ASSOCIATION FOR WOMEN IN MATHEMATICS

Newsletter

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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.

IN THIS ISSUE

PRESIDENT'S REPORT

It is with great pleasure that I address this report to the whole mathematical community! As of March 2014, all current and previously embargoed *AWM Newsletters* are available to members and non-members alike through the AWM website. The academic world is embroiled in an ongoing debate on "open access" for journals, books, etc. A version of this debate unfolded at the January Executive Committee meeting over open access for the *AWM Newsletter*, weighing the advantages of getting our message out to the broader community against the desire to offer unique benefits to our members. We believe that most of you who are currently members have joined AWM because you believe in our mission and will not begrudge our efforts to spread our message to a broader audience. We firmly hope that those of you who are not members, but find our *Newsletters* informative and thought-provoking, will join AWM to help us support the growing community of women in mathematics.

One of the current initiatives at AWM is to broaden the reach of the Association beyond academics to include more people working in government and industry. Please help us reach out to this audience by telling your friends in government or industry about AWM. You could, for example, send them a link to this *Newsletter*! We would also be interested in hearing from those of you currently working in industry about how AWM could better serve you or your industry.

On a more somber note, the mathematical community is mourning the death of Lee Lorch (1915–2014) who died in March at the age of 98. Lee devoted much of his energy over many years to promoting fair treatment of women and minorities, often at the expense of his own career. The inspiring story of his life is described in several articles, such as his *New York Times* obituary, but his exceptional efforts to support women in mathematics and to help AWM in the early days of its existence are often overlooked. In recognition of all he did for women in mathematics, AWM is including its own tribute to Lee in the current issue of this *Newsletter*. I urge you to read it. Lee Lorch was an amazing person and we owe him our deepest gratitude.

I have been reading lately about a psychological phenomenon known as "implicit bias." As described by the Kirwan Institute for the Study of Race and Ethnicity, "implicit bias refers to the attitudes or stereotypes that affect our understanding, actions, and decisions in an unconscious manner." The Kirwan Institute's report, *Implicit Bias Review 2013*, details increasing scientific evidence that implicit bias affects us all; it affects our thinking and our actions in ways we

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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.

Circulation: 3500.

PRESIDENT'S REPORT *continued from page 1*

are not aware of and generally do not intend. It is a fascinating subject. (For a brief introduction to the subject, I suggest *Blindspot: Hidden Biases of Good People* by Banaji and Greenwald, and for a more in-depth discussion of how our minds work, try *Thinking Fast and Slow* by Kahneman.) While I believe that overt discrimination against women in the sciences has decreased significantly in the past several decades, implicit bias is more subtle and harder to eradicate. So what will it take to erase the implicit association of "mathematician" with "male"? In all likelihood, it will not disappear until the proportion of women in the field increases significantly, but we can weaken that association by making female mathematicians more visible through lectureships, prizes, workshops, conferences, etc. In that effort, AWM can make a difference.

One of the long-held goals of AWM is to assure that the accomplishments of female mathematicians are appropriately recognized and rewarded. An important step in this process is bringing well-qualified women to the attention of selection committees. Toward this end, AWM recently sent out a survey asking for suggestions for nominees for AMS, MAA, and SIAM prizes and Fellows. (The survey is available at https://www.surveymonkey.com/s/3F5VLSC.) Names suggested through this survey will be passed on to a potential nominator with a personal note from the AWM President. In the past month, I have contacted numerous people with suggested candidates for AMS Fellows. I am pleased to report that the response has been very positive. It will be interesting to see if the proportion of females among the new AMS Fellows this year will be more than last year, when only 10% of the newly appointed Fellows were female.

AWM is also proud to offer its own awards and honors to outstanding women in the field. We are pleased to announce in this *Newsletter* two awards: the 2014–15 Ruth Michler Prize and the 2015 Sonia Kovalevsky Lecturer.

The Ruth I. Michler Memorial Prize is one of our most valued awards. It provides a fellowship for a mid-career women to spend a semester focusing on research, without teaching obligations, in the Mathematics Department of Cornell University. It is named after Ruth Michler, a talented mathematician who was killed in a tragic accident at the age of 33. AWM is pleased to announce the winner of the 2014–15 Michler Prize, Sema Salur, Associate Professor of Mathematics at the University of Rochester. Professor Salur's research is in differential geometry, geometric analysis and mathematical physics. I am sure she will find the Cornell math department to be a very stimulating environment. Congratulations to Sema Salur!

The 2014 AWM-SIAM Sonia Kovalevsky Lecture will be given by Irene M. Gamba, Professor of Mathematics and Member of the Institute for Computational Engineering and Sciences at the University of Texas, Austin. Named after Sonia Kovalevsky, a widely known Russian mathematician of the late 19th century, the Kovalevsky Lecture was established to highlight significant contributions of women to applied or computational mathematics. It is presented as a plenary lecture at the SIAM Annual Meeting. Professor Gamba's extensive research contributions in applied and computational analysis, mathematical and statistical physics, and non-linear kinetic partial differential equations do honor to this lectureship.

Before closing, I would like to highlight some events coming up in the next few months. The USA Science and Engineering Festival (USASEF) is a 3-day event,

to be held April 25–27 at the Convention Center in Washington, D.C. AWM took part in the two previous USASEFs in 2010 and 2012, running one of the most popular booths at the Festival with girls, boys, parents, and grandparents lining up to try their hand at the activities. Back by popular demand this year, the AWM booth is titled "Secret messages, or how to write your journal so your brother cannot read it." I am looking forward with enthusiasm to participating in this event. Many thanks to Irina Mitrea for organizing it!

The 2014 SIAM Annual Meeting will take place July 7–11 in Chicago. AWM activities at that meeting include two minisymposia organized by Chiu-Yen Kao and Ching-Shan Chou, a graduate student poster session, and a two-session career panel organized by Misun Min and Xueyan Wang. In addition, the Sonia Kovalevsky Lecture will be featured as a plenary lecture. Later in the summer, August 6–9, MathFest 2014 will be held in Portland, Oregon and will feature the AWM-MAA Falconer Lecture (to be announced in the next newsletter).

A list of other upcoming events, run by various organizations, can be found on the AWM website under "Events of Interest." The biggest mathematical event on the horizon is the International Congress of Mathematics (ICM) that will take place in Seoul, Korea, August 13–21, with the International Congress of Women in Mathematics (ICWM) held in conjunction with the ICM on August 12 and 14. As described on their website:

> The purpose of the ICWM 2014 is to bring together women mathematicians and supporters of women in mathematical sciences from around the world to showcase the mathematical contributions of women, to exchange ideas about supporting and encouraging active careers for women in the mathematical sciences, and to provide opportunity for mathematicians to meet and talk with women in the mathematical sciences from around the world.

The ICWM will feature plenary talks, poster sessions, a panel and a banquet. It will conclude on the afternoon of August 14, in time for the ICM Emmy Noether Lecture, a plenary ICM lecture to be given by former AWM president Georgia Benkart.

Also approaching is the application deadline for the 2015 AWM-SIAM Workshop. The workshop will be held at the SIAM Conference on Computational Science and Engineering (CSE) in Salt Lake City, March 14–18, 2015. (The change in venue is due to the fact that the SIAM Annual Meeting will be replaced by the International Congress on Industrial and Applied Mathematics in Beijing in 2015.) The workshop minisymposia for recent PhDs will focus on Mathematical Modeling and High-performance Computing for Multi-physics and Multi-scale Problems, while the poster session for graduate students will include all areas of research. Graduate students and recent PhD recipients are encouraged to apply. The application deadline is July 1.

Business concluded, we come to my favorite part of the President's Report, my chance to muse on random topics. I was recently interviewed by a reporter from *The Christian Science Monitor* on the occasion of Pi Day. She originally intended to write about famous historical figures in mathematics, but the conversation soon turned to more current topics. As President of AWM, I am often

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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
AWM is a 501(c)(3) organization.

Institutional Membership Levels

Category 1: $325
Category 2: $325
Category 3: $200

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
γ **Circle:** $1000–$2499

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. 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 queries/material for columns to Anne Leggett, leggett@member.ams.org. Send all book review queries/material to Marge Bayer, bayer@math.ku.edu. Send all education column queries/material to Jackie Dewar, jdewar@lmu.edu. Send all media column queries/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.

asked about the problems encountered by women in mathematics today. While I am willing to discuss at length the issues facing women in the profession and the efforts of AWM to address those issues, I always prefer to conclude the conversation on a positive note. It is important that our message to young women considering a career in math, or facing the challenges of graduate school and job hunting, be an encouraging one: a career in math can be exciting, rewarding, and flexible enough to accommodate many lifestyles. I am told that I am an incurable optimist (a character flaw I have always been thankful for) so perhaps my view is overly rosy. But given the chance to start over, I, for one, would do it again in a heartbeat.

Ruth Charney

Best wishes for a great summer.

Ruth Charney
Waltham, MA

In Memoriam: Lee Lorch

Lee Lorch, mathematician, teacher, activist, friend, passed away in Toronto on February 28, 2014. Lee was a man of uncommon valor, and we were fortunate that mathematics was his chosen profession. He made the world and the mathematics community a better place. His work was never done, and he fought tirelessly throughout his life for social justice.

Canada became Lee's home when he was blacklisted in the United States for his involvement in the civil rights movement. He was fired from institutions that later in life awarded him honorary degrees. He was a thorn in the side of a mathematics community that did not always welcome on an equal footing women or other underrepresented groups.

When we attempt to articulate what Lee meant to us, we feel, as we always did in Lee's presence, inadequate. Of course, we felt this way because Lee's life set the bar so high that we could only reach for, but never fully realize, the standards he set for us.

All AWM Presidents of a certain age knew Lee well. I'm pretty sure that's when I first met him, in the late 1980s. He was a great friend and supporter of AWM, never missing a business meeting. He always came with an injustice to be made right, a petition to be signed, and in his quiet, calm manner, stood up and moved us to do the right thing. Lee did not hesitate to tell you when you fell short,

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

AWM Travel Grants: May 1, 2014 and October 1, 2014

AWM Workshop at SIAM: July 1, 2014

AWM Workshop at JMM: August 15, 2014

AWM-MAA Falconer Lecture: September 1, 2014

AWM Alice T. Schafer Prize: September 15, 2014

AWM-AMS Noether Lecture: October 15, 2014

AWM-SIAM Sonia Kovalevsky Lecture: November 1, 2014

Ruth I. Michler Memorial Prize: November 1, 2014

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but he did so in a way that educated and inspired, not intimidated. This uncanny ability may account in some small part for the countless mathematicians, many of them African-American women, whom he nurtured and encouraged over the years.

Lee lived a long, productive life, and his gentle warrior spirit lives on in all those he touched. He and his family paid dearly for the principled lives they led. His late wife, Grace, was captured for the ages in a famous photograph that shows her coming to the aid of Elizabeth Eckford, one of the Little Rock Nine students being taunted by a menacing crowd. Lee is survived by a daughter, Alice Bartels, two granddaughters, and a sister. We offer our sincere condolences to his family and friends throughout the world who mourn his passing.

For those members who did not know Lee, there are links below to several articles and obituaries that provide a glimpse into his legacy. Please read them, so you can be inspired as we were by an extraordinary life well lived.

Rhonda Hughes, for AWM

Lee Lorch

The remembrances of several of AWM's past presidents, members, and friends follow.

