AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 33, Number 4 NEWSLETTER July–August 2003

PRESIDENT'S REPORT

We are pleased to announce a special program of **Michler Collaborative Research Grants** that will provide travel and/or living expenses for women in tenured positions to carry out collaborative research at other institutions. The deadline for applications is October 10. Please see the announcement on page 12 for further information. This special program, held this year only, complements the existing NSF funded travel grant program; the latter offers travel grants to women at any career stage to attend research conferences and offers mentoring grants for untenured women to visit research mentors.

In recent years, many efforts have been made both by the AWM and by other organizations to mentor women at the start of their careers. After reaching tenure, however, the support system tends to decline, and, in fact, women may find themselves moving from the role of mentee to mentor. This can be a difficult but extremely important transition between the necessarily self-focused time of early career development and a possible time of leadership later on. The sparcity of women in the more advanced career stages leaves women in this transitional period without many role models.

Two upcoming workshops (one sponsored by the AWM, the other independent) will support women in this transition and help them prepare for eventual leadership in research, in their departments, and in the professional societies. The AWM sponsored workshop, pending final approval of funding, will take place March 12–14 at the University of Maryland (see page 9 for further info). It will bring together recently tenured women in all areas of mathematics with women already in positions of leadership. The other leadership workshop to be held this fall, also at the University of Maryland, is not sponsored by the AWM, although we encourage participation (see the May–June issue for further info). This workshop is for women in applied mathematics and is being organized by Dianne O'Leary and Tamara Kolda.

IN THIS ISSUE

AWM
ASSOCIATION
FOR WOMEN IN
MATHEMATICS

The Association was founded in 1971 at the Joint Meetings in Atlantic City. The purpose of the association is to encourage women to study and to have active careers in the mathematical sciences. Equal opportunity and the equal treatment of women in the mathematical sciences are promoted.

The *Newsletter* is published bi-monthly.

The Editor welcomes articles, letters, and announcements.

Circulation: 4000. © 2003, AWM

The AWM is deeply grateful to the University of North Texas and the National Science Foundation for making available to us the funds remaining in Ruth Michler's POWRE grant. In November 2000, Ruth Michler died tragically in Boston while on leave from North Texas. She was visiting Northeastern University under support from her POWRE grant. (See the January–February 2001 AWM *Newsletter*.) The AWM will use these funds to support the AWM leadership development workshop and the Michler Collaborative Research Grants, both described above. We dedicate these programs to Ruth's memory.

The National Security Agency has renewed its support of the program of Sonya Kovalevsky High School Days. We are grateful for their ongoing support. Please note that the next deadline for proposals for SK days is already upon us: August 4.

The AWM is also grateful to the Department of Energy for its support of the AWM/SIAM Sonia Kovalevsky Lecture at the SIAM annual meeting.

The AWM has been invited to participate in the Council of Scientific Society Presidents (CSSP). This is an organization of current and past presidents of over 60 scientific societies. Among its goals are providing a mechanism for communicating among the various scientific disciplines and deliberating and adopting public policy positions on science research and education. I attended a CSSP meeting in May. As one might expect, one of the major issues discussed was the effect on international science of the current visa requirements for visitors to the United States.

I also represented the AWM at the CBMS meeting in May. The very interesting meeting focused on the mathematical education of teachers. you may wish to visit the CBMS website www.cbmsweb.org to download *Mathematical Education of Teachers*.

I hope you are having an enjoyable and productive summer.

Carolyn Gordon
Dartmouth College
May 31, 2003

AWM SLATE ANNOUNCED!

We are pleased to announce the slate for this fall's AWM election. Barbara Keyfitz (University of Houston) has been nominated to serve as President-Elect. Mary Ann Horn (Vanderbilt University) has been nominated to continue her service as Treasurer. Krystyna Kuperberg (Auburn University), Maxine Rockoff (New York Academy of Medicine), Elaine Terry (Saint Joseph's University) and Ann Trenk (Wellesley College) have accepted nominations for Member-at-Large; two will be elected.

