns.

I chuckled when I discovered that the last typed issue of the newsletter was March–April 1984, because the digital age of the newsletter coincided with the titular year of George Orwell's *Nineteen Eighty-Four*. After all, it is complete surveillance that Orwell warned against and now, with the digitization of the rest of the archives, we have opened up AWM to everyone. However, in this context, I welcome the free access of historical issues—the volumes provide fascinating insight into the organization and a wealth of information about women in mathematics in general over the last 40 plus years—and I believe that this access will effect even more positive change. Recently during office hours a sophomore student asked what I was working on. I showed her an archival issue and she skimmed through it. She saw something that piqued her interest—I don't know what—that she said was just the way she had been feeling. As a result we now have a new fan of AWM—she joined the organization.

I highly recommend that you check out the archives yourself.

Acknowledgements

- [1] Blum, Lenore. “A Brief History of the Association for Women in Mathematics: The Presidents' Perspectives.” *AMS Notices*, Volume 38, No. 7, September 1991, pp. 738–774. Available: <http://www.awm-math.org/articles/notices/199107/blum/>
- [2] Gray, Mary. “Defensive action.” *Association of Women Mathematicians Newsletter*. Volume 1, No. 1, May 1971. Available: <http://www.drivehq.com/file/df.aspx?isGallary=true&shareID=8755087&fileID=748706365>
- [3] Gray, Mary. Personal correspondence. 2012.
- [4] Roitman, Judy. Personal correspondence. 2012.
- [5] Schafer, Alice T. “Report from the President.” *Association for Women in Mathematics Newsletter*. Volume 5, No. 3, April 1975. Available: <http://www.drivehq.com/file/df.aspx?isGallary=true&shareID=8755087&fileID=748711877>

Thanks to Ann Bies and Anne Leggett for their help with this article.

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, 2012. 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 San Diego, January 2013.

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, recommendation letters from professors, colleagues, etc.) should be enclosed with the nomination. All nomination materials to be submitted as ONE PDF file via Mathprograms with a copy of transcripts included at the end of the file. The submission link will be available 45 days prior to the deadline. Nominations must be received by **October 1, 2012**. If you have questions, phone 703-934-0163, email awm@awm-math.org, or visit www.awm-math.org.

BOOK REVIEW

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

Personal reflections on Margaret W. Rossiter's *Women Scientists in America*, vols. 1-3

Else Hoyrup, Danish mathematician and historian of science, elsehoyrup@mail.dk

The data for Margaret W. Rossiter's trilogy

Vol. 1: *Women Scientists in America: Struggles and Strategies to 1940*. The Johns Hopkins University Press, 1982 (hbk), 1984 (pbk). 439 pp.

Vol. 2: *Women Scientists in America: Before Affirmative Action 1940–1972*. The Johns Hopkins University Press, 1995 (hbk), 1998 (pbk). 584 pp.

Vol. 3: *Women Scientists in America: Forging a New World since 1972*. The Johns Hopkins University Press, March 2012. 464 pp.

Introduction

Let me start this personal essay on Margaret W. Rossiter's monumental work, *Women Scientists in America*, with two questions:

1. Women in science: Why so few?
2. Are women human beings?

The first question, formulated in written form by Alice S. Rossi in 1965, is the standard question, reiterated over and over through the years. It was also a starting point for historian of science Margaret W. Rossiter when she in 1972 became interested in the topic *history of women in science*. But she soon realized (as had Alice Rossi also assumed) that it is the wrong question.

What Margaret Rossiter found out, is that there have been lots of women scientists in history—also in America. There was even a female botanist, Jane Calden, already in the 18th century. And the scientific education of women in America started about 1820.

MR soon realized that she had a hell of a job on her hands. She used the next 40 years doing an enormous amount of detective work in archives and libraries (and for

the forthcoming volume 3 also oral histories) throughout America. And the more she searched, the more she found. She collected vast amounts of statistical and biographical material and began summing up the details. She also tried to find some patterns in the vast material, in order that her results might interest other historians of science—and women scientists themselves.

The scope of the books is enormous. They cover all sciences, including mathematics, and they cover all American universities and all American states. Therefore there is not very much biographical data on the specific women scientists, neither is there much information on their specific accomplishments. MR wants to tell the story of all women scientists in America, not only the history of the most lucky and famous ones. Neither are there many new details about the history of the sciences in general. But that is also because the scope of the books is so vast.

We should not judge the trilogy for what it is not, we should judge it on its own accomplishments. What kind of books are they then? They are a collective history of women scientists, seen from a sociological viewpoint. Other books on the topic women in science may have other focuses: For instance biographies of one woman, for example Sonya Kovalevskaya (one of my favourites), or a mixture of several biographies and some general analysis of the historical conditions, including for example the work of the German historian of mathematics, Renate Tobies, whose book I have reviewed: *“Aller Männerkultur zum Trotz”: Frauen in Mathematik, Naturwissenschaften und Technik* (2008).

Some questions, inspired by the books

As a mathematician and historian of science myself, after reading MR's three volumes I began to ask the following questions:

Why did women not know that we had a long history? Why did women mathematicians, physicists etc. not know that we were not the firsts, that there had been lots of women before us? Not only as teachers, but also as scientists? Why had women been denied a history of our own? Who is it, who has told the history of the world as a history without women? ... Certainly you could ask a lot of questions!

What are Margaret Rossiter's answers to my questions?

MR does not give direct answers to the above mentioned questions, because her work is of another kind: **She gives the foundation, on the basis of which it is possible for other scholars to ask and answer such questions.** Nor does she discuss in her books, what feminism is and other theoretical questions. Her style of work is very meticulous and scholarly, as she digs up all the names and all the facts, and she is a very knowledgeable historian and a skilled and sophisticated

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statistician. Her last mentioned quality is of course of special value to us mathematicians.

If you want to be able to ask and answer your own questions on the topic *women scientists, in the past and present*, I cannot here give more than just my personal hints and my recommendation: Read the books yourselves. But take your time—this is very dense stuff.

Obstructions

As to the second question at the beginning of this personal essay: *Are women human beings?*—this question was my starting point in my book on women and mathematics etc., when I wrote it in 1972–73. It was published in Danish in 1974, and excerpts from it were translated into English and came out as a serial in six parts in the *AWM Newsletter*, from the August 1974 issue to the July-August 1975 issue.

Now I have just read MR's first article on the topic *women scientists* from 1974. And here I find the following title of an article: "Before Women Were Human Beings ...", written by the American physiologist Ida H. Hyde—in 1938!

MR unearths so many very severe obstructions to women scientists (in the US) that it is a marvel that so many of these women persisted at all. But it is an ironical fate for these women that most of them were forgotten by

history, until MR found them. When you ask non-specialists to name some women scientists, most people cannot even come up with more than Marie Curie, and she was not an American.

Why were the obstacles so severe that many of the pioneering female graduate students were prevented from studying at many universities in the first place, and thereafter, when some of them gained entrance, the male scientists and students at many universities refused to even speak with them at all? How many male graduate students would have thrived in this totally hostile environment? Some of them maybe—like Newton—but not all men. And Newton got his full share of recognition in the end after all. This has not been the case for most women scientists, as MR documents. The personal hostility towards many of the pioneering female graduate students in America, even after 1900, is the point that has amazed and disgusted me most, while reading MR's books. We are supposed to think of America as a free and fair country, and science as free and fair too. But Margaret Rossiter tells us another story.

What we can learn from MR's trilogy is that life has been, and still is, more complicated for women scientists than for men with comparable talents.

Maybe women are now free to choose education, but this has won only the first part of the battle for women scientists: We still need good scientific jobs and respect and recognition. And we need respect and recognition also as women and human beings, including in the family.

CALL FOR NOMINATIONS

The 2014 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 Rothschild, Dusa McDuff, Krystyna Kuperberg, Margaret Wright, Sun-Yung Alice Chang, Lenore Blum, Jean Taylor, Svetlana Katok, Lai-Sang Young, Ingrid Daubechies, Karen Vogtmann, Audrey Terras, Fan Chung Graham, Carolyn Gordon, Susan Montgomery and Barbara Keyfitz.

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. Nominations are to be submitted as ONE PDF file via Mathprograms. The submission link will be available 45 days prior to the deadline. Nominations must be submitted by **October 15, 2012** and will be held active for three years. If you have questions, phone 703-934-0163 or email awm@awm-math.org.

My own insights after reading the books

I myself have been very inspired by MR's work. It has forced me to look at my own life as a women scientist in a new way and to have a new look at what I have formerly read and heard. Certainly that has been very stimulating.

My approach to the topic of women in science has been Danish, Scandinavian, European—and international. Denmark is a small country with few women mathematicians working as scientists, and even fewer having tenure. But there are many women who are working as mathematics teachers. As a matter of fact my mother and the female friends of my family were almost all mathematics teachers in Danish high schools. My father was a physical scientist. I grew up among a whole cluster of mathematicians and physicists, a rather special fact, I suppose, especially for a woman.

But my life as a woman mathematician and scientist has not been easy, as you might have supposed from this childhood. As is known from many complicated father-son relationships, it is not easy to choose: Should you go in your father's footsteps, when you have the same talents as he, or should you go your own way in another direction?

I graduated as an algebraic topologist in 1969 at Copenhagen University, but when I got married and had children, my life got complicated. In the end I shifted from mathematics to history of science.

For many years I did not understand my own life-story. But reading and working with Margaret Rossiter's trilogy has made me understand my own life in such a way, that I have now learned to live with my own life. And I am proud of my accomplishments as a woman scientist, even if I did not get as good jobs as my male peers.