Mary Gray:

In my tribute to "Lee Lorch, Principled Activist," in AWM's celebration of his 95th birthday three years ago, I noted how inspiring was his steadfast commitment to social justice at considerable personal cost. For Lee there was always a good cause and always another thing Lee thought we should do for it. Although few could match his commitment and courage, it is a comfort to realize that his influence lives on. Learning this week of a long-standing quasi-privatization provision of Social Security that disproportionately disadvantages women, minorities, and others poorly compensated for the work that they do, I sighed and thought that here was another wrong to be righted, but maybe without my help. It doesn't affect me and it's not currently illegal, so it is appealing merely to offer sympathy and bemoan still another inequity. But Lee would not have let it go and neither can I.

When AWM was in its infancy, Lee was among the few upon whom we could count always to be supportive, indeed some felt embarrassingly so. "Would it be better just to keep quiet rather than pointing out the latest egregious affront to women or minorities?" "Should I speak up and focus attention on the issue to the possible future detriment of my career or should I just keep quiet?" Lee's example, while inspirational, was also cautionary.

When for the nth time it has been said, or at least implied, that women can't do really good mathematics or that even if they can, they certainly should not be given a job that should have been filled by a man, it has sometimes been tempting to give up the fight. When for maybe the n + first time we hear about human rights violations here or abroad, it is easy to decide that there is little an individual can do and so do nothing. Lee's expectations for trying to right every wrong, remedy every injustice, were immense—and unfortunately often not met—but he never gave up. It may take years to see any progress, but without a first step nothing will be achieved. We now have fair housing legislation, in part because of Lee's courage in pushing for an end to discrimination. Schools are by law integrated, we have more diversity in mathematics, some oppressive governments have disappeared, but there is a long way to go. Taking up the cudgels may become overwhelming and ultimately seem futile, but Lee's legacy is that we try.

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IN MEMORIAM: LEE LORCH *continued from page 5*

My hope is that future generations of mathematicians will join with AWM and work for its goals, remembering.

Bhama Srinivasan:

Lee Lorch was a phenomenon, being a fine mathematician and a teacher, as well as an activist in the best sense of the word. He was well-known for his leadership in the campaign to desegregate Stuyvesant Town, which ultimately led to the passing of the Fair Housing Act of 1968. After he moved to Toronto that year, it was natural for him to become a loyal friend of AWM when it was founded in 1971. He remained committed to the concerns of women mathematicians till the end.

When I was the president of AWM (1981–83) Lee would often come up to me at a Joint Mathematics Meeting, affectionately addressing me as "Madam President." He would suggest some resolution to be introduced at the AWM or AMS Business Meetings, or point out something at the meeting that was not quite fair. I greatly admired his keen sense of justice. I am saddened at his passing, but grateful to have known him.

Linda Keen:

I first met Lee Lorch in the mid-sixties when I went to my first AMS summer meeting. He sought me out because he had been a student of my father's at Townsend Harris High School in New York in the early 1930s and admired him for his commitment to the rights of the common people. After that, we met regularly at national meetings and talked about politics and, in particular, about women in mathematics. Although I was aware that there were few women mathematicians, I was in denial about how serious the problem was. I wasn't aware that women didn't get invited to speak at conferences or get prestigious fellowships. I just thought I wasn't good enough. This was a defense mechanism—I needed to put my emotional energy into doing mathematics and into my young family and didn't have any left over to spend on dealing with the problem. By the early 1970s I had tenure and was a single mother. AWM was just coming into being. Lee wasn't into denial and, knowing that I had been brought up with a strong social conscience, tried to induce me to become more active in social issues.

I was elected to the AMS Council in the early eighties and served as President of AWM in 1984–86. This was a busy time and Lee was always there at AMS Council meetings and AWM meetings, ever the gadfly. He often pricked my conscience and spurred me to action when I was hesitant. For Lee, being too busy with career or personal responsibilities was not an excuse not to stand up for your beliefs, no matter the consequences. Compromise was not an option for him. He stood up for the the rights of the oppressed, whether they were persecuted for their sex, their beliefs or the color of their skin. For this he lost jobs and the ability to earn his living in the United States. Lee's integrity influenced every

CALL FOR NOMINATIONS

The Etta Z. Falconer Lecture

The Association for Women in Mathematics (AWM) and the Mathematical Association of America (MAA) annually present the Etta Z. Falconer Lecture to honor women who have made distinguished contributions to the mathematical sciences or mathematics education. These one-hour expository lectures are presented at the MAA MathFest each summer. While the lectures began with MathFest 1996, the title "Etta Z. Falconer Lecture" was established in 2004 in memory of Falconer's profound vision and accomplishments in enhancing the movement of minorities and women into scientific careers.

The mathematicians who have given the Falconer lectures in the past are: Karen E. Smith, Suzanne M. Lenhart, Margaret H. Wright, Chuu-Lian Teng, Audry Terras, Pat Shure, Annie Seldon, Katharine P. Layton, Bozenna Pasik-Duncan, Fern Hunt, Trachette Jackson, Katherine St. John, Rebecca Goldin, Kate Okikiolu, Ami Radunskaya, Dawn Lott, Karen King and Pat Kenschaft. Marie Vitulli will deliver the 2014 lecture.

The letter of nomination should include an outline of the nominee's distinguished contributions to the mathematical sciences or mathematics education and address the nominee's capability of delivering an expository lecture. Nominations are to be submitted as ONE PDF file via MathPrograms.Org. The submission link will be available 45 days prior to the deadline. Nominations must be submitted by **September 1, 2014** and will be held active for two years. If you have questions, phone 703-934-0163 or email awm@awm-math.org.

aspect of his life as well as the lives of many of his students and colleagues—it certainly influenced mine. He had a long and very full life. It was a pleasure to have known him.

Carol Wood:

Lee and I met in the early '90s, when I became involved in the mathematics community at the national level. He gave advice, or rather "instructions," and lots of it, especially when I was President of AWM. He was charming and he was relentless. I found it impossible to live up to his expectations. Nonetheless there was never a harsh rebuke from Lee, just more prodding. I came to understand his modus operandi: to keep pushing us all in the right direction.

I marveled at his fervor for action and his capacity for outrage; at 75 he had the fury of someone a third his age. This never slackened in the ensuing quarter century, as best I can tell.

My image of Lee is that of a shoulder angel, as depicted in cartoons: a personified conscience, this particular one with a big grin, whispering in my ear.

Judy Green:

Lee Lorch died on February 28 at the age of 98. To those of us who became active in AWM in the early 1970s, he was a very special person and will be sorely missed.

I do not remember when I first met Lee, probably because he seemed always to be at meetings, constantly encouraging young people, especially minorities and women whom he knew would not be encouraged by all in the mathematical community. He always made me feel that I could, and should, not be afraid to speak up when I cared about something. While numerous obituaries, including a long one in *The New York Times*, have emphasized his many contributions to civil rights and their cost to him, the same principles that motivated those contributions made him equally consistent in his support of the rights of women, both as people and as mathematicians. Admiration for Lee and what he and his wife had done can be seen in the January 1975 issue of this newsletter, which included an "In Memoriam" for Grace Lorch, even though she was not a mathematician.

In Lee's interactions with other established mathematicians, both in general and during his two terms on the Council of the AMS (1974–76 and 1980–82), he was tireless, if not always successful, in attempting to disabuse them of the idea that they could resist making the Society part of the solution to discrimination without making it part of the problem. Lee himself spoke about this at an AMS Special Session, "Meetings of Mathematicians," in January 1994 in Cincinnati. His talk was reproduced in the 1996 *A Century of Mathematical Meetings*, edited by AWM's long-time Meetings Coordinator, Bettye Anne Case, and published by the AMS.

One of the many things Lee did to help me find my place within the mathematical community was to encourage me to run for the AMS Council when I was an untenured

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CALL FOR NOMINATIONS

The 2016 Noether Lecture

AWM established the Emmy Noether Lectures in 1980 to honor women who have made fundamental and sustained contributions to the mathematical sciences. In April 2013 the lecture was renamed the AWM-AMS Noether Lecture and starting 2015 will be jointly sponsored by AWM and AMS. This one-hour expository lecture is presented at the Joint Mathematics Meetings each January. Emmy Noether was one of the great mathematicians of her time, someone who worked and struggled for what she loved and believed in. Her life and work remain a tremendous inspiration.

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

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.Org. The submission link will be available 45 days prior to the deadline. Nominations must be submitted by **October 15, 2014** and will be held active for three years. If you have questions, phone 703-934-0163 or email awm@awm-math.org.

assistant professor who had gotten her degree at a time of few jobs and much discrimination. However, in order to be elected I would have to convince people to vote for me. The minutes of Lee's first council meeting on January 14, 1974, mentions previous "Council restrictions against electioneering in the biographical information accompanying the ballot for contested positions on the Council" and that a motion was made "to continue as at present." After many amendments what passed allowed candidates "to make a statement … without restriction and be asked to list up to five of her or his research papers." Thus Lee, and Mary Gray among others, gave me and other young mathematicians of the 1970s a way to actively participate in discussions of the needs of the untenured faculty. I was elected to the Council later that year and learned a lot from Lee during the two years we served together (1975–76).

Over the years my friendship with Lee deepened, and when he reached the point at which he had to stop attending mathematics meetings, my husband, also a mathematician, and I started visiting him in Toronto whenever we were there to see family. My non-mathematician sister-in-law sometimes became involved in confirming our arrangements with Lee while we were traveling, and in late 2012, when he was in a rehabilitation hospital, she finally met him. That started a friendship that became so important to her that after his death she placed his photo on her screen saver. That, to me, epitomizes how people who were close to Lee, even for a short time, felt about him.

Although Lee had few mathematical descendants, he had a profound influence on several generations of mathematicians and was a father figure to many of them, myself included. I will always feel honored to have had his friendship.

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**.

Sylvia T. Bozeman:

A Tribute to Lee Lorch

Lee Lorch took seriously the mentoring of women mathematicians. During his short time at Fisk University, did he just happen to encounter three outstanding women students, Etta Zuber Falconer, Gloria Conyers Hewitt and Vivienne Malone Mayes, who were capable of earning the PhD in mathematics? It is more likely that he saw potential in his students and made the decision to help them develop their abilities using all of the instructional techniques, encouragement, professional connections, and other resources available to him. How extremely well his efforts paid off in generations of talented students, taught and mentored by the women (and men) that he produced at that one university, who subsequently earned graduate degrees and claimed numerous distinctions in mathematics, science and engineering.

On those occasions when Lee Lorch visited with his former student, Etta Falconer, and the Mathematics Department at Spelman College, he encouraged me to go beyond the teaching of Linear Algebra in my class, to include Black History and to share my own history. Likewise, he gave lectures on mathematics and on civil rights, sharing much of his own history, during the course of his visits. He inspired us as young faculty to engage more broadly in our courses.

Professor Lorch was able to see more potential in people, organizations, and situations than others could. More importantly, when he saw that potential, that spark of "what could be," he was courageous enough to speak up and to act for the benefit of a better world even at great personal sacrifices.[1] In spite of his family's sacrifices, he maintained a warm and generous spirit and a good sense of humor. That is his legacy. I will always be inspired by it.