Nominations by petition signed by 15 members are due to our president by **September 1, 2003**.

Thanks to the Nominating Committee (Jean E. Taylor, Chair, Meghan Burke, Sun-Yung Alice Chang, Ray Johnson and Carol Wood for their efforts in producing this fine slate of candidates.

MEMBERSHIP AND NEWSLETTER INFORMATION

Membership dues

Individual: $50 Family (no newsletter): $30
Contributing: $100 Retired, part-time: $25
Student, unemployed, developing nations: $15
Friend: $1000 Benefactor: $2500
All foreign memberships: $8 additional for postage
Dues in excess of $15 and all contributions are deductible from federal taxable income.
Institutional Members:
Level 1: $250
Level 2a: $125
Level 2b: $125
See http://www.awm-math.org for details on free ads, free student memberships, and ad discounts.
Affiliate Members: $250
Institutional Sponsors:
Friend: $1000+ Patron: $2500+
Benefactor: $5000+ Program Sponsor: $10,000+
See the AWM website for details.

Subscriptions and back orders

All members except family members receive a subscription to the newsletter as a privilege of membership. Libraries, women's studies centers, non-mathematics departments, etc., may purchase a subscription for $50/year ($58 foreign). Back orders are $6/issue plus shipping/handling ($5 minimum).

Payment

Payment is by check (drawn on a check with a US branch), US money order, or international postal order. Cash payment will be accepted if necessary, but only in US currency.

Newsletter ad information

AWM will accept advertisements for the *Newsletter* for positions available, programs in any of the mathematical sciences, professional activities and opportunities of interest to the AWM membership and other appropriate subjects. The Director of Marketing, in consultation with the President and the Newsletter Editor when necessary, will determine whether a proposed ad is acceptable under these guidelines. *All institutions and programs advertising in the* Newsletter *must be Affirmative Action/Equal Opportunity designated.* Institutional members receive discounts on ads; see the AWM website for details. For non-members, the rate is $100 for a basic four-line ad. Additional lines are $6 each. See the AWM website for *Newsletter* display ad rates.

Newsletter deadlines

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

Addresses

Send all **Newsletter** material **except ads and material for book review and education columns** to Anne Leggett, Math Dept., Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; email: leggett@math.luc.edu; phone: 773-508-3554; fax: 773-508-2123. Send all **book review** material to Marge Bayer, Math Dept., University of Kansas, 405 Snow Hall, 1460 Jayhawk Boulevard, Lawrence, KS 66045-7523; email: bayer@math.ukans.edu; fax: 785-864-5255 and all **education column** material to Ginger Warfield, Math Department, University of Washington, Seattle, WA 98195; email: warfield@math.washington.edu. Send everything else, **including ads and address changes**, to Dawn V. Wheeler, 4114 CSS Building, University of Maryland, College Park, MD 20742-2461; phone: 301-405-7892; email: awm@math.umd.edu.

AWM ONLINE

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Online Ads Info

Classified and job link ads may be placed at the AWM website. Detailed information may be found there.

Website and Online Forums

http://www.awm-math.org

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AWM-Net

To subscribe, send mail to awm-net-request@ cs.umd.edu and include your email address; AWM members only.