As George Orwell writes (paraphrased by me): *All men are equal and free, but some men are more equal and free than others.*

Positive examples?

Many people thinking about women in science want to know, just how many female geniuses have there been in history, and how long are their publications lists etc. But even if there are some women who are as lucky as men to get **good working conditions, in the family and in stimulating environments**, they form a minority among all the women found by MR.

Of course we might be interested in reading (or writing ourselves) about the greatest of women scientists, like for instance, Emmy Noether or Nobel Prize winners like Barbara McClintock and Rita Levi-Montalcini. Or Lillian Gilbreth, engineer, psychologist and the mother of twelve children. Or Rachel Carson, whose impact on the world

as the founder of the environmental movement has been immense, although she is sadly underestimated by the (male) establishment in the history of science club.

But we cannot give a fair estimate of women's general capabilities as scientists until this date, because there have been so many very hard obstructions, as Margaret Rossiter points out in her books. In the beginning, education was forbidden for women, and how many geniuses will that foster? For years and years, research jobs were forbidden for women scientists. For almost all women in history, talented women have not received the recognition that men of comparable caliber have. A few women have gotten so much psychological family support, have had such supporting teachers, mentors, friends and colleagues, have had such good jobs, have had so much help with childcare (if they had children) etc. that they have succeeded. But we are not all that lucky.

But I am not pessimistic at all. I see the situation as a kind of dynamical system, where there will come more possibilities for women in the future. And I would like to thank Margaret Rossiter for leading the way!

Ruth I. Michler Prize

The Association for Women in Mathematics invites applications for the seventh annual Ruth I. Michler Memorial Prize.

A \$47,000 prize will be awarded to a woman, recently promoted to associate professor or the equivalent, for a semester of mathematical research without teaching obligations in the Mathematics Department of Cornell University.

A supplemental housing/subsistence stipend award of \$3,000 will be provided. Office space, library access, and computing facilities will be provided by Cornell.

The application deadline is November 1 for the award to be used during the 2013–14 academic year.



www.awm-math.org/michlerprize.html



Cornell University



MEDIA COLUMN

In addition to longer reviews for the media column, we invite you to watch for and submit short snippets of instances of women in mathematics in the media (WIMM Watch). Please submit to the Media Column Editors: Sarah J. Greenwald, Appalachian State University, greenwaldsj@appstate.edu and Alice Silverberg, University of California, Irvine, asilverb@math.uci.edu.

Women Mathematicians on the Web, Part I: A Story About Yale

Margaret A.M. Murray, margaret-a-murray@uiowa.edu

This is the first in a series of articles on the effects of the Internet on public understanding of the history of women in mathematics. Many readers are already well aware of a variety of websites that provide valuable information about women in mathematics, and I'll have something to say about those websites as we go along. But the fact that we, as a culture, have apparently decided to make the Internet our primary source of information has some larger implications for the history of women in mathematics, and these implications are really my central concern.

Let's begin with a simple question: For any given university in the United States, who was the first woman to earn a Ph.D. in mathematics there, and when did she earn it? As an illustration, let me discuss the case of Yale—the university that awarded the first US Ph.D., in 1861, and the first US Ph.D. in mathematics the following year ([1]).

According to President Richard Levin's 2009 address to the incoming freshman class at Yale College, the first woman to earn a Ph.D. in mathematics at Yale was Grace Murray Hopper (1906–1992), who earned the degree in 1934. To help commemorate the 40th anniversary of undergraduate coeducation at Yale, Levin devoted his talk to the inspiring story of Hopper—a legend in the history of modern computing, whose career in academia, industry, and the US Navy spanned more than half a century. Hopper was, according to Levin, “the first woman to receive a Yale Ph.D. in mathematics” ([2]).

When I first read this assertion, in the November 2009 issue of the *Yale Alumni Magazine*, I had to stop, rub my eyes, and read it again. Yes, Grace Hopper earned a Yale Ph.D. in mathematics in 1934, but she was by no means the first woman to do so. Although undergraduate coeducation at Yale began in 1969, women were first admitted to graduate degree programs at Yale in 1892 ([3]). I considered it a matter

of long-established fact that the first woman to earn a Yale mathematics Ph.D., Charlotte Barnum (1860–1934), entered Yale in 1892 and earned the doctorate in 1895. How could the President of Yale University not have known this?

More to the point, perhaps: how did I know it? When I earned my own Yale math Ph.D., in 1983, I certainly had no idea how many women had come before me. I now know, however, that I was roughly the 35th woman to earn a Yale math Ph.D. That I know this—and a great deal more besides—is largely because of the work of two intrepid scholars, Judy Green and Jeanne LaDuke. Their magisterial history, *Pioneering Women in American Mathematics: The Pre-1940 PhD's*—a printed book of roughly 350 pages, supplemented by nearly 800 pages of additional material, available for free online—is the culmination of 30 years of painstaking research. *Pioneering Women* was published by the American Mathematical Society in December 2008, eight months prior to President Levin's address ([4]).

Naturally enough, I wondered where Levin had gotten his information; clearly he hadn't been reading Green and LaDuke. In his opening remarks, he said that he'd derived his inspiration from a newly-published Hopper biography. With the Yale archives so close at hand, this struck me as an odd way for Yale's president to learn about a distinguished alumna of his own institution. So I decided to go online in search of his source.

A Google search on “first woman Ph.D. math Yale” led me directly to admiralgracehopper.com, the website associated with the book *Grace Hopper and the Invention of the Information Age* (MIT Press, 2009), where author Kurt W. Beyer clearly identifies Hopper as “the first woman to graduate from Yale with a Ph.D. in mathematics” ([5]). Upon further Googling I learned that in the book's first rush of publicity, this “fact” appeared to be replicating all over the web. Now I was really curious: I wanted to track the error to its ultimate source.

I began by buying and reading Kurt Beyer's book. I found the assertion about Hopper's Yale Ph.D. three times in its pages, each time without a citation ([6]). I wondered: in a biography backed by archival research, how could this assertion go unreferenced?

As Kurt Beyer's website biography makes clear, he has a long affiliation with the US Navy, including four years at the US Naval Academy (1986–1990) and seven years as a naval officer (1990–1997). Admiral Hopper's retirement ceremony aboard the USS *Constitution* came just weeks after Beyer enrolled at Annapolis, where she subsequently came to address the “lowly plebes.” Beyer's Navy career encompassed both Hopper's death in 1992 and the

subsequent launch of the USS *Hopper* in 1996. In short, Beyer served in the Navy when the Hopper legend was at its zenith—which made me wonder whether, perhaps, in his repeated assertions about Hopper’s Yale Ph.D., Beyer was simply repeating a bit of Navy folklore. Indeed, when I returned to Beyer’s book I found buried in the footnotes a reference to Hopper’s “Navy obituary”—Elizabeth Dickason’s “Remembering Grace Murray Hopper: A Legend in Her Own Time”—which is still readily available on the Navy website. In it, Dickason states, again without citation, that Hopper was Yale’s first female math Ph.D. ([7]).

My response to all these discoveries was to dash off a letter to the *Yale Alumni Magazine*, correcting President Levin’s error and reinstating Charlotte Barnum as the first woman to earn a Yale mathematics Ph.D. My letter was published in the May 2010 issue, along with a very gracious “*mea culpa*” from President Levin ([8]). Ironically,

just as my correction appeared in print, the Wikipedia article on Grace Murray Hopper was edited to reflect her newfound status as the first woman to earn a Yale mathematics Ph.D.; then, four days later, the error was corrected, citing my letter in evidence ([9]). At the same time, the original text of President Levin’s address remains uncorrected on the Yale University website.

This whole episode left me feeling very smug and self-satisfied—but with a nagging, unsettled feeling, too. Certainly I’ve made at least one glaring historical error in public—as I’ll discuss in more detail next time. Suddenly I found myself thinking, *I know that Hopper wasn’t the first woman, but really, how do I know for sure it was Barnum?*

Even asking this question made me feel a little insane. As I said, I learned about Barnum from Green and LaDuke, two highly credible scholars as well as personal friends.

continued on page 12

NSF-AWM Travel Grants for Women

Mathematics Travel Grants. Enabling women mathematicians to attend conferences in their fields provides them a valuable opportunity to advance their research activities and their visibility in the research community. Having more women attend such meetings also increases the size of the pool from which speakers at subsequent meetings may be drawn and thus addresses the persistent problem of the absence of women speakers at some research conferences. The Mathematics Travel Grants provide full or partial support for travel and subsistence for a meeting or conference in the applicant’s field of specialization.

Mathematics Education Travel Grants. There are a variety of reasons to encourage interaction between mathematicians and educational researchers. National reports recommend encouraging collaboration between mathematicians and researchers in education and related fields in order to improve the education of teachers and students. Communication between mathematicians and educational researchers is often poor and second-hand accounts of research in education can be misleading. Particularly relevant to the AWM is the fact that high-profile panels of mathematicians and educational researchers rarely include women mathematicians. The Mathematics Education Research Travel Grants provide full or partial support for travel and subsistence for

- mathematicians attending a research conference in mathematics education or related field.
- researchers in mathematics education or related field attending a mathematics conference.