The Family of Etta Falconer:

We have very fond memories of Dr. Lorch. His unwavering support of our mother meant that he had a consistent presence in our lives. Whenever he came to Atlanta, he would always visit us and make himself right at home. We have fond memories of him sitting at the kitchen table and talking with our mom for hours—about math and about life. He was there when our mother started studying mathematics at Fisk University. He was a mentor to her as she worked on her PhD. He supported her ventures as she embarked on a career at Spelman College. Later in her career, he traveled to the University of Wisconsin to see our mom receive her honorary PhD. And even after our mother passed, his presence in our lives remained as he came to Atlanta to attend the Etta Falconer Lecture at Spelman College. Through all of these years, he truly grew to be like family. We will always remember his dedicated yet gentle and unassuming nature and we will always be grateful for his many years of friendship to our mother.

Articles about Lee:

http://www.nytimes.com/2014/03/02/nyregion/lee-lorch-desegregation-activist-who-led-stuyvesant-town-effort-dies-at-98.html?src=twrhp&_r=0

http://yfile.news.yorku.ca/2014/03/05/passings-york-professor-emeritus-of-mathematics-lee-lorch-defied-injustice/

http://deantiquate.blog.yorku.ca/2012/02/24/bhm2012_leeandgracelorch/

http://www.thestar.com/news/gta/2014/03/11/mathematician_lee_lorch_fought_tirelessly_against_racism.html

http://www.humanite.fr/tribunes/lee-lorch-mathematicien-et-communiste-est-mort-560417

https://www.youtube.com/watch?v=x3MKhuuMhE0

"President's Report," Georgia Benkart, *AWM Newsletter*, September–October 2010, 1–3.

"Tributes to Lee Lorch on His 95th Birthday," Granville et al., *AWM Newsletter*, September–October 2010, 7–9.

Lee Lorch and Bettye Anne Case, Cincinnati JMM, 1994. Photo © Rebekka Struik

[1] The kind of turmoil faced by Lee Lorch and his wife, Grace, is evident in "Subversive Activity in the South," *Congressional Record—House*, February 17, 1959, pp. 2544–2548. See http://www.mocavo.com/Congressional-Record-Volume-105/981184/1278.

Irene M. Gamba to Be AWM-SIAM Sonia Kovalevsky Lecturer

The Association for Women in Mathematics and the Society for Industrial and Applied Mathematics (SIAM) have selected Irene M. Gamba to deliver the prestigious Sonia Kovalevsky Lecture at the 2014 SIAM Annual Meeting.

Gamba is the John T. Stuart III Centennial Professor in Mathematics and a core Member of the Institute for Computational Engineering and Sciences (ICES) at the University of Texas, Austin where she leads the Applied Mathematics Group. She was selected as the AWM-SIAM Sonia Kovalevsky Lecturer for her contributions to analytical and numerical methods for statistical transport problems in complex particle systems, and for her service to the applied mathematics community, including serving on scientific, policy, and editorial committees and boards and training postdocs and graduate students, including women applied mathematicians.

Gamba received her Licenciatura en Matemáticas from Universidad de Buenos Aires, Argentina and her MS and PhD in Mathematics from the University of Chicago. Her PhD advisor was Jim Douglas Jr. As a National Science Foundation Postdoctoral Research Fellow at the Courant Institute of Mathematical Sciences she worked with Cathleen Morawetz.

Before her current position Gamba spent three years as a faculty member at the Courant Institute, in addition to two postdoctoral fellowship years there. She has held invited visiting positions at many universities and institutes, both nationally and internationally, including IPAM at UCLA, where she was also a member of the Scientific Advisory Board for seven years, ICERM at Brown University, École Normale Supérieure at the Université de Paris, France, and Newton Institute at Cambridge University, England.

In addition to being in the inaugural class of Fellows of the American Mathematical Society (2013), Gamba is also a Fellow of the Society for Industrial and Applied Mathematics (2012). She was awarded a Japan Society for the Promotion of Science (JSPS) fellowship at Kyoto University, Japan, March 2013 and the University of Texas (ICES) Distinguished Research Award for 2012. She is the author of more than 90 research articles and is a sought-after conference speaker. The title of her Sonia Kovalevsky Lecture is "The evolution of complex interactions in non-linear kinetic systems."

Irene M. Gamba

Gamba has served on the editorial board of several journals and is currently an editor for the *Journal of Mathematical Fluid Dynamics* and an Advisory Board member for Springer Graduate and Undergraduate Texts in Mathematics (GTM) and (UTM) Series, among others.

The 2014 SIAM Annual Meeting will be held July 7–11 in Chicago, IL. 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 Margaret Cheney, Barbara Keyfitz, Susanne Brenner, Suzanne Lenhart, Andrea Bertozzi, Dianne O'Leary, Lai-Sang Young, Irene Fonseca, Ingrid Daubechies and Joyce McLaughlin.

AWM Essay Contest

Congratulations to all the winners of the 2014 AWM Essay Contest: Biographies of Contemporary Women in Mathematics! Many thanks to Heather Lewis, Nazareth College, contest organizer, for coordinating the judging, and to the committee that does the matching (of students to subjects) and the judging. We are also grateful to Math for America for their sponsorship of this contest. The essay contest is intended to increase awareness of women's ongoing contributions to the mathematical sciences by inviting students from sixth-graders through college seniors to write biographies of contemporary women mathematicians and statisticians in academic, industrial, and government careers.

The 2014 Grand Prize essay appears after the list of this year's winners. Congratulations to all! To see the other prize-winning essays, visit http://www.awm-math.org/ biographies/ contest/2014.html.

GRAND PRIZE WINNER

"The Road Not Taken"
Nathalie Sieh, St. Cecelia Interparochial School,
Clearwater, FL
(The essay was about Ms. Mary Judith Gedroiz of Ameriprise Financial Advisors.)

Undergraduate Level Winner

"Nora Moushey: Chief Actuary and Lifelong Learner"
Tory Fields, Ball State University,
Muncie, IN
(The essay was about Ms. Nora Moushey of Western & Southern Financial Group.)

Undergraduate Level Honorable Mention

"No More Excuses"
Carolyn Brown, Brigham Young University,
Provo, UT
(The essay was about Dr. Emily Evans of Brigham Young University.)

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CALL FOR NOMINATIONS

The 2015 Kovalevsky Lecture

AWM and SIAM established the annual Sonia Kovalevsky Lecture to highlight significant contributions of women to applied or computational mathematics. The 2015 lecture will be given at the International Congress on Industrial and Applied Mathematics (ICIAM), Beijing, China, August 10–14, 2015. 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, Susanne Brenner and Barbara Keyfitz, and Margaret Cheney. Irene Gamba will deliver the 2014 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.Org. The submission link will be available 45 days prior to the deadline. Nominations must be received by **November 1, 2014** 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.

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High School Level Winner
"Dr. Kate Stevenson: Adding Value"
Francesca Paris, Head-Royce School,
Oakland, CA
(The essay was about Dr. Katherine Stevenson of California State University, Northridge.)

High School Level Honorable Mention
"Delving Into Uncertainty Analysis: A Biography of Dr. Laura P. Swiler"
Simin Liu, Albuquerque Academy,
Albuquerque, NM
(The essay was about Dr. Laura P. Swiler of Sandia National Laboratories.)

Middle School Level Winner
Same as Grand Prize Winner

Middle School Level Honorable Mention
"A True Kennedy Legacy: Suzanne Croco and Her Story"
Karen Ge, Kennedy Junior High School,
Lisle, IL
(The essay was about Mrs. Suzanne Croco of Kennedy Junior High School.)

The Road Not Taken

Nathalie Sieh

What makes a person choose Path A over Path B? What makes a person take the road less traveled?

"My father had a substantial career at the top 'Big 8' accounting firm Arthur Andersen, but you could have knocked him over with a feather when I told him I was going to get an MBA and a CPA. He thought I would be a nice nurse or marry well."

Mary Judith Gedroiz, a Certified Public Accountant, grew up in a family and in a community where girls were supposed to develop their femininity or their faith—not their academic potential. Mary Judith, however, never saw "being a girl" as something that limited what she could do. And yet, while she never saw it as an excuse, there *was* one obstacle she had to overcome: her dyslexia. "When I was in elementary school, I was labeled a poor speller and somebody who couldn't read, so I was either sent to the back of the class or off to remedial. I certainly felt like I wasn't as smart as everyone else."

"The beginning of wisdom is calling things by their right name."
—Chinese proverb

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 September 15, 2014. 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 Antonio, January 2015.

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 the 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 material is to be submitted as ONE PDF file via MathPrograms.Org 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 **September 15, 2014**. If you have questions, phone 703-934-0163, email awm@awm-math.org, or visit www.awm-math.org.

Mary Judith is the perfect example of why labels matter. Her teachers labeled her slow and lazy. Her friends used to say, "Poor Mary Judith sitting at the back of the class!" At the time, she did not know she had dyslexia. School eventually got better because she found ways to compensate, not because it became easier or because her dyslexia went away. She would memorize words and how they were spelled. She would count the number of students in front of her, find the section she would be asked to read aloud, and then practice that paragraph over and over until it was her turn. She would create patterns, charts, and tricks to help classify and retain information. She was persistent and worked hard.

"I believe that learning to develop my compensatory skills played a huge role in my success as a professional because in finance one has to intuit many different things going on at the same time. Perhaps my ability to pull information out of context, concentrating not just on one indicator, but bringing many in laterally, may have been affected by what I learned to do from my struggles with dyslexia." Mary Judith never set out to make math her career. "I think I basically focused so much on just getting through school, and not getting labeled and teased, that I wasn't so much centered on what I wanted to do in the future." She did not set out to be a trailblazer, though she was the first girl in her family, and, in fact, in her school, to take the "math path." She simply wanted to get a job, and she knew what she was good at: math.

"If opportunity doesn't knock, build a door." —Milton Berle

Mary Judith first looked for a job as a high school teacher. But there were no jobs. She even looked in the obituaries. She found a dead history teacher in New Hampshire and called the school. "They told me not to send a resume because they already had over a thousand resumes. Well, so much for that!" A neighbor then told her about an MBA in Accounting program at Rutgers University. The program promised an internship, preparation for the CPA exam, and exposure to the "Big 8" accounting firms. "Mathematics," explained Mary Judith, "made me happy because I felt capable, whereas before I felt good for nothing." This is why she applied and eventually received an MBA/CPA from Rutgers University, despite discouragement and astonishment from her family. She went on to enjoy a successful early career at Haskins & Sells, now called Deloitte Touche. After she was married, she partnered with her husband, Paul, in the securities business as a registered principal. She continues to do this today.

Mary Judith's ability to see patterns and trends that no one else sees has benefited countless numbers of people. She enjoys her current profession "more than ever" because she loves to help those who are not as adept and knowledgeable in math and in finance. "I believe I do have a gift that other people don't have, and I will always be compassionate to those who don't have that gift. I know what it feels like for something not to make sense. I try to share what I can with others, breaking down numbers so they can make sense."