AWM DEADLINES

Sonia Kovalevsky High School Mathematics Days: August 4, 2003

AWM Workshop, January 2004: September 1, 2003

Alice T. Schafer Prize: October 1, 2003

Louise Hay Award: October 1, 2003

NSF-AWM Travel Grant: October 1, 2003 and February 1, 2004

Michler Collaborative Research Grants: October 10, 2003

Noether Lecturer Nomination: October 15, 2003

AWM CONTACT INFO

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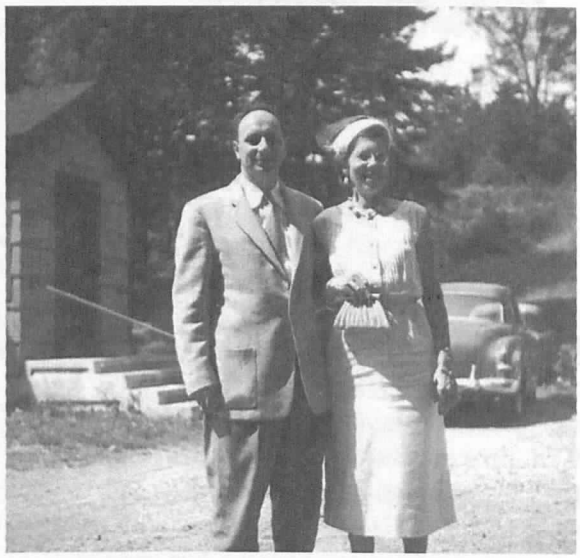
JOSEPHINE M. MITCHELL AND LOWELL I. SCHOENFELD

Josephine M. Mitchell and Lowell I. Schoenfeld were mathematicians. She worked in analysis (several complex variables); he in number theory (analytic). They were married for nearly 50 years. They wrote at least one paper together. They shared a love of the outdoors, which became even more intense in later years. Josephine Mitchell passed away at the end of 2000, and slightly more than one year later, Lowell Schoenfeld passed away as well. But this brief description of two intertwined lives is wholly inadequate, for in many ways these two mathematicians represented twentieth-century mathematics in America.



Josephine Mitchell grew up in Edmonton, Canada, and did her undergraduate work at the University of Alberta. Her interests at the time were history and mathematics. The mathematics professors persuaded her to study mathematics, which at the time some viewed as an uncommon field for women. She graduated in 1934 and eventually went on to get her master's and Ph.D. from Bryn Mawr College in Pennsylvania, under the direction of the famous mathematician Anna Pell Wheeler. She taught at several small colleges, but in the early 1950s ended up at the University of Illinois in Champaign-Urbana.

By John Ewing, Executive Director, AMS. He made these remarks at a ceremony on May 16, 2003 dedicating a portion of the gardens at AMS headquarters to Mitchell and Schoenfeld. A plaque has been installed there in their honor. He gives (and we echo) special thanks to Professor Raymond Ayoub for reminiscences about Penn State, to Mrs. Alta (Mitchell) Bento for photographs and information about her sister, and to Mrs. Jean Rubel for photographs of her cousin, Josephine.

Lowell Schoenfeld spent his early years in New York City, graduating *cum laude* from the College of the City of New York in 1940. He went on to MIT to earn a master's and then to the University of Pennsylvania, receiving his Ph.D. in 1944 under the direction of Hans Rademacher. (During his years in graduate school, he seems to have worked for the Philadelphia Navy Yard as well, writing reports on aircraft navigational computers.) After positions at Temple University and Harvard, he moved to the University of Illinois, where he met his future wife.

When the two met in the early 1950s, she was an associate professor with tenure, he an untenured assistant professor. Anti-nepotism rules had begun to enter American universities in 1920s, and by the early 1950s they had become widespread. They were sometimes used to subtly discriminate, but in this case there was nothing subtle at all. As soon as Mitchell and Schoenfeld were married, the University demanded that she, the senior and *tenured* faculty member, step down from her position, while he, the junior and *untenured* partner, was permitted to keep his. Both husband and wife protested; they appealed for help to the American Association of University Professors; they went to the American Association of University Women. But their efforts were unsuccessful, and the University of Illinois prevailed in the end. *Both* resigned their positions.

They began a period of wandering from one institution to another, trying to find an institution that accepted both as mathematicians. They finally settled at Penn State University, which at the time was one of the few universities to hire couples.

Their ten years at Penn State are remembered fondly by one of their colleagues at the time, Raymond Ayoub. He remembers both for their hospitality, their frequent colloquium parties, and their sparkling and stimulating conversation. He also remembers Lowell for leading a protest against the university library, which had decreed that all departmental collections be housed with the main library. Lowell and the protestors won.