Selection Procedure. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians and mathematics education researchers appointed by the AWM. A maximum of \$1500 for domestic travel and of \$2000 for foreign travel will be funded. For foreign travel, US air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

Eligibility and Applications. These travel funds are provided by the Division of Mathematical Sciences (DMS) of the National Science Foundation. The conference or the applicant’s research must be in an area supported by DMS. Applicants must be women holding a doctorate (or equivalent) and with a work address in the USA (or home address, in the case of unemployed applicants). Please see the website (<http://www.awm-math.org/travelgrants.html>) for further details and do not hesitate to contact Jennifer Lewis at 703-934-0163, ext. 213 for guidance.

Deadlines. There are three award periods per year. Applications are due **February 1, May 1, and October 1.**

They've done years of research using archival sources. In my next installment, I want to take a careful look at what counts as evidence in the history of women in mathematics—and why that matters to Internet research.

Notes

1. See R.G.D. Richardson, "The Ph.D. Degree and Mathematical Research," *American Mathematical Monthly* 43 (1936), 199–215.
2. See Richard Levin, "A Yale pioneer: The Freshman Address," *Yale Alumni Magazine* 73(2), November/December 2009, 59–62; on the web at http://www.yalealumnimagazine.com/issues/2009_11/levin5962.html. See also *Yale Office of Public Affairs and Communications, Speeches and Statements, Freshman Address by President Richard C. Levin, August 29, 2009*, at <http://opac.yale.edu/president/message.aspx?id=87>. As of this writing, these pages remain uncorrected.
3. On the admission of women to doctoral study at Yale, see Margaret Rossiter, *Women Scientists in America: Struggles and Strategies to 1940* (Baltimore: Johns Hopkins, 1982), 34–35 and 329, nn. 17–19.
4. See Judy Green and Jeanne LaDuke, *Pioneering Women in American Mathematics: The Pre-1940 PhD's* (Providence: American Mathematical Society, 2008), and additional material for the book at <http://www.ams.org/publications/authors/books/postpub/hmath-34>.
5. Beyer makes this assertion in the Career Timeline on the page *Who is Grace Hopper?* (http://admiralgracehopper.com/grace_hopper.html). Scattered amid all the misinformation, I was cheered to find a few websites that gave Charlotte Barnum her due—most notably, *Biographies of Women Mathematicians* (<http://www.agnesscott.edu/lriddle/women/women.htm>), the award-winning website begun by Professor Larry Riddle at Agnes Scott College in 1995, about which I shall have more to say later on.
6. Beyer asserts that Hopper was the first woman mathematics Ph.D. at Yale, without citation, on pages 25, 26, and 205 of his book.
7. For Beyer's author biography, see http://admiralgracehopper.com/kurt_beyer.html. Dickason's article—originally published in the April 1992 edition of *CHIPS*, the US Navy's information technology magazine—is online at <http://www.history.navy.mil/bios/>

hopper_grace.htm, and Beyer cites it in an unrelated context in his book (see p. 281 and p. 374, note 5).

8. "The first lady of math?" *Yale Alumni Magazine* 73(5), May/June 2010, 5–6; on the web at http://www.yalealumnimagazine.com/issues/2010_05/letters_412.html.
9. The main article is http://en.wikipedia.org/wiki/Grace_Hopper; to see and compare previous versions of the article, click the *View history* tab at the top right of the page. A Wikipedia contributor known as Nunh-huh introduced the error at 20:01 on 10 May 2010 (citing a reference that does not actually assert that Hopper was the first woman to earn a Yale math Ph.D.), and then corrected the error at 01:10 on 14 May 2010—citing the print version of my letter. Perhaps Nunh-huh is a Yale alum.

WIMM Watch: *Castle*

Kristine Roinestad, Georgetown College

ABC's *Castle*, which airs Mondays at 10 p.m., is a "dramedy" centering on the fictitious well-known mystery writer Richard Castle (played by Nathan Fillion), who partners with NYPD homicide detective Kate Beckett (Stana Katic) to help her department solve crimes. Beckett becomes Castle's source of inspiration for his new series of mystery novels about a female detective. In February 2012, continuing episodes entitled "Pandora" (Part 1) and "Linchpin" (Part 2) find Castle and Beckett investigating an intricate plot involving international intrigue, conspiracy, multiple homicides, the CIA, and the KGB. A peripheral, yet integral, character in this wild storyline is Tracy McGrath, a victim allegedly murdered in her home by a former CIA agent. McGrath, a Ph.D. in applied mathematics, is described as having developed "statistical models to predict the effects of climate change." Castle and Beckett come across the fact that as a graduate student McGrath had worked under Nelson Blakely, a famed applied mathematician who subsequently discovered a single trigger that could spin the world into economic collapse. They not only conclude that the tie-in between Blakely and McGrath is the motivating factor behind her murder, but also use the connection to uncover the identity and solve the mystery of the "linchpin."

Common Core State Standards

Ginger Warfield, Emerita, University of Washington

In the current state of the world, it can be far too easy to focus on the troubles and dangers that beset K–12 education and be drained of energy by that bleak viewing. It was therefore a particular pleasure to me when at a recent conference of WaToToM (Washington Teachers of Teachers of Mathematics) a presentation on the Common Core State Standards (CCSS)¹ permitted me not one but two patches of optimism. In a general effort to spread the sunshine, I decided to present them here.

The first had to do with the Standards themselves. I have been so pleased and excited about the Standards of Mathematical Practice and the way that the CCSS keep them in the foreground, that I missed another key feature. For decades now the phrase “mile wide, inch deep curriculum” has been so firm a mantra of everyone involved in mathematics education that I have wondered how many household parrots might by now be able to repeat it. It has seemed to me, though, that any efforts to deal with it have simply produced a shuffling of the elements rather than any narrowing or deepening. The writers of the CCSS addressed this problem by standing it on its head: instead of starting by looking at everything a kindergartner should be able to take in and working their way upward, they started at the top and chose a small number of advanced concepts that any educated citizen should have the opportunity to learn. They then worked their way backwards down the levels and produced what they called mathematical progressions that led to these concepts. With those progressions established, they put in some benchmarks for when students need to arrive at specific levels along the route. In doing so, they made strenuous efforts to avoid requiring any topics, even attractive ones, that are not needed for one of the progressions. The goal ... plan ... hope is that keeping the requirements focused and non-bulky will leave some room for optional topics that teachers choose to teach. In any case, it will provide a structure such that teachers should be able to find out readily which concepts their students should already have available to use and which they are going to need in the next year or two. All of which has at least the potential to keep the curriculum flowing down a narrower, deeper channel. Encouraging.

¹ If you have not yet met the CCSS, I recommend having a look at <http://www.corestandards.org/the-standards/mathematics>.

For the second patch of optimism I need to drop back and throw in a little local history. Back in the '90s almost all states, my home state of Washington included, produced State Standards. Washington then went further and was among the relatively few that produced assessments to go with its Standards. The writers of the resulting WASL (Washington Assessment of Student Learning) took note of the absolutely central role of understanding and communicating the ideas behind the (also necessary) mathematical procedures, worked incredibly hard, and produced a test such that if a teacher successfully taught to the test he or she would indeed be teaching what the Standards intended. Unfortunately, the onslaught of No Child Left Behind loaded the WASL with stakes it was not designed to bear, and after a decade or so it wound up essentially eliminated. I was thoroughly disheartened until a conversation with a high school teacher of whom I think a world, in which she said “Yes, but all the teachers I know are teaching very differently and way better as a result of trying to prepare our students for the WASL. We’ve learned a lot!”

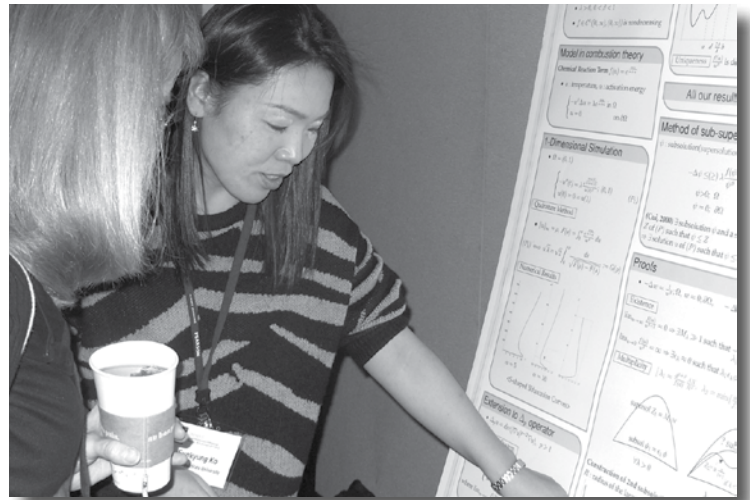
Now two large consortia are hard at work producing assessments to correspond to the common Core State Standards. The WaToToM presentation that I mentioned above included some emerging details about the one that Washington is heavily involved in, Smarter Balanced Assessment. Again I was already familiar with a number of key points, such as their determination to de-emphasize summative testing whose results provide information that fails to benefit either students or teachers, and offer formative and interim assessments designed to give teachers information that they can use to improve the learning of the students they have. They also plan to provide a variety of formats of assessments, including some open-ended one or two day projects that will give students an opportunity to demonstrate a very different set of abilities from those required for timed multiple choice or short answer tests (which will also be used, but in moderation.) Smarter Balanced has a long way to go, but what struck me as I listened was that if they succeed in following the path they have laid out for themselves, then they, too, will have created an assessment such that teachers who “teach to the test” will be giving their students exactly what they need, and learning a lot as they do so.

These are harrowing times, and not even my Pollyanna side can maintain that The Solution has been achieved. But despair has very few virtues, and correspondingly I feel enormous gratitude for the incredible efforts the writers of the CCSS and the folks at the Smarter Balanced consortium have put in and are still putting in. I plan to hang fiercely onto the hope they are proffering!