Nowadays, instead of "slow" or "lazy," she is often called a role model. She likes this label a lot better. She believes "If you know/have a role model who is, or is perceived as, a superwoman, then people think, 'Well, that's not me, I can't aspire to that.' Many young girls still have the idea that to excel in math, you have to have Einstein's brain, funny hair, ugly clothes, thick-rimmed glasses, and be quite boring and serious." Mary Judith does not fit this stereotype very well. She is beautiful and charming, wears fashionable clothing, and loves having fun! She is an accomplished photographer, devoted wife, loving mother, and great friend. She is exactly what math needs as a spokeswoman for its cause and advancement for young girls. I am proud to say that Mary Judith Gedroiz is my aunt and role model, not just because of the obstacles she overcame, but because she is somebody that one day maybe I could become.

"…Two roads diverged in a wood, and I—
I took the one less traveled by,
And that has made all the difference." —Robert Frost

About the Student:

My name is Nathalie Sieh. I am in 7th grade at St. Cecelia Interparochial School in Clearwater, Florida. My whole life, I have been the worst speller in my grade. At first, everyone thought that it was normal because I was so little. As the years passed, it got worse and worse. But, in 5th grade, I got the news that changed my life. I had dyslexia. My life changed so much that I thought it was ruined, only to find out later that it changed for the better. I realized that just because I have trouble with spelling and reading does not mean that I am bad at everything else, too. I am stronger in things that others are not. I love math. This summer I will attend a 3-week program at UC Berkeley called Math Zoom, which is a training program for mathematically gifted students.

AWM at Baltimore JMM

Sybilla Beckmann, Ruth Charney, William Yslas Vélez, and Bernice Lopez Vélez

Jacqueline Davis & Ruth Charney

Daniel B. Szyld & Malena Espanol

Marylesa Howard & Aisha Najera Chesler

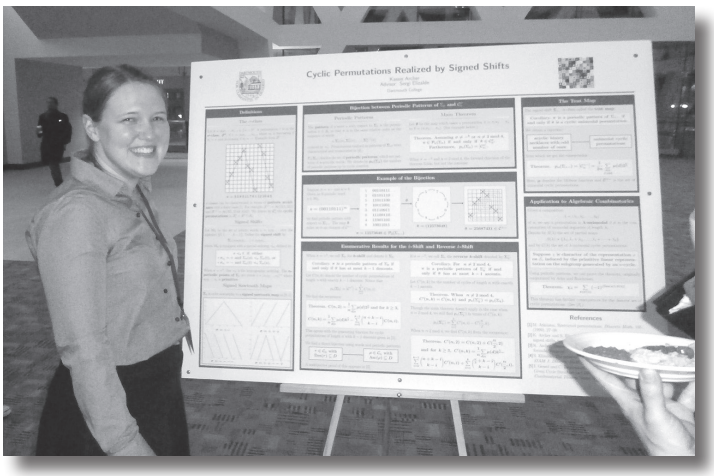
Georgia Benkart & Tom Halverson

sarah-marie belcastro & Thomas Hull

Jill Pipher & Svitlana Mayboroda

Bettye Anne Case & Christina Sormani

Jennifer Tripp, Cloie Webster & friends



Kassie Archer at her poster

Sema Salur

Sema Salur Wins Ruth I. Michler Memorial Prize

The Association for Women in Mathematics and Cornell University are pleased to announce that Sema Salur, University of Rochester will receive the 2014–15 Ruth I. Michler Memorial Prize.

The Michler Prize grants a mid-career woman in academia a residential fellowship, without teaching obligations, in the Cornell University mathematics department. This pioneering venture was established through a very generous donation from the Michler family and the efforts of many people at AWM and Cornell.

Sema Salur was selected to receive the Michler Prize because of her wide range of mathematical talents. In 1993 she earned a BS in Mathematics from Boğaziçi University, Turkey. Salur received her PhD in mathematics under the direction of Gang Tian from Michigan State University in 2000.

Before coming to the University of Rochester in 2006, where she is currently an associate professor in the Department of Mathematics, Salur spent time as a visiting assistant professor at both Cornell University and Northwestern University. She has been a research fellow at Princeton University, the Mathematical Sciences Research Institute (MSRI) and the Institute for Pure and Applied Mathematics (IPAM). In spring 2003 and spring 2004 she visited her collaborator Dominic Joyce at Oxford with support from an AWM Mentoring Grant. She will be spending Spring Semester 2015 at Cornell University.

Salur's research is in the area of manifolds with special holonomy and calibrations. In particular she studies geometry and topology of the moduli spaces of calibrated submanifolds inside Calabi-Yau, G_2 and *Spin(7)* manifolds. Her work is partially funded by a research grant from the National Science Foundation.

At Cornell Salur will continue her work on manifolds with special holonomy and Ricci flat metrics. She plans to collaborate with Xiaodong Cao and Yuri Berest on projects related to the geometric flows on G_2 and *Spin(7)* manifolds. Understanding these flows will have many applications in mathematical physics and algebraic geometry. She also plans to work with Tara Holm and Reyer Sjamaar on calibrated submanifolds and special vector fields on manifolds with special holonomy. These are similar to Hamiltonian vector fields which play an important role in symplectic geometry.

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

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.

Column Editors' Note: Here we have two articles about efforts to address the underrepresentation of women among mathematicians as subjects of Wikipedia articles. One is from the perspective of a mathematician and the other is from the perspective of a writer/editor.

Writing Women in Mathematics into Wikipedia

Marie Vitulli, University of Oregon

I have long been concerned about both the underrepresentation of women in mathematics and the inadequate recognition of outstanding mathematicians who are women. I created The Women in Math Project (http://pages.uoregon.edu/wmnmath) website and have chaired the AWM Policy and Advocacy Committee since 2011 to help advance women in mathematics. When I found out that my institution, the University of Oregon, was hosting a workshop and edit-a-thon on writing women into Wikipedia on March 8–9, 2013 I eagerly signed up for both events. [1] [2] Sarah Stierch, who was trained as a community fellow and subsequently served as a program evaluation coordinator at the Wikimedia Foundation, the non-profit organization that operates Wikipedia, was the speaker at both events. Stierch is the author of numerous Wikipedia articles but is no longer an employee of the Wikimedia Foundation. [3] At the workshop we were informed that between 9 and 13% of the Wikipedia editors, that is, contributors, and about 10% of the Wikimedia administrators are women. During the edit-a-thon I decided to write an article about Susan Montgomery. Montgomery was the 2011 AWM Noether Lecturer and in 2012 she was selected as both an AAAS Fellow and an inaugural class AMS Fellow. I felt she clearly merited a page on Wikipedia. I began working on her page during the edit-a-thon and finished up the article a couple of weeks later. My experience writing for Wikipedia was extremely frustrating but in the end I am glad that I undertook this project. I learned that there are many Wikipedia conventions that a contributor must follow.

Every contributor must sign up for an account at http://en.wikipedia.org; the User name that you select will be displayed on your User page and in the history of any article you create or edit. After logging in to a Wikipedia account the User will see a link to her *Sandbox* at the top of the page. This is where a User can create a draft of an article. A biographer must remain neutral and there can't be any conflict of interest with the subject. A current Wikimedia administrator recommends that a biographer start her article with one sentence describing what her subject accomplished and another sentence pointing out why her subject and the subject's work are important. Your subject must be *notable* and every claim you make about her must be backed up by a *credible* citation. Wikipedia has criteria for notability, in general, and for academic notability, in particular. Wikipedia's guidelines on academic notability (also known as the *professor test*) stipulate that a professor is notable provided that she meets at least one of nine criteria listed on the Wiki page for academic notability. [4] Here are the first couple of criteria from that list.

1. The person's research has made significant impact in their scholarly discipline, broadly construed, as demonstrated by independent reliable sources.
2. The person has received a highly prestigious academic award or honor at a national or international level.

There are additional specific criteria notes on the Wikipedia page on academic notability. A contributor must demonstrate notability using *reliable* sources. [5] In general, reliable sources include mainstream news media and major academic journals, both of which are subject to some sort of editorial control. For Wikipedia published original research articles are considered primary sources; expository articles or summaries of the current state of affairs in a particular research area are considered to be secondary sources. Wikipedia also has a page on Biographies in their Manual of Style [6] and a special page on Biographies of living persons [7]. The Wikipedia site includes both an article entitled "List of female mathematicians" [8] and a list of women with Wiki pages that have been designated as belonging to the category *Women mathematicians* [9]. When I perused the latter list I was disheartened to see how many prominent women lack a Wikipedia page.

The first thing I did during the edit-a-thon was to edit the existing Wikipedia page on the Noether Lecture [10] so that the lecturers for 2011–2013, including Montgomery,

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were included on that page. A biography has a better chance of surviving on Wikipedia if the subject is already mentioned on an existing Wikipedia page. I followed all the above-mentioned guidelines and asked Stierch to read my article before I published it. In spite of all my precautions my article was proposed for deletion within ten minutes after it went live by a novice editor who made this remark:

> It is proposed that this article be deleted because of the following concern: This looks like a case of shameless (self)promotion. Hey, look at me: I teach math and I want my CV on Wikipedia. [11]

Stierch responded to the novice editor by saying the biography was in fact a "good faith article by a new editor (not the subject)" and removed the mark for proposed deletion. The article survived because of Stierch's intervention.

The WikiProject Women Scientists [12] is dedicated to ensuring the quality and coverage of biographies of women in science. I have contacted the Wikimedia administrator by the User name Keilana (keilanawiki@gmail.com). She is involved in this project and has agreed to serve as a contact for those of us who want to write pages on notable women in mathematics; she will keep an eye on pages we create. Keilana is currently compiling a list [13] of women in science who are missing from Wikipedia. If you notice someone who is prominent and both doesn't have a page on Wikipedia and is missing from Keilana's list please let her know. If you take a crack at writing a biography I highly recommend that you contact Keilana or some other experienced administrator with an interest in women in science and ask the administrator to follow your page. I intend to write more Wikipedia articles and hope you will join the effort to add more women in mathematics to Wikipedia.

Notes

[1] http://fembotcollective.org/blog/2013/03/06/writing-women-in/

[2] https://en.wikipedia.org/wiki/Wikipedia:Meetup/Eugene/Women%27s_History_Month_2013

[3] http://arstechnica.com/tech-policy/2014/01/wikimedia-foundation-employee-ousted-over-paid-editing/

[4] https://en.wikipedia.org/wiki/Wikipedia:Notability_(academics), or type the shortcut WP:NACADEMICS in the Wikipedia Search box

[5] https://en.wikipedia.org/wiki/Wikipedia:Reliable_sources, or type WP:Reliability in the Wikipedia Search box

[6] https://en.wikipedia.org/wiki/Wikipedia:Manual_of_Style/Biographies, or type WP:MOSBIO in the Wikipedia Search box

[7] https://en.wikipedia.org/wiki/Wikipedia:Biographies_of_living_persons, or type WP:ALIVE in the Wikipedia Search box

[8] https://en.wikipedia.org/wiki/Female_mathematicians

[9] https://en.wikipedia.org/wiki/Category:Women_mathematicians

[10] https://en.wikipedia.org/wiki/Noether_Lecture

[11] https://en.wikipedia.org/w/index.php?title=Susan_Montgomery&oldid=545519309

[12] https://en.wikipedia.org/wiki/Wikipedia:WOMSCI

[13] https://en.wikipedia.org/wiki/Wikipedia:WSL

Closing the Wikipedia Gender Gap in Mathematics

Maia Weinstock, maiaw.com

A significant gender gap persists on Wikipedia, the popular online encyclopedia that has become a primary research source for millions every day. This gap manifests in two ways: First, articles and mentions of important contributions of women—including those in the STEM fields—are vastly outnumbered by those detailing important contributions of men. Second, despite Wikipedia being an open source wiki—meaning anyone can edit and add to its pages—some 80 to 90 percent of Wikipedia's editors are male. [1]

Not surprisingly, such a dearth of women on the pages of Wikipedia and in the worldwide editing community flavors the public perception of the history and sociology of certain fields, especially those that suffer significant gender gaps of their own. I have been attempting to address these issues head on in the past two years through various measures including workshops known as edit-a-thons as well as basic community outreach to those who are not familiar with Wikipedia's inner workings. In this article I will recount some of my experiences in this realm and provide a few tips for getting involved in the important task of adding and correcting Wikipedia content relating to notable women in mathematics and other STEM fields.