Throughout their lives, both seem to have loved the outdoors—hiking, canoeing, and especially wildflowers. During their time at Penn State, Ayoub remembers that Josephine gained the habit of tasting every unusual plant she saw, a habit that he describes as "nerve-wracking" since he was certain she would succumb to some poisonous plant on each excursion. Their love of wildflowers seemed to grow as years went by, and Josephine became an avid photographer in later years.

They moved to the University of Buffalo in 1968, where they each became active department members—writing papers, directing dissertations, reviewing for *Math Reviews*, and cultivating a better library (which was a constant theme throughout their lives). They each retired during the 1980s, but they maintained many interests—in the outdoors, in the library, in the symphony, in traveling, in family … and in mathematics.

Ralph Waldo Emerson once wrote that "Nature and Book belong to the eyes that see them." There seems no better epitaph for Josephine Mitchell and Lowell Schoenfeld; Nature and Books were theirs, throughout their lives.

The Society has received a substantial bequest from Josephine Mitchell and Lowell Schoenfeld, which will be part of the Society's endowment, with its income used to support mathematics and scholarship. In one special way, they have already provided unusual support for mathematics: their rather magnificent collection of books and journals was sent to Charles University in the Czech Republic, where recent floods had destroyed the entire library.

In both ways, these two "gentle" mathematicians, whose work spanned a half century and whose professional lives represented so much about twentieth century mathematics, will be a part of the mathematical community during the next century as well. The Society is grateful, and we honor them today by naming this portion of our garden the "Josephine Mitchell and Lowell Schoenfeld Memorial Garden."

MITCHELL BEQUEST TO UNIVERSITY OF ALBERTA

Josephine Mitchell received her undergraduate education at the University of Alberta and graduated in 1934. She was always grateful for the encouragement that she received there to continue her study of mathematics. Although she intended to be generous to her alma mater in her will, she had not done so; her husband Lowell Shoenfeld honored her wishes in his own will, leaving a bequest of $1.6 million in her name to the Faculty of Science at the University. Dr. Gregory Taylor, Acting Dean of Science, said, "This is truly a generous gesture from an alumnus. My only regret is that we never had the opportunity to meet Dr. Mitchell and talk about what made her experience at the U of A so memorable that she would make such a significant contribution to our future."

Cairney's article says: "The bequest will support several initiatives within the Department of Mathematics and Statistical Sciences. These include endowments to fund the Dr. Josephine M. Mitchell Mathematics Library and the Dr. Josephine M. Mitchell graduate scholarships. In addition, the bequest will fund the Dr. Josephine M. Mitchell Environmental and Industrial Fluid Dynamics Laboratory, a state-of-the-art facility to be housed in a proposed Centre for Interdisciplinary Science."

Mitchell would have liked to teach in Canada after earning her Ph.D. from Bryn Mawr, but her sister Alta Bento, says, "There was never any opportunity of her getting a position in Canada. At that time, there wasn't a huge number of universities. She was lost in the crowd and being a woman in that field...."

Based on "Mathematician made her way through a man's world" by Richard Cairney in the University of Alberta Folio, *March 7, 2003. See www.ualberta.ca/~publicas/folio/40/13/01.html for the full text.*

CORRECTION

Last issue the call for nominations for the AWM Noether Lecture mistakenly asked for nominations for the 2004 lecturer. Due to lead times, it should have asked for nominations for the 2005 lecturer. Our apologies to Svetlana Katok, who has already been chosen to present the 2004 Noether Lecture. She is also planning an associated Special Session for the January Joint Meetings.

EDUCATION COLUMN

On Community

For years I have been bemoaning the unfairness of our educational system in loading the schedules of K–12 teachers to the point where they have almost no opportunity to interact. This point of view has been reinforced by the palpable joy with which teachers taking part in our Community of Learners NSF projects greet each other at successive workshops and retreats. I have also found it frequently resonating with comments in articles by and about teachers.