JMM 2012 in Boston



Jill Pipher and Fan Wei, Schafer Prize winner



Eunkyung Ko explaining her poster



Anastasiia Tsvietkova and Genevieve Walsh at the Workshop reception



Nura Patani and Jacob White playing SET at the AWM Reception



Radmila Sazdanovic giving her talk at the Workshop



Hui Li explaining her poster



Jill Pipher and Meng Guo, Schafer Prize honorable mention



Ellen Gasparovic and Ami Radunskaya at Ellen's poster



Heather Russell, ?, Constance Leidy, Genevieve Walsh and Anastasiia Tsvietkova at the Workshop lunch



Jill Pipher and Maghild Lien at the AWM Reception



Suzanne Lenhart and a student at the AWM Reception



Franziska Hinkelmann and Anna Zelyanova, Workshop participants



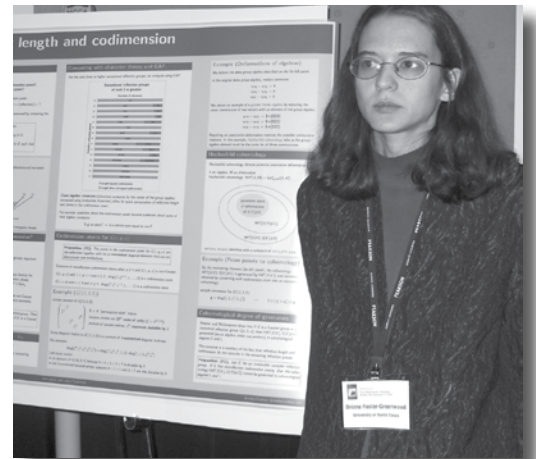
Jill Pipher and Jennifer Iglesias, Schafer Prize runner-up



Magnhild Lien and Jean Taylor at the AWM Workshop Reception



Above, AWM Panel, from left: Trachette L. Jackson, Ruth Haas, Ami Radunskaya, Ulrica Wilson, Jill Pipher

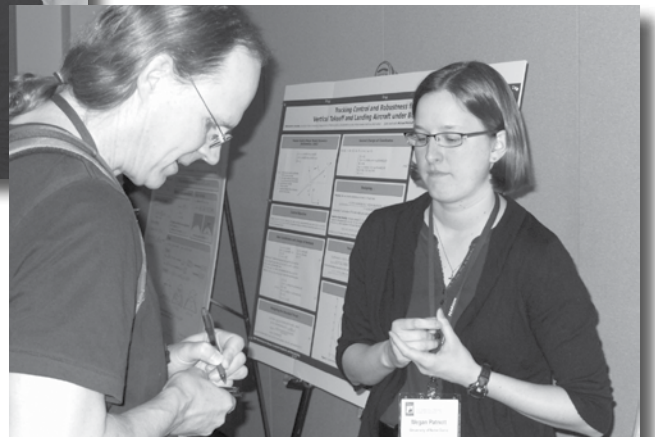


Above: Brianna Foster-Greenwood at her poster



Right: Michelle Lastrina at her poster

Below: David Perkinson and Megan Patnott at her poster



JMM 2012 in Boston



Elena Pavelescu giving her talk at the Workshop

Right: Hongkun Zhang and Fan Wei at the AWM Workshop Reception



Left: Kathy O'Neil and Megan Patnott at the AWM Workshop Reception

CALL FOR NOMINATIONS

The 2013 Kovalevsky Lecture

AWM and SIAM established the annual Sonia Kovalevsky 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, Lai-Sang Young, Dianne P. O'Leary, Andrea Bertozzi, Suzanne Lenhart, and Susanne Brenner. Barbara Keyfitz will deliver the 2012 lecture.

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 are to be submitted as ONE PDF file via Mathprograms. The submission link will be available 45 days prior to the deadline. Nominations must be received by **November 1, 2012** and will be kept active for two years.

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/sponsored/Kovalevsky.php and www.awm-math.org/kovalevskylectures.html for more details.

Awards at the JMM

Hannah Alpert, Minerva Cordero-Epperson, Ruth Favro, Susan Loepf, Elina Robeva, Hortensia Soto-Johnson, Daina Taimina, and Cynthia Wyels received awards from organizations other than AWM at the Joint Prize Session at the Joint Mathematics Meetings in Boston, MA in January. Congratulations! The citations and responses below are reprinted from the prize booklet (see “January 2012 Prizes and Awards” online at www.ams.org/ams/prizebooklet-2012.pdf).

Euler Book Prize

The Euler Book Prize is awarded annually to the author of an outstanding book about mathematics. The Prize is intended to recognize authors of exceptionally well-written books with a positive impact on the public’s view of mathematics and to encourage the writing of such books.

The Euler Prize, established in 2005, is given every year at a national meeting of the Association, beginning in 2007, the 300th anniversary of the birth of Leonhard Euler. This award also honors Virginia and Paul Halmos, whose generosity made the award possible.

Citation for Daina Taimina

Crocheting Adventures with Hyperbolic Planes, A. K. Peters, Ltd., Wellesley, MA, 2009.

This book is unlike any previously considered for the Euler Prize. Indeed, it is unlike any book on hyperbolic geometry previously written, and it is in a different universe from any book on crochet previously written. But, when you look at it, the idea makes such perfect sense that it seems inevitable.

Eugenio Beltrami, who in 1868 first modeled the non-Euclidean geometry of Bolyai and Lobachevsky by surfaces of negative curvature, actually toyed with the idea of building such surfaces. He made a small fragment of such a surface out of paper, and the idea was taken up again by William Thurston in the 1970s. But the idea did not take off, let alone reach a wide audience, until Daina Taimina wrote this book. By bringing crochet technology to the subject, she makes it easy and fun to construct hyperbolic surfaces that vividly illustrate essential features of non-Euclidean geometry. The book is elegant, from both a visual and mathematical point of view.

Thus, *Crocheting Adventures with Hyperbolic Planes* is a novel approach to geometry that has brought a whole new audience to mathematics. In this respect it has greater outreach potential than any book we have previously considered. But it is much more than that; it is perfectly capable of standing on its mathematical feet as a clear, rigorous, and beautifully illustrated introduction to hyperbolic geometry. It is truly a book where art, craft, science, and mathematics come together in perfect harmony.

Biographical Note

Before coming to the United States in 1996, Daina Taimina taught for twenty years at the University of Latvia. Currently she is an Adjunct Associate Professor of Mathematics at Cornell University. In 1997 she crocheted the first hyperbolic plane for use in a non-Euclidean geometry class. Since then her crocheted geometric models have turned also into fiber art pieces. She has given many public lectures and workshops popularizing mathematics for wide audiences. Her models have appeared in art shows in the U.S., U.K., Ireland, Italy, Belgium, Germany, and her native Latvia. Her idea about crocheting hyperbolic planes was picked up by The Institute For Figuring and turned into the ecological project *Hyperbolic Crochet Coral Reef*, which involves thousands of participants worldwide. Taimina’s crocheted hyperbolic planes are in the permanent Textile Collection of Cooper-Hewitt National Design Museum, the American Mathematical Model Collection in the Smithsonian Institution, the U.S. State Department’s Art in Embassies Collection, as well as others.

Response from Daina Taimina

Paul Halmos argued, “Mathematics is a creative art, and mathematicians should be seen as artists, not number crunchers.” It has always been one of my favorite quotes, and I was greatly surprised and deeply honored to learn that I had been selected to receive the Euler prize (established by Paul and Virginia Halmos) exactly for viewing mathematics through art and craft. I was encouraged by a variety of people to write this book, many of whom approached me after my talks and told me that they always wanted to learn more mathematics, but they were scared away by the formality and abstractness of it. When I was in seventh grade my math teacher gave me a little book by Martin Gardner. Reading his book I realized that mathematics is not only strings of formulas or facts to remember, but that it is about many fun things. In writing *Crocheting Adventures*

with *Hyperbolic Planes*, I hope that maybe many years from now somebody else will be able to say the same about my book.

According to the AAUP, 68% of faculty in American higher education is composed of contingent and visiting faculty. I am accepting this prize in the name of that entire faculty group in hope that their contribution to the education of the next generation will be adequately acknowledged in future. I could not possibly have written this book without the help, support, and advice from other people—too many to list here. I want to thank once more the great team at my publisher, A. K. Peters, and all the reviewers; you gave me much valuable advice that shaped this book. My most heartfelt gratitude goes to David Henderson,

my husband, who also acted as my first editor, critic, typesetter, consultant, opponent, and supporter; without you this book simply would not exist, so this award is as much yours as mine.

Haimo Awards for Distinguished College or University Teaching of Mathematics

In 1991 the Mathematical Association of America instituted the Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics in order to honor college or university teachers

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AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND RECENT PH.D.'S

supported by the Department of Energy and the Association for Women in Mathematics

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.

WHEN: An AWM Workshop is scheduled to be held in conjunction with the SIAM Annual Meeting, San Diego, CA, July 8–12, 2013.

FORMAT: The workshop will consist of a poster session by graduate students and two minisymposia featuring selected recent Ph.D.'s, plus an informational minisymposium directed at starting a career. The graduate student poster sessions will include all areas of research, but each research minisymposium will have a definite focus selected from the areas of Mathematical Biology, Modeling, Control, Optimization, Scientific Computing, and PDEs and Applications. AWM will offer partial funding for travel expenses for between fifteen and twenty participants. Departments are urged to help graduate students and recent Ph.D.'s obtain supplementary institutional support to attend the workshop presentations and the associated meetings. All mathematicians (female and male) are invited to attend the program.