Getting Started

I have been a Wikipedia editor—or Wikipedian, in the community lingo—since 2007, which is the year I registered my account. But my early experiences as a contributor were far from welcoming.

My first contribution was the addition of an image that I didn't have the proper rights to add. Shortly after uploading it, I was notified in a scary-sounding message that my image was subject to "speedy deletion." I am a professional editor and writer, so I was pretty sure I knew what fair use was and how it is applied in the U.S. but apparently fair use is different on Wikipedia than it is in the real world. None of this made sense to me at the time, and my contributions were summarily removed. I felt defeated, not only because my image had been zapped, but because I lacked a detailed understanding of what I had done wrong and what I should have done differently. I didn't really know where to turn for this information, and so I did nothing.

It wasn't until two years later, when I attempted to add a mention of the newly created Ada Lovelace Day [2] to the Ada Lovelace article, that I really tried my hand at anything so daring again. Once again, however, my edits were greeted with notifications that they were misplaced and would likely be removed. I recall trying harder this time to

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AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND RECENT PHDs AT THE 2015 JOINT MATHEMATICS MEETINGS

Application deadline: August 15, 2014

For many years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent PhDs in conjunction with major mathematics meetings. Pending funding an AWM Workshop is scheduled to be held in conjunction with the Joint Mathematics Meetings in San Antonio, TX in January 2015.

FORMAT: The new format, which started in 2013, presents research talks focused on a research theme that changes from year to year. In addition, a poster session for graduate students includes presenters from all fields of mathematics. The AWM Workshop talks in San Antonio in 2015 will focus on Homotopy Theory. Participants will be selected in advance of the workshop to present their work. Recent PhDs will join senior women in a special session on Homotopy Theory where they will give 20-minute talks. The graduate students will present posters at the workshop reception and poster session. Pending funding, AWM will offer partial support for travel and hotel accommodations for the selected participants. The workshop will 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 PhDs 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 by **September 15, 2014**.

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have made substantial progress towards her thesis and a recent PhD must have received her PhD 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.

All applications should include:

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

Applications (including abstract submission via the Joint Mathematics Meetings website) must be completed electronically by **August 15, 2014**. See http://www.awm-math.org/workshops.html for details.

get help, but I was still not able to make my case persuasively enough, and my additions were deleted.

Mind the Gender Gap

Down but not out, I decided to start editing smaller articles on a more regular basis. But it wasn't until 2012 that I really stepped up my game. That summer I was invited to participate in something called Ada Camp, an annual gathering of women involved in "open culture" projects—anything from Wikipedia to open source software to fan fiction and much more. [3] It was a wonderful event that opened my eyes to the multitudes of women who were faced with many of the same frustrations that I had experienced in my early Wikipedia days. The women—and a few men—I met were not only supportive but also offered to help if anyone needed assistance in their various community endeavors.

A few months after this I learned that the organizers of Ada Lovelace Day, to which I had contributed since its inception, were planning a few in-person editing parties called edit-a-thons focusing on women in the STEM fields. There was no United States edit-a-thon for the occasion, so I decided I was going to do whatever I needed to do to make one happen. I have long been interested in the history of women in the sciences, and this would be a perfect opportunity to meld that interest with my interest in Wikipedia. I was bolstered by supportive emails from one of my Ada Camp acquaintances, Sarah Stierch, who has been a major force in shaping how new editors experience Wikipedia on the back end. And, long story short, my edit-a-thon at Harvard University was a rousing success: We created several new articles on women in the sciences and cleaned up a slew more. [4]

Subsequently, I have organized and run several similar events, most notably an edit-a-thon at Brown University for Ada Lovelace Day last fall, which was both extremely well attended and also well covered in the media. [5] Putting these meetings together and interacting with attendees has given me the opportunity to learn what works and what doesn't when it comes to newer editors attempting to add specific types of content. In particular, I now have a good sense of what constitutes a solid starting article for a woman in STEM who may not be well known outside of her academic area. This issue has been the subject of several recent *AWM Newsletter* articles [6] [7] [8], so I'd like to offer some tips for ensuring success in your editing endeavors.

Wikipedia Editing Tips

Don't: Attempt to create a new article right off the bat. Until you're fairly familiar with Wikipedia markup, formatting, and sourcing, you would be wise not to attempt to create a new article. Yes, anyone can start a new article, but if you want your article to remain viable, there are a number of elements that you'll need to be aware of first. In general, I strongly suggest you edit articles to begin with and work your way up to creating your first new article. More on this in my penultimate point.

Do: Read Wikipedia's Five Pillars. I always begin any in-person event with a review of Wikipedia's tenets, known as the Five Pillars of Wikipedia. [9] Keep in mind that one of the pillars is that Wikipedia has no rules—which is to say, there are contradictions everywhere in Wikipedia, so learning how to navigate these effectively will only help your efforts on individual pages.

For instance, it's helpful to understand the difference between general advocacy and partiality. Plenty of editors work exclusively on articles that focus on specific types of people or events. Edit-a-thons like the ones I've run are just one example. There are also many WikiProjects that exist expressly for the purpose of advocating for the improvement of particular areas. Each project has a main page where editors suggest articles to improve or add for the sake of meeting the project's goals. Examples include WikiProject Women Scientists (which includes mathematicians) and WikiProject Mathematics. [10][11]

What *is* discouraged is paid advocacy or other conflicts of interest. For instance, it is suggested that you do not create or add to a page about yourself or a company or institution you work for. However, that doesn't mean that occasional editing even of these pages is out of the question. It is simply recommended that when you do so you put a notice on the talk page of the article announcing your relationship to the topic and explaining why you made the edit(s). Alternately, you may elect to request that someone else make an edit if you feel you are too close to the subject to add to it impartially.

Do: Make sure your subject is notable. Notability is tricky, because there are, of course, varying levels of notoriety. In the case of female mathematicians, I would suggest starting with articles on women who have: won at least one prestigious award, led one or more prestigious professional organizations, given public talks or communicated regularly in publicly available media outlets, accomplished some "first" or other major accomplishment(s) that could easily be linked to from another page in Wikipedia, appeared in any

biographical dictionary of women in mathematics, etc.

There is no magic formula for establishing notability, but in general the more sources you can provide showing that a person is widely known and respected, the better the chances others will accept that she is deserving of an article. One tip is to just come out and say the person is notable, using that or a similar word. Of course you have to back it up with sources as well, but writing the person was a "noted mathematician" versus just "a mathematician" is always a good idea.

By the way, if anyone questions you on notability, you might try pointing to articles about men of equal stature as evidence that your person is also worthy. When I was promoting the Ada Lovelace Day edit-a-thon at Brown, I mentioned to media outlets the example of engineer Ingeborg Hochmair, who had no article at the time despite having won the prestigious Lasker Award, which some consider to be America's Nobel Prize. Meanwhile, Hochmair's husband and longtime collaborator—who, notably, did not win the Lasker—did have an article. (We have since rectified this situation.)

Do: Find an exemplar article for you to mimic or copy. I'll let you in on a little secret: I copy quite a bit of content on Wikipedia straight from one article into another. It's often the quickest and easiest way to properly format a page or element, and it prevents me from having to remember

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AWM WORKSHOP FOR WOMEN GRADUATE STUDENTS AND RECENT PHDs AT THE SIAM CONFERENCE ON CSE

Application deadline: July 1, 2014

For many years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent PhDs in conjunction with major mathematics meetings.

WHEN: Pending funding, an AWM Workshop is scheduled to be held in conjunction with the SIAM Conference on Computational Science and Engineering (CSE), Salt Lake City, UT, March 14–18, 2015.

FORMAT: The workshop will consist of a poster session by graduate students and two minisymposia featuring selected recent PhDs, plus an informational minisymposium directed at starting a career. The graduate student poster session will be open to all areas of research, but the two research minisymposia will focus on Mathematical Modeling and High-performance Computing for Multi-physics and Multi-scale Problems. Pending funding, AWM will offer partial support for travel expenses for between fifteen and twenty participants. Departments are urged to help graduate students and recent PhDs 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 at awm@awm-math.org.

ELIGIBILITY: To be eligible for selection and funding, a graduate student must have begun work on her thesis problem, and a recent PhD 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.

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-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 PhDs. In particular, a graduate student should include a letter of recommendation from her thesis advisor.

Applications must be completed electronically by **July 1, 2014**. See http://www.awm-math.org/workshops.html for details.

where to find tutorial pages (which do exist but are sometimes way too complicated or else hard to track down). To be sure, you must make sure to replace the pasted code with code and text relevant for your subject. But finding and remembering example articles is a good habit. This goes for anything from biographies to list pages to personal user pages.

Some examples of female mathematicians whose articles are particularly good as of this writing are:

- Ailana Fraser ("stub" level)
  https://en.wikipedia.org/wiki/Ailana_Fraser
- Andrea Bertozzi ("start" level)
  https://en.wikipedia.org/wiki/Andrea_Bertozzi
- Dorothy Lewis Bernstein (medium length)
  https://en.wikipedia.org/wiki/Dorothy_Lewis_ Bernstein
- Emmy Noether (fully detailed article which has actually been featured on the homepage)
  https://en.wikipedia.org/wiki/Emmy_Noether

Do: Know where to get help. There are two places where you can ask a question about any Wikipedia process or problem you're having and someone will get back to you, usually within a couple of hours (if not sooner). One is the Teahouse, which is geared specifically toward new or relatively inexperienced editors. [12] The other is the Help Desk. [13] They both work in the same basic way: Leave a message in the form of a question and someone will provide an answer of some kind. If I'd known back in the day how helpful this can be, I would have started editing in earnest way sooner. Incidentally, get to know a few of the folks who work on WikiProject Women Scientists. I and others there are generally very willing to help folks who are working on articles about women in the STEM fields!

Don't: Try to learn everything at once. As with anything, learning to be a proficient and confident Wikipedia editor takes time. What's more, the more you edit, the more you build your editing cred, which will help when you want to tackle increasingly complex tasks, including creating new articles or contributing to WikiProjects. Understand that every new article is reviewed upon creation, and reviewing editors often find it suspicious when an editor with little to no editing experience attempts to create an article from scratch. I'm not saying it can't be done, but it's in your best interest to work your way up to doing this so that you will have fewer problems down the line. It also helps to have a professional-looking user profile, which can act as a sort of Wikipedia cover letter and resume.

Do: Have fun! Wikipedia can seem like a serious place, but it's created by all of us, and it's my experience that most editors are friendly and well-meaning. Best of luck in your editing adventures!