MENTORS: We also seek volunteers to act as mentors for workshop participants. If you are interested in volunteering, please contact the AWM office.

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have begun work on her thesis problem, and a recent Ph.D. must have received her degree within approximately the last five years, whether or not she currently holds a postdoctoral or other academic or non-academic position. All non-US citizens must have a current US address. All selected and funded participants are invited and strongly encouraged to attend the full AWM two-day program. For some advice on the application process from some of the conference organizers see the AWM website.

All applications should include:

- a cover letter
- a title and a brief abstract (75 words or less) of the proposed poster or talk
- a concise description of research (one or two pages)
- a curriculum vitae
- at least one letter of recommendation from a faculty member or research mathematician who knows the applicant's work is required for graduate students and recommended but not required for recent Ph.D.'s. In particular, a graduate student should include a letter of recommendation from her thesis advisor.

Applications must be completed electronically by **November 1, 2012**. See <http://www.awm-math.org/workshops.html>.

who have been widely recognized as extraordinarily successful and whose teaching effectiveness has been shown to have had influence beyond their own institutions. Deborah Tepper Haimo was president of the Association, 1991–1992.

Citation for Susan Loepf

Susan Loepf has a profound influence on her students, challenging them to reach their full potential through high standards and talented encouragement. Her mentoring of a diverse group of students has inspired passion and encouraged many to major in mathematics. She also advises numerous undergraduates to successfully publish research and has created new courses and a concomitant book.

Professor Loepf received an unprecedented three teaching awards as a graduate student at the University of Texas, Austin, and also the 2007 Alumni Award from her alma mater, Bethel College in Kansas. Her teaching evaluations at Austin, the University of Nebraska, and Williams College shine above most others.

At Williams College, Loepf challenges and encourages a diverse group of students, men and notably women, athletes and scholars, the anxious and the overconfident. Loepf has high standards, assigning both daily and weekly problem sets, about which students have been known to brag how long it took and that they were able to finish. She says “I am passionate about setting high standards for students and then helping them struggle to reach their potential.”

Loepf’s colleagues write that she exudes energy, interest, confidence, and knowledge; “has a lively, friendly, inviting teaching style, but it’s clear that she means business”; that she has the “courage to explore tough/pointless/all student questions, [even] if it [means] departing from her lesson plan”; and that she has an impressive ability to conduct class discussion: “She drew perceptive and eager responses from her students ... due, in part, to her engaging them in vital mathematical conversation and exploration. Susan knows the importance of giving the students time to think.” Loepf empowers students, connecting with them individually and inspiring mathematical zeal, encouraging many to become mathematics majors. Students are clearly infected by her enthusiasm.

Loepf also guides numerous students in undergraduate research in commutative algebra: she has seven joint papers with undergraduate students, and six additional research papers have been published by her students. She has advised

32 summer research students from across the country in the NSF SMALL undergraduate research project, and many of these have given student talks at conferences. A colleague writes, “It is remarkable that Loepf is able to make this very technical material accessible to undergraduate students. To bring students to the point of producing publishable results is truly incredible.” Additionally, Loepf has advised 35 student colloquia at Williams College.

Finally, Loepf has created three courses that emphasize applications: a senior seminar on algebraic error-correcting codes, a course on quantum cryptography (which utilizes a book she cowrote with William K. Wootters), and an applied version of a core requirement in abstract algebra, including encryption on elliptic curves.

Biographical Note

Susan Loepf received a B.A. in mathematics and a B.S. in physics from Bethel College (N. Newton, Kansas) in 1989. She earned her Ph.D. in mathematics from the University of Texas at Austin in 1994. After a two-year postdoctoral position at the University of Nebraska, she joined the faculty at Williams College, where she now holds the rank of professor. Loepf is currently the principal investigator on the Williams College SMALL REU grant, and she has served as the director of the program twice. Her research area is commutative algebra, and she has advised the research of many undergraduate students in that field. Loepf and William K. Wootters, an expert in quantum information theory, are co-authors of the book *Protecting Information: From Classical Error Correction to Quantum Cryptography* (Cambridge University Press, Cambridge, 2006).

Response from Susan Loepf

I am truly honored to be one of the recipients of the 2012 Deborah and Franklin Tepper Haimo Award. I am immensely grateful to my colleagues in the mathematics and statistics department at Williams College. Every day, they show by example what it means to be a dedicated teacher and scholar. I am lucky to be surrounded by exceptionally supportive, talented, dynamic, and entertaining colleagues. Olga R. Beaver, in particular, has been a fantastic mentor and role model. The undergraduate students I have taught and advised in research are amazing; I have learned more from them than they from me. My Ph.D. advisor, Raymond C. Heitmann, was the best advisor I could have hoped for. I am also grateful to Arnold M. Wedel from

Bethel College and Frank S. Brenneman from Tabor College for their dedication to my undergraduate education and for introducing me to effective and unconventional teaching techniques. Finally, I would like to thank my family and friends for their unwavering support.

Citation for Cynthia Wyels

Cynthia Wyels is committed to student success. She works tirelessly to facilitate student learning, not only for

her own students but also for students of her colleagues, students across her university, and students at other universities, including in other countries. Her devotion to supporting learning extends to students of all backgrounds and abilities.

Professor Wyels invests considerable time, creativity, and enthusiasm in developing, employing, and assessing innovative teaching practices. One example is her development of computer laboratory activities that lead students to

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AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND RECENT PH.D.'S AT THE 2013 JOINT MATHEMATICS MEETINGS

Application deadline: Check www.awm-math.org for date

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 have received support from the National Security Agency for the AWM Workshop to be held in conjunction with the Joint Mathematics Meetings in San Diego in January 2013.

FORMAT: Starting in 2013 the research area for the talks will be focused, and the research theme will change from year to year. Poster presenters will be chosen from all fields of mathematics. The AWM Workshop talks in San Diego in 2013 will focus on algebra and number theory. Participants will be selected in advance of the workshop to present their work. Recent Ph.D.'s will join senior women in a special session on algebra and number theory where they will give 20-minute talks. The graduate students will present posters. AWM will offer partial funding for travel and hotel accommodations for the selected participants. The workshop will also include a reception and a luncheon. 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, and posters. Departments are urged to help graduate students and recent Ph.D.'s who are not selected for the workshop to obtain institutional support to attend the presentations.

MENTORS: We also seek volunteers to act as mentors for workshop participants. If you are interested in volunteering, please contact the AWM office at awm@awm-math.org.

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have made substantial progress towards her thesis and a recent Ph.D. must have received her Ph.D. within approximately the last five years, whether or not she currently holds a postdoctoral or other academic position. Women with grants or other sources of support are welcome to apply. All non-US citizens must have a current US address. Watch for further announcement about the application process and application deadline at <http://www.awm-math.org/workshops.html>.

understand and explore key concepts in a variety of undergraduate mathematics courses. Another example is her creation of in-class worksheets that help students to concentrate on the big picture of mathematical ideas being presented. More recently, Wyels has begun to use “proof portfolios” to track students’ abilities to construct complete, correct, and elegant proofs as they progress through their under-graduate studies. Wyels has shared all of her teaching innovations with her departmental colleagues and also more broadly through various MAA conferences and publications.

Providing students with enriching research experiences is a particular passion of Professor Wyels. She has led Research Experiences for Undergraduates programs that have emphasized participation from students in under-represented groups, particularly native Spanish speakers and first-generation college students. She has regularly donated her own faculty stipend in order to support participation of students from a Mexican university. She has mentored 63 undergraduates in research, including 38 from underrepresented groups, with several of these projects leading to co-authored research papers. Wyels has also led efforts to institutionalize student research on her campus and to create an annual student research symposium.

Wyels’ dedication to effective teaching extends across her campus, as does her commitment to providing productive learning environments for all students. She founded the Critical Friends Group at California State University Channel Islands, which colleagues report as having fostered a cultural shift in attitudes toward teaching, especially with regard to supporting students who initially find university culture to be confusing and alienating.

Students and colleagues alike attest to the tremendous influence that Wyels has had as a mentor, not only on their study of mathematics and their careers in mathematics and education, but also for developing their self-confidence, persistence to succeed, and professionalism for handling all situations. Testimonials for Wyels attest to her high standards and meticulousness, and also to her generosity, enthusiasm, kindness, and selflessness.

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Biographical Note

Cindy Wyels attributes a love for teaching and an analytical bent to her parents, a teacher and an engineer. She first learned to appreciate mathematics at Pomona College. After earning her Ph.D. at the University of California, Santa Barbara, she took positions at the United States Military Academy and Weber State University, then spent several formative years at California Lutheran University. A growing interest in access to higher education led her to CSU Channel Islands, where she has directed the graduate program since its inception. Over the years she has become more cognizant of the barriers facing students from low income, first generation, and historically underrepresented groups, and has worked more actively to help students overcome whatever barriers they may face. She is an advocate of undergraduate research and believes it is particularly meaningful for students from nontraditional backgrounds. Her research interests are in combinatorics, most recently in graph pebbling and graph labeling.