Notes:

1. Percent estimates of female contributors vary by country and by study. Wikipedia's 2011 user survey (http://blog.wikimedia.org/2012/04/27/nine-out-of-ten-wikipedians-continue-to-be-men/) found that only about 10 percent of editors worldwide self-reported as being female. The U.S. enjoyed the largest percentage of female contributors, at 14–15 percent. In contrast, on the low end of the scale only 3 out of every 100 Indian editors claimed to be female. A separate 2013 study that combined several data sets (http://mako.cc/copyrighteous/the-wikipedia-gender-gap-revisited) suggested that the percentage of female Wikipedia editors in the U.S. may be closer to 23 percent, while the percentage worldwide is estimated at around 16 percent.
2. Ada Lovelace Day is a worldwide celebration of women in the STEM fields. Visit http://findingada.com for more.
3. Ada Camp is run by the Ada Initiative: http://adainitiative.org/what-we-do/events/
4. A full recap of the Harvard Ada Lovelace Day event can be found at http://blog.wikimedia.org/2012/10/25/an-ada-lovelace-day-edit-a-thon-at-harvard-university/
5. Recap of the Brown Ada Lovelace Day edit-a-thon, including media coverage: http://annalsofspacetime.blogspot.com/2013/10/ada-lovelace-wikipedia-edit-thon-at.html
6. Margaret A.M. Murray. "Media Column: Women Mathematicians on the Web, Part III: Wikipedia," *AWM Newsletter* 42(5), September–October 2012, pp. 16–19
7. Karen E. Smith. "Letter to the Editor," *AWM Newsletter* 43(4), July–August 2013, p. 4
8. Susan Landau. "Letter to the Editor," *AWM Newsletter* 43(5), September–October 2013, p. 4
9. Five Pillars of Wikipedia: https://en.wikipedia.org/wiki/Wikipedia:Five_pillars
10. WikiProject Women Scientists: https://en.wikipedia.org/wiki/Wikipedia:WikiProject_Women_scientists
11. WikiProject Mathematics: https://en.wikipedia.org/wiki/Wikipedia:WikiProject_Mathematics
12. Teahouse, for beginners: https://en.wikipedia.org/wiki/Wikipedia:Teahouse
13. Help Desk, for everyone: https://en.wikipedia.org/wiki/Wikipedia:Help_desk

BOOK REVIEW

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

Let IT Go: The Story of the Entrepreneur Turned Ardent Philanthropist, Dame Stephanie Shirley with Richard Askwith. Andrews UK Limited, ISBN 978-1782348313.

Reviewer: Marge Bayer

In the March–April 2013 issue I reviewed *Recoding Gender: Women's Changing Participation in Computing* by Janet Abbate. I was particularly intrigued by the story in that book of the woman Dame Stephanie Shirley who founded a software consulting business in Britain in the early 1960s. So I was happy to find that Stephanie Shirley had written an autobiography. There I learned of many fascinating aspects of her life not hinted at in *Recoding Gender*.

Stephanie Shirley was born as Vera Buchthal in 1933 in Germany, the daughter of a Jewish judge and a Gentile from Austria. In her early years, the family moved from country to country to try to escape Nazism. At the age of five she was put on a Kindertransport in Vienna to be evacuated to Britain, leaving her parents behind. Although she was later reunited with her parents, she was brought up by an English couple.

A nun at the local school noticed her talent for mathematics and helped her win a scholarship to a private school, where she would have more opportunity. Eventually she attended a girls' high school, which was not equipped to prepare her for exams in mathematics, but she was allowed to walk to a boys' school for mathematics class. The reaction of the boys was unpleasant, to say the least, but "the sexism was, in retrospect, invaluable preparation for the trials I would later encounter in the marketplace." [Chapter 3] Before completing school Vera Buchthal became a British citizen and changed her name to Stephanie Brook.

Although she had been preparing to go to university, she had no financial resources to do so. However, there was a great demand for employees with mathematical skills, and she found work right out of school as a research assistant. She was also able to take evening classes in applied mathematics and physics and began to study for a bachelor's degree in mathematics.

Her job was leading her towards a career in computer programming. This was the 1950s, so it was just the beginning. She worked for the Post Office Research Station, at first doing hand calculations (with the help of an electromechanical adding machine) and drawing graphs. Her attempts at advancement were hampered by a sexist boss. After completing her bachelor's degree, an application for promotion was stymied by a sexist appointment committee. But she was ambitious, or perhaps she just had a strong intellectual drive. She spent a six-week holiday (when she could not afford to travel) doing unpaid work at a General Electric Company research center, where she had her first experience with an electronic computer. Eventually she got a transfer to a Post Office Research Station department where she was able to work with computers and, more importantly, had a boss who valued creative contributions from all of his staff. She completed a master's degree and did some research on "speech recognition by computers." (This was the 1950s!)

In 1959 Stephanie Brook married Derek Shirley, who also worked at the Post Office Research Center. There was a taboo (but no actual rule) against both spouses working at the Center. Stephanie quit her job and went to work in the software group of Computer Developments Limited. After a couple of years, frustrated by some narrow-mindedness in the company, and developing her own vision of the profession, she resigned. She had decided to start her own company to sell software. At the time, there was no such industry. Companies and organizations that used computer programs found them on the computers they purchased or had their own staff write programs. Stephanie's other vision for the company was to provide job opportunities for women who were prevented from working regular jobs, because of marital status, pregnancy or children.

Freelance Programmers started with a single project, not enough work to hire another employee. Soon after completing that project, Stephanie gave birth to a son, Giles. If Stephanie had not had such drive, this would have been the end of Freelance Programmers. But she was determined to keep it going. As work trickled in, Stephanie and Derek speculated that her letters soliciting work might get more response if signed with a male name. Stephanie Shirley became Steve Shirley. Around the same time, a newspaper article about her business resulted in a number of inquiries from women who had worked in the computer industry, but were now at home with children. The rest is history. The company grew. Projects came in from large and small companies, from Britain and the US. The work was done by women in their homes, women who cared for children or elderly relatives.

A significant part of the book is about the development of the company, later called F International. There were interesting twists and turns in its history, an international recession, and managerial turmoil, as the company grew large. In 1975 (finally) it became illegal in Britain to discriminate

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by gender in hiring. It's interesting that one of the first companies to revise its policies was one that primarily recruited women for technical work. At the time, "all but three of our 300-odd freelance programmers were women, and all 25 of our project managers were women, but nearly a third of our 40 or so systems analysts ... were male." The company changed its personnel policy; now the stated goal was providing employment for "people with dependants unable to work in a conventional environment." [Chapter 11] Another progressive aspect of the company was partial employee ownership. When the company went public, some of the employees, as well as Stephanie, made quite a lot of money.

The autobiography intersperses narrative of her professional work with that of her personal life. For the latter the overwhelming focus is on Stephanie's and Derek's only child, Giles. He was severely autistic. While she was building up this large company, much of Stephanie's time and attention was devoted to caring for her son. He was in a series of schools and institutions of varying quality. When puberty hit, his condition worsened significantly, he had episodes of violence, and he developed epilepsy. In his late teens and early twenties, Giles was in a state-run institution full time. His parents were never happy with it, but as the care worsened (or they learned more about it), they came to the decision that they needed to move him. With some inheritance money and, later, wealth from Stephanie's business, they were able to move him to a house with full-time caregivers, where they spent part of each week.

Eventually, this led to a new phase in Stephanie's work life. She retired from her company and started putting her time, effort and wealth into the cause of helping people with autism. She expanded Giles's residence into a small group home and duplicated it with other homes. Later she started a school, Prior's Court, and hired an innovative principal experienced in teaching students with autism. And then she helped set up a foundation called Autistica, which funds medical research on autism.

Although most of the focus of Stephanie Shirley's philanthropic work has been related to autism, she has also been active throughout her career in professional and charitable organizations related to the software industry. In particular, she donated much money as well as time to the Worshipful Company of Information Technologists. To the American ear, this organization name certainly sounds odd. But this is a standard form for the "livery companies" of the City of London. These trade associations are the descendants of medieval guilds and at one time were closely associated with religious activities. The Worshipful Company of Information Technologists functions as a professional society, including mentoring young people in the field, advising nonprofits, and supporting educational projects. Recently it opened a high school specializing in creative and digital media and information technology. She also provided the initial funding for the Oxford Internet Institute, now a degree-granting department of the university.

Stephanie Shirley received many honors and commissions. She was appointed Office of the Order of the British Commander and, in 2000, Dame Commander. She served as President of the British Computer Society, 1989–1990. She received the Beacon Fellowship Prize in 2003 for her philanthropic efforts, both in the fight against autism and in support of public uses of information technology. In 2009 she was appointed the United Kingdom's first Ambassador for Philanthropy.

I have not mentioned the theme that is reflected in the title of the book, *Let IT Go*. Stephanie Shirley has been active throughout the modern history of information technology. She has been a leader, responsible for some of the advances in the business, if not the technical, side of the field. But she highlights the lesson she learned, and applied to Freelance Programmers, and to her many philanthropic ventures: there comes a time when a founder must pass on the reins to others. Stephanie considers one of her greatest challenges to be surrendering control of ventures that she initiated, when it was time to do so.

Dame Stephanie Shirley tells a compelling story of a challenge-filled life, and a life that was right in the middle of the information technology revolution.

EDUCATION COLUMN

Education Column Editor: Jackie Dewar, Loyola Marymount University, jdewar@lmu.edu. *This issue, there are two articles in the column.*

The CCSSM Again

Ginger Warfield, University of Washington, warfield@math.washington.edu

The Common Core State Standards for Mathematics. As far as I know, there is no swifter way to get blood boiling in the current world of educational politics than mentioning them. Even the acronym will do it. Obviously what I would really like to do would be to explain it all in two paragraphs and use a third to offer a nice succinct solution. Neither of those being an option, what I can offer is the perspective from where I stand, which includes a lot of experience with mathematics, and with mathematics education, and with standards and some (albeit highly reluctantly) with the politics thereof. Add to this a recent week-end of intensive discussion with WaToToM (Washington Teachers of Teachers of Mathematics) and I think I am in a position to cast at least a little light on at least a bit of the issue.

I think a major source of the complexity is that there are in fact a bunch of issues that have become so tightly intertwined that it is really difficult to see any of them on its own. There are the Standards; there is the manner in which they came into being; there is the manner of persuasion being used to encourage states to adopt and use them; there is the manner of assessing whether the Standards are being met; and there is the way in which the tests being created for that assessment are being used.

I'll start with the one about which I have the most solidly positive feelings: the Standards themselves. Two years ago I burbled about them in this column and my views are pretty much unaltered. They are not (of course!) perfect, but they have some very real and very major strengths. One is the way they not only lead with, but continually weave in, eight standards for mathematical practice that we can all recognize as essential—persistence, ability to reason, ability to construct a viable argument, etc. Another is the fact that they genuinely respond to the "mile-wide-inch-deep" line that many have called out but few have chosen to deal with. They take a small number of absolutely key concepts and build them carefully and coherently through the grade levels. I can't speak to the high school standards, but at the elementary and middle school levels it seems to me to work well. I have to admit that some people for whom I have a lot of respect have raised some issues that I take very seriously, but they haven't convinced me that the bath water is so bad that the baby needs to go.