Response from Cynthia Wyels

I am deeply honored and humbled to receive the Haimo Award from the Mathematical Association of America. I gratefully recognize the MAA for many opportunities: professional development programs through which I found mentors and friends who still guide and sustain me; the National REU Program that gave me a start directing REUs for students from underrepresented minorities; and all the workshops, minicourses, conference sessions and panels from which my students and I continue to benefit immensely. The faculty of Pomona College in the early 1980s exemplified the scholar-teacher model: Stan Hales in particular shared his enthusiasm for combinatorics. Joe Gallian and Aparna Higgins inspired hundreds of faculty to engage undergraduates in mathematical research; Aparna became a role model, then a collaborator and a friend. Kathryn Weld and Phil Straffin have been steady friends and mentors, with just the right advice or support when needed. Zsuzsanna Szaniszló generously offers advice and ideas; Maggy Tomova provides inspiration and joyfully collaborates on what is her “hobby” branch of mathematics. At each stage of my career I’ve been surrounded by dedicated and caring mathematics faculty, too many to name. I thank my students for all they have taught me, as they’ve demonstrated time and again that mathematical talent and strength of character are found in every subpopulation, native language, and income level. It is my privilege and joy to work at

CSU Channel Islands with so many talented students and brilliant, caring faculty. I particularly rely on the wisdom, humor, and dedication of my colleague Kathryn Leonard, who shares a passion for promoting student success, especially through engaging students in meaningful research.

Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student

The Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student recognizes and encourages outstanding mathematical research by undergraduate students. It was endowed by Mrs. Frank Morgan of Allentown, Pennsylvania.

Citation for Honorable Mention for Hannah Alpert

Hannah Alpert is recognized with an Honorable Mention for the 2012 Morgan Prize for Outstanding Research by an Undergraduate Student for a body of work consisting of six papers, five of which were published and one submitted prior to her graduation from the University of Chicago in June 2011. The first of these, in terms of her timeline of work, is a joint paper on topological graph theory on which she worked while in high school. Her co-authors on this paper point out that they sent this high school student the remaining cases in the proof that all 6-colorable triangulations of the torus satisfy Grünbaum's Conjecture, cases on which they were stuck. Hannah finished them off quickly and this paper appeared in the *Journal of Graph Theory* early in 2010. An anonymous referee's comment on Hannah's paper "Rank Numbers of Grid Graphs" (*Discrete Mathematics*, 2010) says, "The compilation of results forms arguably the best paper on the topic in the last decade." This is one of three professional-level papers she wrote in her 2009 REU at University of Minnesota Duluth.

Rather than exploit her novel approach to ranking numbers (her first paper of the summer of 2009) to obtain more results, Hannah asked for a different topic and successfully extended previous results on phase transitions in countable Abelian groups. She also provided the first results on phase transitions for uncountable Abelian groups and infinite nonabelian groups. She spoke on this work at the Combinatorial and Additive Number Theory conference, which is sponsored by the New York Number Theory Seminar. Hannah had two papers related to tournaments following the Lafayette College REU and a joint paper in *Discrete and*

Computational Geometry as a result of the Willamette Valley REU the summer after her first year at University of Chicago.

Biographical Note

Hannah Alpert grew up in Boulder, Colorado, attending Fairview High School. It was in high school that she began her mathematical research that led to a joint paper published in the *Journal of Graph Theory*. Hannah participated in the Hampshire College Summer Studies in Mathematics for three summers and was a MathPath camp counselor the summer before she entered the University of Chicago, from which she graduated in June 2011.

While an undergraduate at Chicago, Hannah participated in three REUs (Willamette Valley, University of Minnesota Duluth, and Lafayette College) and in each of these successfully solved posed problems, resulting in publications in *Discrete and Computational Geometry*, *Discrete Mathematics*, *Integers*, and *Archiv der Mathematik*. She also participated in the Budapest Semesters in Mathematics. Hannah was recognized at JMM 2009 with an MAA Undergraduate Poster Session Prize. She was awarded the Barry M. Goldwater Scholarship in 2009 and was a winner of the 2010 Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman. Hannah is in her first year of graduate work at MIT, where she is supported by an NSF Graduate Fellowship.

Response from Hannah Alpert

I am grateful to have been selected for Honorable Mention for the 2012 Morgan Prize. I would like to thank sarah-marie belcastro, Josh Laison, Joe Gallian, Mel Nathanson, and Garth Isaak for the work they have done to facilitate my research.

Citation for Honorable Mention for Elina Robeva

Elina Robeva is recognized with an Honorable Mention for the 2012 Morgan Prize for Outstanding Research by an Undergraduate Student for her work with Sam Payne of Yale University on a new proof of the Brill–Noether Theorem using tropical geometry. Elina began work on the deep and difficult mathematics of Brill–Noether theory during her sophomore year at Stanford; the co-authored paper "A Tropical Proof of the Brill–Noether Theorem" has been recommended for publication in *Advances in Mathematics*. Elina's letters of recommendation say that without her persistence, independence, and insight, this project would

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have ended far short of the ultimate goal of a new proof of the Brill–Noether theorem. It is noted that the Brill–Noether theorem is a remarkable result that has spawned an entire subfield of algebraic geometry and that the paper of which Elina is a co-author may reasonably be the most important paper of the year in tropical geometry. Multiple definitive breakthroughs along the way to the new proof were due solely to Elina.

Prior to the Brill–Noether work, Elina proved an elegant formula for the optimal strategy in bidding Hex (where players bid for the right to move, rather than taking turns). Her formula is beyond the computing capacities of contemporary machines; however, Elina developed and implemented a Monte Carlo approximation to this optimal strategy that is available online and is undefeated against human opponents. This work led to a joint paper “Artificial Intelligence for Bidding Hex” that appeared in the volume *Games of No Chance* in December 2008. Elina is referred to by her references as a mature and powerful research mathematician, who is known for her attitude at seeking out challenges and working both hard and wisely. “The essential quality in a mathematician, the willingness to dive into a research problem and not be fearful, is something that Elina has developed at a young age.”

Biographical Note

Elina Robeva was born and grew up in Sofia, Bulgaria. Her interest in mathematics developed in middle school through competitions. By the time she graduated from high school, she had won two silver medals in the International Mathematical Olympiad, a gold medal in the Balkan Mathematical Olympiad, and various other awards from national and international competitions. Then she enrolled at Stanford, where she concentrated on theoretical mathematics and research. She graduated in June 2011 and was recognized with a Deans’ Award for Academic Accomplishment and a Sterling Award for Scholastic Achievement. The article announcing these awards says that she “devoured the most challenging undergraduate and graduate mathematics courses at Stanford.” She also achieved an honorable mention on the 2010 William Lowell Putnam

examination and spent a summer at Facebook as a software engineer. Elina is now in her first year of the mathematics Ph.D. program at Harvard.

Response from Elina Robeva

I am very honored to have received this recognition, and I thank the AMS, MAA, and SIAM for selecting me for this award.

I would like to express my gratitude to the people who have had the most impact on my mathematical education thus far. I thank Ravi Vakil for the great support and advice and for all the times when he encouraged me to pursue various challenging mathematical tasks. I thank Sam Payne for being a wonderful research advisor and providing me with really interesting and engaging research problems. I also express my gratitude to Persi Diaconis for his great advice during my time at Stanford. I thank my high school teacher, Svetla Angelova, and the Bulgarian Academy of Sciences for the great preparation and opportunities to take part in mathematical competitions. Finally, I thank my mother, Romyana Ivanova, for her unbounded love, support, and patience, which have continuously guided me during my education.

Certificates of Meritorious Service

The Certificate of Meritorious Service is presented for service at the national level or for service to a Section of the MAA. The first such awards were made in 1984. At each January meeting of the Association, honorees from several Sections are recognized.

Citation for Ruth Favro, Michigan Section

At Lawrence Tech, Professor Favro has served as the faculty advisor for competitive student events, such as the Lower Michigan Mathematics Competition, the Michigan Autumn Take-Home Challenge, and the Mathematical Contest in Modeling, from 1989 to the present. For the Section, she directed the Michigan Mathematics Prize Competition (MMPC) from 1991–1994, and then served on the Executive Committee for nearly a continuous decade: three years as Secretary/Treasurer (1997–2000); three years

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as Vice Chair, Chair, and Past Chair (2000–2003); and finally three years as Governor (2004–2007). Additionally, from 1995 to present she has coached the Michigan ARML team (American Regions Math League), each year recruiting from the high school students who participated in the MMPC. At the national level, Favro has been actively involved with committees for the MAA such as the Committee on Local and Regional Competitions (1998–2002), the Committee on Competitions (2002–2006), and the Committee on the Participation of Women (2000–2008, Chair 2002–2006).

In addition to all of this dedicated service, Favro has worked tirelessly at every level to promote greater participation among women in mathematics. At her home institution, she has been regularly involved in the LTU Women's Career Day; for the state she was the co-coordinator of Michigan Area Women and Mathematics from 1995–2000; and she served the national Association of Women in Mathematics (AWM) as a member of the AWM Falconer Lecture Committee from 2004–2010, chairing the committee from 2008–2010. Currently, she serves on the AWM Meetings and Program Portfolio Committee.

Favro's colleagues recognize the deep impact she has had on mathematics in Michigan through her many activities, and especially her recruitment, advising, coaching, and encouragement of students. She regularly brings LTU students to Section meetings and is constantly involved in coaching groups of students in competitions. Her department chair, David Bindschadler, observes that she has been an outstanding contributor to the LTU mathematics department and the profession in general, noting that she has been extremely effective at being connected to and participating in the broader mathematical community.