This brings us to the next layer: how they came to happen. There already things begin to get murky. The original mandate came from the level of state governors—as a group they produced a mandate for some standards that would make it possible for students to move from state to state without undue educational disruption. This was greeted with great enthusiasm by the feds and by the Gates Foundation, with two results: massive funding and an impression that it had all originated at the national level. Immediate image promulgated: a bunch of government functionaries sitting in their offices cranking out the standards, with no opportunity for input from other sources. This is a complete mismatch with my image, since I watched Bill McCallum, who is a mathematician deeply engaged with mathematics education and emphatically not a government functionary, working on them extraordinarily hard for several years. He wasn't working alone, though, so there may be room for both images. It is also the case that I observed several times when commentary was requested and attention was paid to the comments, but it's quite possible that the timing and the breadth of the requests could have been improved.

On the other hand, the U.S. Department of Education most definitely did involve itself at the next phase, which was that of persuading states to adopt the Standards once they were written. The mechanism was very simple: any state that wanted to be seriously considered for funding from the Race to the Top had to adopt, or at least plan to adopt, the CCSSM. Given the impact of money on anyone's clarity of vision, it's hard to fault people for concluding that the whole idea came from the federal government.

And then came an even thornier issue: assessment. Adopting the Standards can't mean just framing them on the wall. And assessing learning that has some deep shifts away from what has been standard is extremely demanding. So the Department of Education funded two coalitions—the Partnership for Assessment of Readiness for College and Career and the Smarter Balanced Assessment Consortium—to come up with assessments that could be used by any state using the CCSSM. Those are still works in progress. Given the solidity of the CCSSM goals, and given the inevitability of teachers' teaching to the test, the obvious objective is to produce assessments such that teachers who teach to them are also teaching to the Standards. Very difficult but not altogether impossible, and the jury is still out on that.

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But even assuming perfect tests, there is a land mine looming on this front: any change in teaching is challenging, and the deeper the change, the deeper the challenge. It is conceivable, but barely, that there exist teachers who can absorb the content of the CCSSM overnight, generate materials (few of which yet exist) that will enable them to teach in the way the Standards require, and produce in one academic year a classroom full of students whom the tests will designate as proficient. It is demonstrably the case that there are many excellent teachers who are working themselves to the bone because they do believe in the Standards and desperately want to meet them, but who are forced to face the fact that achieving that much turnaround in that short a time is just not possible. And of course there are also plenty of teachers who have hunkered down and closed their doors and are waiting for the storm to pass.

It is an incontrovertible fact of the current educational world that test results are held to reveal absolute truth. They produce numbers, and our society has a basic hypothesis that numbers don't lie. So when the tests that are designed to measure something that takes years to produce show clearly after one year or even two that that something has not been produced, no one is going to ignore the resulting numbers. Some people will claim that it demonstrates ineptitude of the students, and many students who had begun to think of themselves as able to think mathematically will be crushed. Some people will claim that it demonstrates that the CCSSM are unworkable. And most appalling by far, a large and vocal and powerful bunch will claim that it demonstrates incompetence on the part of the teachers, thereby adding one more crank to the thumbscrews that seem to be the favored tool for producing a corps of expert, enthusiastic teachers.

My own state of Washington is, to my sorrow and horror, among those whose legislatures are seriously considering a mandate connecting teacher evaluations to test scores. That means that we in WaToToM are in "Once more into the breach!" mode. I don't think the situation is that dire in most states. On the other hand, the mode that we can all be in is that of responding to conclusions that people reach based on the test scores with "WHAT?" or "You've got to be kidding!" Or perhaps something a tad less provocative—I've just exposed where it is that my own blood reaches the boiling point!

The Teacher Partnership Program

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Hear ye, hear ye! As of February 1, 2014, four new organizers for the AWM Teacher Partnership Program are now on board: Christina Eubanks (Loyola Marymount University), Maria Fung (Worcester State University), Michelle Merriweather (The College of New Rochelle), and Sonya Stanley (Samford University). They bring to the program rich experiences of outreach, working with teachers, and more.

To follow up on and complete our periodic reporting on the program, we, the three founding organizers, will briefly recap the background and history of the program to date.

Phase I

From its inception in August 2006 until February 2014, the authors of this article were the organizers who planned the program that linked mathematicians (in all areas including mathematics education) and teachers of mathematics at the K–12 level (in all kinds of institutions). From August 2006 to March 2011, the program matched an applicant from one group with one or two from the other group. Several articles were written to describe that phase of the work. The idea was to build a community of two different groups for collaboration. By April 2010, 134 people (from several continents) had requested a partner and we made nearly 80 matches involving about 120 people. Some articles describing the program are:

- P. Hsu, S. Lenhart, & E. Voolich (2008, July–August). The AWM Teacher Partnership Program, *AWM Newsletter*, Vol. 38, No. 4, pp. 12–13.
- P. Seshaiyer (2008, July–August). Partnering to Make a Difference, *AWM Newsletter*, Vol. 38, No. 4, pp. 14–15.
- P. Hsu, S. Lenhart, & E. Voolich (2009). Linking Teachers and Mathematicians: The AWM Teacher Partnership Program. In L. Paditz & A. Rogerson (Eds.), *Proceedings of the 10th International Conference on the Mathematics Education into the 21st Century Project*, Dresden, Germany, pp. 255–256.

(Links to these articles are available at the Teacher Partnership Program webpage: https://sites.google.com/site/awmmath/programs/teacher-partnership.)

In addition to doing a formative evaluation in November 2008, we had planned on having an outside evaluation after a few more years. At the end of 2010, we had several conversations with an outside evaluator. We felt that there had been a few cases of visible "success" in which the chemistry was right, but some matches looked like they did not work out, for whatever reason—"too busy" being an often cited one. The difficulty reflected the idiosyncratic nature of the matches (based on broad areas of interest) that we made from a limited, small pool of participants, with the request that partners be geographically close the hardest to accommodate.

Phase II

In March 2011, the program stopped matching participants and opened up a web forum for all participants, not just those who had been matched. Previously, participants had used a listserv to raise particular issues with the larger group but worked mostly with one or two partners. The new format uses Wiggio.com to provide a setting in which participants give their own profiles, find a topic for discussion, or find their own partners, in the hope that adapting to changing technology may yield more fruitful results. Links to webpages and uploaded files can be shared on this web forum. In addition to those participants who migrated over, 34 new applicants were added to the web forum by the end of January 2014. Some have reported that they have enjoyed information they read in the forum.

From the initial planning begun in 2004, when the three founding organizers were members of the AWM Education Committee, until the end of 2012, we had worked on the program for eight years. At that point, we were ready to hand it over to new organizers. Finally, that has been accomplished.

Future

We affirm our belief that building a community that links teachers of mathematics in different settings with mathematical scientists working in a different environment is important to the mathematics education of all. Communication between communities is always hard, and it takes brave souls to work on it. We wish the new organizers the best and hope the program flourishes in whatever format it takes. Visit the webpage listed above for any new developments.

MATHEMATICS + MOTHERHOOD

Interview with Ingrid Daubechies

Lillian Pierce, Hausdorff Center for Mathematics and Duke University; from conversations with Daubechies in October 2012 and February 2014

For my last installment of this column, it was a great pleasure to speak with Ingrid Daubechies, the James B. Duke Professor of Mathematics at Duke University and the President of the International Mathematical Union.

LP: Let's start by talking about your research interests.

ID: I work in a number of different directions that all have to do with trying to understand complex data. One of these directions is geotomography—we work to analyze the structure of the mantle of the earth via seismic signals that have been recorded from large earthquakes worldwide during the last 30 years. The mantle can be viewed as being built up spherically symmetrically by layers that have different characteristics. Because of these different layers, as the seismic waves propagate through the earth after an earthquake, the waves actually follow curved paths and once they emerge again they contain information about not only the source but about all the layers. Using the spherically symmetric model as a first approximation, you can predict what these results would look like at time of arrival. In practice, those times of arrival are not exactly correct, and deviation from that prediction gives you information about the deviation from spherical symmetry of the mantle of the earth. The deviation from spherical symmetry consists of large but smoothly varying as well as some very narrow scale features—wavelets are very good at depicting those phenomena, so we are constructing a wavelet model of the mantle of the earth and doing computations.

Another problem I'm working on is with art historians. We're trying to use high-resolution pictures of paintings and image analysis techniques to draw conclusions and find similarities or dissimilarities that art historians will find interesting. One project involves trying to distinguish underdrawings from painted surfaces. Underdrawings were done in the 17th century; artists would draw outlines, often with charcoal or another carbon-holding pigment, before painting the topic. Everywhere the painter changed his or her mind about making an edge between color planes, we can see the underdrawing line when we take an infrared

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photograph of the painting. On the infrared photograph you typically see faintly the painted surface itself and the underdrawing lines, but where the artists don't change their mind, that line coincides with the demarcation line in the painted surface so it's very hard to see it. We hope to develop techniques to actually see the full underdrawing—this is something art historians would really like.

LP: Your career has unusual breadth in that you've worked in Europe and the US, and in industry and academia. Among all this, when did you start your family?

ID: I met my husband when we were thirty already. The year we got married, I turned 33 very soon after, and we felt it was time to have children. We got married, we had a honeymoon, I moved to the States, I started at Bell Labs, I got pregnant. It all happened so fast. I didn't know many people yet, and didn't yet have women friends. My colleagues at work, nearly all middle-aged men, realized there was no one to organize a baby shower for me, so they organized one! That was really very nice.

LP: That sounds like a good sign of a welcoming work culture. What was the maternity leave policy?

ID: At Bell Labs there weren't many women and it had been quite a while since anybody had had a baby. Officially there wasn't much pregnancy leave but they told me "just arrange things how you want—you can take vacation leave, you can phase back in slowly." I wanted to stay at work until the very last minute. Actually, I was at work the morning of my delivery. My office neighbor was a bit apprehensive that I was staying until the very last day at work. A few weeks before, he asked "Are you going to keep coming to work? What happens if the baby gets born here?" To tease him, I copied from one of my books "What to do if labor starts at work" and I posted it on my wall. I said to everybody, "If something happens, here are the instructions!" People took it in stride and teased me and it was very nice.

LP: And then the baby was born.

ID: It was an incredible experience—every new parent says you have no idea how your life will change, and it's true, you have no idea. Every child is a wonderful experience but the first one especially is such a complete change in your life. After the four days in the hospital I wanted to go home but I also felt "are they going to let me go home with this little new human being?" I remember bursting out in tears one day when the baby was two weeks old and it was three in the afternoon and I still hadn't managed to change out of my robe and have my morning shower. It was also a wonderful time. Nursing is one of the most pleasant experiences. I'll remember it my whole life. You'd just feel at peace with the universe. I have had some of my best ideas while nursing. But that came much later—that was with my second baby.

LP: It's astounding how hard it is to do anything when you have your first new baby!

LP: You read these books beforehand and they say little babies sleep a lot—and it's true, they do, although mine never slept as much as they said. They say babies sleep 16 hours, but there's no way mine ever slept 16 hours. And the thing is, it's also not a block of 16 hours. I bought textbooks—I was going to *really learn* Unix. I still have that book—by now it's completely obsolete, of course. I still haven't read more than two pages of it. But I kept the book as a memory—of all the things I was going to do while the baby was sleeping!

LP: How long did you stay home?

ID: I was at home for about two months, exhausting all my pregnancy leave and vacation. I loved being with the baby, but there was part of me that was craving more, craving talking with adults. At some point I was trying to read the baby to sleep by reading an article from *The New Yorker*!