Biographical Note

Ruth Favro completed her undergraduate work at Wellesley in Art History and Mathematics. She received her M.S. at New York University–Courant Institute and did further work at Wayne State University. While in NYC she taught at Brooklyn Poly (now NYU–Poly). In Detroit, after a time multitasking with kids, clay, and math, she pursued a full time appointment at Lawrence Tech. Her interests in partial differential equations (PDE), computer graphics, fractals and chaos, and coaching student contests led to developing courses in Math Modeling and Geometry in Art, and many talks to different groups. Outside interests include squash, bicycling, fly-fishing, and travel. Now retired (at least salary-wise), she is still involved in

teaching, coaching “mathletes,” and outreach. She hopes someday to get back to clay in the context of Math and Art.

Response from Favro

I am honored and humbled to be selected for this award. I have enjoyed working with so many excellent people in the MAA, in Michigan, and nationally. They have been supportive and have provided role models for career, leadership, and giving back to the profession. Listening to John Petro and Hugh Montgomery, seeing Marian Barry and Renate McLaughlin as chairs of the Section before me, working with Toni Carroll on WAM and Bob Messer and John Fink on the ARML team, are just a few examples. My colleagues at Lawrence Tech and the students, too, have been great to work with. In particular, thanks to former chair Bill Arlinghaus for the nudge to direct the MMPC, and to the current chair David Bindschadler for support of my activities both at LTU and in the MAA. And thanks to my husband, Skip, who encouraged me to pursue math and physics back when he was boyfriend status.

Citation for Hortensia Soto-Johnson, Rocky Mountain Section

Hortensia (known as Tensia to MAA members) has a long record of outstanding service to the MAA. Tensia's outstanding leadership as the Section Secretary/Treasurer has provided a pillar of strength for the Section and proved to be pivotal in getting our Section to establish a graduate student session at the Section meetings. Tensia managed to leverage Section resources to provide partial travel support to graduate students at the local research universities, which has resulted in the students recruiting additional peers to attend the Section meeting. The graduate student session has been a great addition to the program and it has also provided a catalyst for other research-based sessions at the Section meeting.

Tensia has served on several national MAA committees (Minicourses, America Conference Center Advisory Board, and the Strategic Planning Working Group on Revenue), has chaired the MAA Web Policies and Procedures Committee and the RUME Committee on Mentoring, and has served on the Board of Governors twice. She has also served on the editorial board for *MAA FOCUS* and for *MAA Online*, plus she currently serves on the Leitzel Lecture Committee. Tensia has made numerous contributions to the Section and to the MAA, but more importantly it is the quality

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of her contributions that has made her a valued resource to our Section. Tensia has an outgoing and positive attitude that makes her a joy to work with, along with a strong ability to get the job done. In fact, she organized the first Annual Pikes Peak Regional Undergraduate Mathematics Research Conference.

It is fortunate that the timing of this award lends us the opportunity to recognize Tensia for her service as she steps down from the position of Secretary/Treasurer; we look forward to the contributions that she will make in the future.

Biographical Note

Hortensia Soto-Johnson grew up in western Nebraska where she spent long summer days working on the farm and daydreaming about going to college so she wouldn't have to do manual labor the rest of her life. At that time she thought she would be a big corporate lawyer, even though she always saved her math homework for the last thing because it was like dessert. She didn't know anything about graduate school, until her undergraduate advisor said, "So where are you going to get your Ph.D.?" The daydreaming quickly commenced after she found out what that meant. Hortensia teaches at the University of Northern Colorado training preservice elementary, secondary, and collegiate mathematics teachers. Her favorite pastime is spending time with her family, which includes going back to Nebraska to do manual labor.

Response from Hortensia Soto-Johnson

It is a great honor to receive the Rocky Mountain Section Meritorious Service Award. As a Project NExT Fellow, I learned the value of saying yes to the MAA, both at the National level and Section level. I am fortunate to be in a Section that encourages participation from novice and seasoned professors at two-year institutions to research institutions. It has been and continues to be a joy to serve the MAA, to learn from past leaders, to serve as a role model to others, but the most rewarding part is transforming working relationships into life-long friendships. Thank you to the Rocky Mountain Section Nominating Committee for recommending me for this award.

Citation for Minerva Cordero-Epperson, Texas Section

Minerva Cordero-Epperson is an Associate Professor of Mathematics at the University of Texas at Arlington. Minerva is an active member of the Texas Section of the MAA. Her service to the Section includes serving as a director, Section chair, and chairing the committee to organize the 85th Annual Meeting of the Texas Section. She is known to serve with enthusiasm, creativity, and innovation. For example, she introduced the "Calculus Bowl" competition at the 85th Annual Meeting, which is now a very popular tradition.

At the local level, Minerva is a very popular teacher and an active research advisor to both graduate and undergraduate students. Twice she was awarded Professor of the Year by the Student Chapter of the MAA at her university. Upon arrival at UT Arlington, she initiated the Student Chapter of the MAA, and a year later she was awarded the UT Arlington Outstanding Advisor Award and the Student Chapter received the "Overall Winner" Award among all the UT Arlington organizations. For her excellence in teaching she received the MAA Award for Distinguished College or University Teaching presented by the Texas Section. She also received the University of Texas Regents Award for Distinguished Teaching and is a member of the UT Arlington Academy of Distinguished Teachers. She is involved in several initiatives to increase the number of underrepresented minorities in the mathematical sciences at UT Arlington. For example, through her National Science Foundation Graduate STEM Fellows in K-12 Education (GK-12) grant, she works with several schools in the Arlington area which have a large enrollment of minorities and economically disadvantaged students to bring mathematical research to these schools to motivate students to pursue careers in the mathematical sciences.

Minerva has received an MAA TENSOR-SUMMA grant and has codirected MAA sponsored REU programs for the last four years. Some of her research students have won first place in the Student Presentations Competitions at the Texas Section Meetings.

Minerva is also active at the national level. She was the MAA Governor-At-Large for Minority Interests (2008-2011) and she has served on several national committees, including the Invited Addresses Committee for MathFest 2012, the Invited Addresses Committee for the 2011 Joint Mathematics Meeting, the Committee on Minority Participation in Mathematics (which she currently cochairs),

the CUPM Subcommittee on Curriculum Renewal Across the First Two Years, and the Strategic Planning Working Group on Membership. She is currently an Associate Editor of the *American Mathematical Monthly* and serves in the Human Resources Advisory Committee of the Mathematical Sciences Research Institute at Berkeley, CA.

Biographical Note

Minerva Cordero-Epperson is an Associate Professor of Mathematics at the University of Texas at Arlington. She was born and raised in Bayamon, Puerto Rico. As a young girl she always loved and excelled at mathematics and was blessed with many supportive and encouraging mathematics teachers. She knew at a very young age that she wanted to pursue a career in mathematics. Since there were no Ph.D. programs in mathematics in Puerto Rico at the time, she moved to the United States to pursue her graduate studies. Since then, she has published numerous articles and given talks at national and international conferences on her research in finite geometries. An integral part of her career centers on her devotion to teaching and her dedication to her students. This has been the driving force behind her involvement with the MAA and other organizations that promote students' involvement in the greater mathematical community.

Response from Minerva Cordero-Epperson

I am honored to receive the Texas Section Meritorious Service Award. It has been my pleasure to serve the Texas Section in several capacities, and I care deeply about its continued success. The Texas Section has many dedicated individuals whose contributions have made the Section a vibrant organization that serves the needs of both students and faculty. I have been fortunate to serve alongside many great individuals like Stuart Anderson, the late Jasper Adams, Neal Brand, James Epperson, Kim Childs, Connie Yarema, and Reza Abbasian, whose loyalty and service to the Section continue to inspire me every day.

IISSAM 2012: Poster Submissions and Registration

IISSAM, the International Institute for SoTL Mentors and Scholars, will be held at Loyola Marymount University, in Los Angeles, CA, June 1-3, 2012, with plenary speakers Mary Huber, Eric Strauss, and Jennifer Meta Robinson. Tony Ciccone will lead a preconference workshop on May 31, 2012. See <http://www.iissam.org>.

Scholarship of Teaching and Learning projects (already selected by a peer-review process) will be presented as works-in-progress. Institute attendees will participate in the process of mentoring those projects using the model developed by the Carnegie Academy for the Scholarship of Teaching and Learning.

All registered participants (not already selected as scholars) may submit a poster describing an incipient idea for a SoTL project, i.e., a project idea that has not yet been researched in detail or implemented. During the poster session, all attendees will have the opportunity to canvass all submitted posters. The posters will continue to be available during the remainder of the Institute. There will be an opportunity to provide comments and suggestions for each poster.

Formatting instructions for the poster are available at http://www.lmu.edu/resources/iissam/submissions/Poster_Submissions.htm. Posters may be submitted during the registration process or sent by email to iissam@lmu.edu.

Registration is open at <http://www.lmu.edu/resources/iissam/Logistics/registration.htm>.

May 7, 2012 is the deadline for both registration and poster submission.

A flyer with more details about the Institute and poster submission is available at www.lmu.edu/Assets/Centers+Institutes/Center+for+Teaching+Excellence/IISSAM/Call+for+Posters.pdf.

For more information or questions email iissam@lmu.edu.

Women in STEM at Community Colleges

The Institute for Women's Policy Research has just released a new report, *Increasing Opportunities for Low-Income Women and Student Parents in Science, Technology, Engineering, and Math*, that outlines ways to encourage more women to pursue education in STEM fields at community colleges. The report addresses challenges faced by women entering these "non-traditional" fields and gives recommendations for increasing rates of recruitment and retention, such as improving access to child care, academic counseling, and other services. The report and related resources can be found online here: <http://www.iwpr.org/initiatives/student-parent-success-initiative/increasing-opportunities-for-low-income-women-and-student-parents-in-science-technology-engineering-and-math-at-community-colleges/>.

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HARMONIC ANALYSIS From Fourier to Wavelets

Applied Mathematics

María Cristina Pereyra, *The University of New Mexico, Albuquerque, NM*, and **Lesley A. Ward**, *University of South Australia, Mawson Lakes Campus, Adelaide, Australia*

This rich and engaging text is an introduction to serious analysis and computational harmonic analysis through the lens of Fourier and wavelet analysis. Through an accessible combination of rigorous proof, inviting motivation, and numerous applications (plus over 300 exercises), the authors convey the remarkable beauty and applicability of the ideas that have grown from Fourier theory. Ideal for an advanced undergraduate and beginning graduate student audience.

About the Authors: Long-time friends, academic sisters, and collaborators, authors María Cristina Pereyra and Lesley Ward are proof of the colorful, dynamic, and successful careers available to women in the mathematical sciences. Both women received PhD's from Yale University under the advising of Peter Jones, and went on to co-teach a course in harmonic analysis at the 2004 IAS/Princeton University Program for Women in Mathematics. Between them, Pereyra and Ward have amassed an impressive array of experience, awards, and distinctions in mathematics. Dr. Ward conducts research in complex analysis, harmonic analysis, Internet search algorithms, and industrial mathematics, and Dr. Pereyra focuses her research in harmonic analysis. Both are members of the AWM and the AMS.

Student Mathematical Library, Volume 63; 2012; approximately 411 pages; Softcover; ISBN: 978-0-8218-7566-7; List US\$58; Individual member US\$46.40; AMS members US\$46.40; Order code STML/63



PIONEERING WOMEN IN AMERICAN MATHEMATICS The Pre-1940 PhD's

Judy Green, *Marymount University, Arlington, VA*,
and **Jeanne LaDuke**, *DePaul University, Chicago, IL*

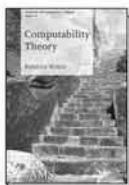
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Biographical information on the American women earning PhD's in mathematics before 1940, revealing insights into the mathematical community of their time

Co-published with the London Mathematical Society beginning with Volume 4. Members of the LMS may order directly from the AMS at the AMS member price. The LMS is registered with the Charity Commissioners.

History of Mathematics, Volume 34; 2009; 345 pages; Hardcover; ISBN: 978-0-8218-4376-5; List US\$81; AMS members US\$64.80; Order code HMATH/34



COMPUTABILITY THEORY

Applied Mathematics

Rebecca Weber, *Dartmouth College, Hanover, NH*

What can we compute – even with unlimited resources?

Are computations necessarily drastically limited, not just in practice, but theoretically? In this new book, Dartmouth College professor Rebecca Weber addresses questions that lie at the heart of computability theory, giving the reader a firm grounding in the fundamentals of the subject as well as an overview of currently active areas of research.

Student Mathematical Library, Volume 62; 2012; approximately 206 pages; Softcover; ISBN: 978-0-8218-7392-2; List US\$37; AMS members US\$29.60; Order code STML/62



CHANGE IS POSSIBLE

Stories of Women
and Minorities in
Mathematics

Patricia Clark Kenschaft,
*Montclair State University,
Upper Montclair, NJ*

Kenschaft reveals the passions that motivated past and present mathematicians and the obstacles they overcame to achieve their dreams. Through research and in-depth personal interviews, she has explored the sensitive issues of racism and sexism, rejoicing in positive changes and alerting us to issues that still need our attention.

—*Claudia Zaslavsky, the author of "Africa Counts" and other books on equality issues in mathematics education*

An entertaining look at previously untold stories of mathematicians who defied stereotypes and overcame barriers to success

2005; 212 pages; Softcover; ISBN: 978-0-8218-3748-1; List US\$32; AMS members US\$25.60; Order code CHANGE



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MSRI



The Mathematical Sciences Research Institute in Berkeley, California
is currently accepting registrations for participation in the following 2012-13 workshops:

Connections For Women:

Joint Workshop on Commutative Algebra and Cluster Algebras

August 22, 2012 to August 24, 2012

Deadline for Funding: June 3, 2012

Organized By: Claudia Polini (University of Notre Dame), Idun Reiten (Norwegian University of Science and Technology), Karen Smith (University of Michigan), and Lauren Williams* (University of California, Berkeley)

Joint Introductory Workshop: Cluster Algebras and Commutative Algebra

August 27, 2012 to September 7, 2012

Deadline for Funding: June 3, 2012

Organized By: David Eisenbud* (University of California, Berkeley), Bernhard Keller (Université Paris VII, France), Karen Smith (University of Michigan), and Alexander Vainshtein* (University of Haifa, Israel)

Cluster Algebras in Combinatorics, Algebra, and Geometry

October 29, 2012 to November 2, 2012

Deadline for Funding: August 19, 2012

Organized By: Claire Amiot (Université de Strasbourg), Sergey Fomin (University of Michigan), Bernard Leclerc (Université de Caen), and Andrei Zelevinsky* (Northeastern University)

Combinatorial Commutative Algebra and Applications

December 3, 2012 to December 7, 2012

Deadline for Funding: September 9, 2012

Organized By: Winfried Bruns (Universität Osnabrück), Alicia Dickenstein (University of Buenos Aires, Argentina), Takayuki Hibi (Osaka University), Allen Knutson* (Cornell University), and Bernd Sturmfels (University of California, Berkeley)

Connections for Women:

Noncommutative Algebraic Geometry and Representation Theory

January 24, 2013 to January 25, 2013

Deadline for Funding: October 14, 2012

Organized By: Georgia Benkart (University of Wisconsin), Ellen Kirkman* (Wake Forest University), and Susan Sierra (Princeton University & University of Edinburgh)

Introductory Workshop:

Noncommutative Algebraic Geometry and Representation Theory

January 28, 2013 to February 1, 2013

Deadline for Funding: October 14, 2012

Organized By: Michael Artin (Massachusetts Institute of Technology), Michel Van den Bergh* (Vrije Universiteit Brussel), and Toby Stafford (University of Manchester)

FURTHER INFORMATION:

www.msri.org

Students, recent Ph.D.'s, women, and minorities are particularly encouraged to apply. Funding awards are typically made eight weeks before the workshop begins. Requests received after the funding deadlines are considered only if additional funds become available.

The Institute is committed to the principles of Equal Opportunity and Affirmative Action.

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The Institute for Computational and Experimental
Research in Mathematics

UPCOMING PROGRAMS

TOPICAL WORKSHOPS:

Heterostructured Nanocrystalline Materials
May 30 – June 1, 2012

NSF/CBMS Conference: Finite Element Exterior Calculus (FEEC)
June 11 – 15, 2012

Bridging Scales in Computational Polymer Chemistry
August 6 – 10, 2012

Reproducibility in Computational & Experimental Mathematics
December 10 – 14, 2012

SEMESTER-LONG PROGRAMS:

(each with 3-4 associated workshops)

Computational Challenges in Probability
Fall 2012: September 5 – December 7

**Automorphic Forms, Combinatorial Representation Theory,
and Multiple Dirichlet Series**
Spring 2013: January 28 – May 3

Low-dimensional Topology, Geometry, and Dynamics
Fall 2013: September 9 – December 6

Computation on Networks
Spring 2014: February 3 – May 9

VIRTUAL INSTITUTE OF MATHEMATICAL AND STATISTICAL SCIENCES (VI-MSS):

*(As part of a broader NSF initiative known as SAVI, VI-MSS partners
two US mathematical science institutes with mathematics and
statistics institutes in India.)*

**Winter School and Conference on Computational Aspects
of Neural Engineering at the Indian Institute of Science,
Bangalore**
December 10 – 21, 2012

**Workshop and Conference on Limit Theorems in Probability
at the Indian Institute of Science, Bangalore**
January 1 – 9, 2013

SUMMER@ICERM:

Geometry and Dynamics (Undergraduate Summer Research)
June 18 – August 10, 2012



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organizers, confirmed participants, and to submit an
application, please go to our website:

<http://icerm.brown.edu>



Fields Institute Director Search

The Fields Institute for Research in Mathematical Sciences invites applications or nominations for the position of Director for a three- to five-year term beginning July 1, 2013 (once renewable).

The Fields Institute is an independent research institute located on the downtown campus of the University of Toronto. The Institute's mission is to advance research and communication in the mathematical sciences. With 3000 registered annual participants from around the world, its programs bring together researchers and students, commercial and industrial users, and an interested public. See www.fields.utoronto.ca.

Candidates should be researchers in the mathematical sciences with high international stature, strong interpersonal and administrative skills, and an interest in developing the activities of the Fields Institute.

A letter of application addressing the qualities above, together with a CV and names of three references should be sent to directorsearch@fields.utoronto.ca. Expressions of interest or nominations may also be sent to this address.

Applications or nominations will be considered until the position is filled, although the Search Committee will begin discussions in June 2012. Women and members of underrepresented groups are encouraged to apply.

2011–2012 Rates: Institutions

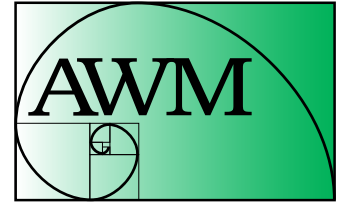
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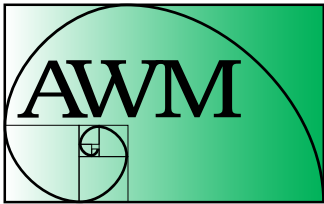
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Volume 42, Number 3, May–June 2012

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