LP: So after two months, you went back to work at Bell Labs?

ID: With the first baby, when I went back to work, I went back the first week one day, the second week two days, and so on. I wanted to get back to math and I just couldn't think. I was horrified. Fortunately I had some routine things that I could do. I busied myself with writing up things I already knew, and revising and editing. Whenever I tried to do something original, nothing would come. This was a cause of serious panic. I thought, "Oh my god, my brain is gone." Nobody had warned me that I wouldn't be able to think any more. I didn't tell anybody. I didn't even tell my husband. Because I thought if this lasts, I can't do this job anymore. It was only later, when I compared with other women, that I realized that quite a few people—not everybody—have this experience after delivery. Six months later, things came back and I did some very good work after that. I now warn young women scientists and mathematicians that this may happen—it may happen, or it may not happen, but if it does happen, don't panic. It will come back!

LP: I remember that you told me this years ago, before I had children, and I filed it away. Once I had my first child, I vividly recalled how you described your experience and found it very comforting. I counted on that six month threshold!

ID: With the second child I was much more relaxed—I knew this was going to happen, and it did happen, but at

least I knew my brain was not gone forever.

LP: When you went back to work, what type of childcare did you arrange?

ID: Living in the States meant I was in a completely different environment in terms of childcare than I was used to in Belgium. I found out that most childcare stops at 5, some goes until 6. Later when the children go to school, childcare ends at 3:00 or 3:30. Even 6 was early for me! In the past, we often worked later, and then we'd go to dinner with friends, and then we'd go back to the office to work or to a movie. Of course all that stopped with children! But the idea that my work hours would be so regulated by childcare was very difficult for me. In Belgium, if you want, childcare can go until between 6 and 7, and often there is childcare very near where you work. So there was the time issue. Also there was the fact that my mother tongue is Dutch, and I thought about bringing up the children bilingually. I decided that I would speak Dutch with the children, sing them the songs I knew and read them Dutch stories, and then they'd be able to speak Dutch with my parents. So the idea formed that we would try to get an au pair from Belgium who would live with us and mind the children and speak Dutch with them.

LP: How long did you use au pairs?

ID: We looked for our first au pair when I was still pregnant, and we found somebody who had trained as a childcare professional and was interested in going abroad for a year. She arrived when our first baby was two months old. We had au pairs for sixteen years! The way the visa situation works is that you can have them only for one year, and then they have to go back and you find somebody else for the next year.

LP: What was it like to have effectively a new member of the family every year, for sixteen years?

ID: The children took that in stride. For a long time my son thought that a nuclear family consists of two adult parents and an adult babysitter. We went to a zoo and there were polar bears, and he looked at the three adults and a juvenile swimming, and he said "Look, it's a family! There's the mama bear and the papa bear and the baby bear and the babysitter bear!" Children have no limit on how many people they can love. It's not that they love you less because they love another adult too. We kept in touch with all the au pairs. When our youngest child was 16, we had a vacation in Belgium and we invited all the former au pairs. They brought their own children, and talked about anecdotes of our children at various stages.

LP: It sounds like you had really good fortune with the extended family of au pairs you selected!

ID: It wasn't cheap, but it was worth it. And it really helped with establishing the language; both my children are absolutely fluent in Dutch. In my case, my parents helped find the au pairs in Belgium. My mother had none of these scruples about questions you don't ask—she would ask everything of the applicants. We also always invited the parents of the au pair to come visit during the year and stay in the guest room in our house. Most parents took us up on that offer, and I think that these visits reassured all the parties very much.

LP: I think that really trusting and feeling comfortable with your childcare is so crucial.

ID: Cathleen Morawetz, who is one of my heroes, gave me excellent advice early on, even before we had children: if we wanted children, she said, it's very important if you want to keep doing mathematics, that you think about what kind of childcare you want. That you decide on childcare that you really trust, even if it costs you most of your salary. Because if you try to do it more cheaply, you won't be comfortable, you will feel guilty, it will not work. If you want to keep doing mathematics, it's worth it, for your peace of mind. I think that is very good advice.

LP: Other than establishing good childcare centers close by, what else could universities do to support new mothers in academia?

ID: I think something that would be very useful would be to make it easy and comfortable for young mothers to occasionally bring their baby to work—say, if the baby has a fever and they can't bring it to childcare for 24 hours, even though the baby is fine. If you could then bring the baby and have it with you in the office, it would make a big difference. Also, if you are a nursing mother, departments should make it easy for you to pump. I used to pump at work at Bell Labs. It was important for me that I had a private office and a door that I could lock, otherwise I couldn't have done that. New motherhood is a time where you feel emotionally insecure and vulnerable, so having understanding for the type of needs new mothers might have can be an important form of support. Be aware that there may be these needs. Make it easy so that people don't have to worry about asking for these things.

LP: When you had your first child, you had already had achieved tremendous success in your research. But you were also young and had just started a new job in industry. Did your career feel like it was in a fledgling stage or in a mature stage?

ID: At the time we chose to go to industry, we also already had tenured offers in academia. So even if we had been in academia, I would have already had tenure. But that's just an effect of having met Mr. Right so late, not because I chose to wait to have children. I had not made that decision

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consciously to wait to have a permanent position before having a child. I've seen it work in all ways—I've had graduate students who already had a child, and it worked fine.

LP: Your children grew up with two mathematical parents. What's it like to have at least two mathematicians in the family?

ID: My husband and I work in different subfields of mathematics and we actually find it hard, when we talk advanced math, to talk to each other. There are so many things where we understand each other with half a word. But when we talk to each other about our own mathematics, we need *all* the words. And we get a bit irritated with the other one for not immediately understanding! I'm an analyst, and my husband is an algebraist. He does these sophisticated things … and as he describes the manipulations, he's already three steps ahead of me when I'm still parsing the first one. He's so unused to that from me that it irritates him—why I am not listening! He's said it, hasn't he? It's a little bit the same with me.

LP: How do you see algebra and analysis?

ID: Algebra is the mathematics of models in which everything fits perfectly and you build these fantastic things—but if you hit it with a hammer, it just shatters, and you have nothing. While analysis is the mathematics of the overstuffed sock. If you push a bit here, it will bulge a bit there. For me everything in analysis is very intuitive: I have the intuitive feeling, that if you help here, it will work there. You never have that in algebra. It's such a different way. On the other hand, if you like structures, and you see the whole thing structuring itself, crystalizing, if your mind does that, then algebra is beautiful. Whereas I have to think "first this, then that.…" Our children have the impression that we are always talking mathematics. In reality, we talk about the instruction of elementary mathematics or about work politics. And it's true I have a way of logically approaching whatever we talk about. I like looking things up and having facts and saying "if this, then that."

LP: So thinking mathematically is a way you naturally look at the world?

ID: I remember this even as a child. When I was a child, we had a little tiger hanging in the car. I remember one time we were driving in a street illuminated in neon light, which is orange … and the tiger was bleached! I said, "Look what happened to our tiger!" My father explained it's because the light is orange, and so the tiger doesn't look different from white things in the orange light, but it's really still orange. I only half-believed it and I went back to check the next day to see if the tiger was still orange in daylight. Later I noticed something else. We had a green band on the windscreen, to help avoid glare. My father had explained how colors changed when they were filtered. But we were driving down the same street and I saw the neon light filtered through the green, and it looked just as orange as it had before! And I said "That can't be—it should look different, it's filtered through the green!" So I asked my father, and he thought, "now I have to explain monochromatic light to the kid!" That was tougher. This type of thinking is fundamental to my outlook—I had taken something he explained, I had checked it experimentally, and now there was something in contradiction, and I couldn't rest until it had been resolved. To me, that kind of thinking is part of the fun I have in life!

To Lillian Pierce (and her three future math-moms …):

Pointing the Math + Motherhood column in the direction it took last issue (March–April 2014) was a great idea, and very timely! Here's my response (but an "answer" only for some, in particular me!).

Looking back—'way back, at age 71, after four children and five grands—looking back at long "careers" as math lover, mother, writer, wife, and human being (and other lesser passions), I'm glad I didn't go the tenure track route. That was not what I'd planned or expected, but life (and a bit of immaturity in my youth) just turned me that way (as described in a letter in the July–August 2013 issue of the *AWM Newsletter*).

Looking back at how much pleasure, passion, and meaning these "careers" gave me, I can't imagine also having to deal with being tenure track, and in general *worrying* about math. I loved being a full time (but not stay at home) mother, doing math and writing for pleasure and meaning (and to some extent, money, or as much money as I needed). I wound up accomplishing to my satisfaction, and as things turned out, I did indeed "do something" about my passion for math, and for math-*like* things (expressed in some of my poetry), and for me that was the main thing.

So, again, for me (and perhaps some others too), the "answer" was not-thinking of math as a career, in that often-stressful sense. That certainly did not always feel like an "answer," and even now when, e.g., I read the math publications, and speak with other mathematicians, and read

about research I never heard of or feel I could never understand, I feel a slight twinge of ... it used to be guilt, now it's a slight longing, or just a feeling of "the road not travelled." But there must always be a "road not travelled," or a road *less* travelled, and looking back, I feel as though I travelled the correct roads, in the correct proportions, for me. (Or perhaps only one of several correct "random variables"....)

And if I were male...? Well, I'm glad I'm not!

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Announcements

Call for Nominations: Mary Ellen Rudin Young Researcher Award Fund

In memory of the late Mary Ellen Rudin, this annual prize is sponsored by Elsevier on behalf of the journal *Topology and Its Applications.* It honors Rudin's achievements and continues her legacy, encouraging the development of young talent in mathematics.

The prize consists of $15,000 to be used as follows: $5000 to enable the winner to attend at least three major conferences in topology, $5000 to support travel and living expenses while on a visiting appointment at a leading research center, and a cash prize of $5000.

Applications involve a letter of nomination, two other letters of support, a letter from the applicant with a commitment to the award and the proposed plan. Please send your nominations to: adow@uncc.edu. The application deadline is **May 31, 2014**.

Call for Nominations for the Norwood Award

The Section on Statistical Genetics and the Department of Biostatistics in the School of Public Health, University of Alabama at Birmingham (UAB) are pleased to request nominations for the Thirteenth Annual Janet L. Norwood Award for Outstanding Achievement by a Woman in the Statistical Sciences. The award will be conferred on September 10, 2014. The award recipient will be invited to deliver a lecture at the UAB award ceremony and will receive all expenses, the award, and a $5000 prize.

Eligible individuals are women who have completed their terminal degree, have made extraordinary contributions and have an outstanding record of service to the statistical sciences, with an emphasis on both their own scholarship and on teaching and leadership of the field in general and of women in particular and who, if selected, are willing to deliver a lecture at the award ceremony. For additional details about the award, please visit http://www.soph.uab.edu/ssg/norwoodaward/aboutaward.

How to nominate: Please send a full curriculum vitae accompanied by a letter of not more than two pages in length describing the nature of the candidate's contributions. Contributions may be in the area of development and evaluation of statistical methods, teaching of statistics, application of statistics, or any other activity that can arguably be said to have advanced the field of statistical science. Self-nominations are acceptable.

Please send nominations to David B. Allison, dallison@uab.edu. Deadline for receipt of nominations is **June 27, 2014**.

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