Given the consistency of my plaint, it is a little embarrassing to admit how long it took me to register the parallel between the world of the teachers and that of the teachers of teachers. It took, in fact, a couple of conversations with Marj Enneking of Portland State University in which she described in glowing terms the impact of getting Oregon's teachers of teachers together to finally capture my attention. If isolation is damaging to teachers, why not also to teachers of teachers? From those conversations and that question arose WaToToM (Washington Teachers of Teachers of Mathematics), now in its seventh year, and growing ever stronger. In this column I shall attempt to step back and describe how WaToToM has developed and what it contributes.

Our first gathering was in 1998. There were only 21 of us, but a nicely variegated 21, so that the get-acquainted aspect had plenty to work with. I would characterize that gathering and the two that followed it as almost entirely conversation of the best sort. Nary an ax was ground—well, not many anyway—and the focus was entirely on answering questions like: What do we have in common? What can we learn from each other? Where does what we know fit into the larger scale educational scene? What, in fact, is going on in the larger scale educational scene? By the fourth gathering we were beginning to feel that we had achieved some basic level of understanding and perhaps something should be done with it. And that is the time Marj Enneking managed to find a chink in her incredibly jammed agenda and come tell us tales of Oregon's ToToM. They have been getting together for a long time (since before email—what more need I say?) and have accomplished a tremendous amount, including ultimately being awarded a huge NSF collaborative grant which is having an impact all over the state. By the time she finished her description we were all stunned. Fortunately we had a day to recover before we parted company, and we finished that gathering with a lively discussion of what direction we wanted to take as a group and what needed to happen in order for us to move in that direction. I'm not sure, looking back, to what extent we actually moved in the direction we envisaged then, but I can say with considerable confidence that this marked the beginning of our thinking of ourselves as an entity and of our gatherings as having a goal beyond information exchange and community building. Our conversations have become deeper and livelier (though never, I report with pleasure, acrimonious). We have sent two position papers to the Office of the Superintendent of Public Instruction and one to the Higher Education Coordinating Board and begun increasingly to have follow-up conversations by email in between our annual gatherings. In short, all of us have begun to feel that we not only know more about that larger educational scene we were inquiring about, but are part of it and together might possibly have some impact on it.

Meanwhile, we as an entity have been watching and encouraging the growth of another such community, which reached a milestone this year. Among our most regular attenders have been folks from Green River Community College. About the time WaToToM was getting launched they were launching their own campaign. From the fact that about 50% of Washington's elementary school teachers start their post-secondary education at community colleges, it seemed to the Green River crew to follow that community colleges ought to be putting some thought into providing a good mathematical foundation specifically geared to teachers. They got themselves some funding from the NSF, took on the title of Project TEACH, and settled in to design and test out a good, solid program—a carefully thought out course sequence and ways to support and connect the students aiming at an elementary teaching career. In due course, they began to feel that they had produced a program worth sharing. How could that be done? They set

By Column Editor Ginger Warfield, with thanks to my colleague Judith Arms for helping me see the connections among sundry isolated portions of my mental scheme of things. Department of Mathematics, University of Washington, Seattle, WA 98195; warfield@math.washington.edu.

up a one-day Community College Teacher Preparation Summit and invited colleagues from all the community colleges around the state to take part in it. University colleagues were welcomed as well. It was a wonderful, well-attended day, with numerous sessions discussing different aspects of the program. I enjoyed the sessions and basked in the frequent references to WaToToM. What gave me the most pleasure, though, was a feeling of familiarity: the air crackled with a life and energy that reminded me forcibly of the first of the WaToToM gatherings. Here is another community in the making, and I will hazard a guess that as it develops it is going to be a very productive one.

Meanwhile, one of the ingredients of their program has been the establishment of a Future Teachers' Club, which has in turn been reaching out to students, teachers, administrators, and other educational professionals from area high schools, community colleges, four-year university programs and K–12 schools by staging annually since 2000 a one-day Future Teachers' Conference. I haven't made it to one of those, but the grapevine provides very positive indications.

"Community-building" has become something of a buzz word recently, to the point that claiming it as a virtue for a proposed activity can produce a skeptical "yeah, yeah." To be sure, the skepticism is sometimes justified, but let me put in a firm word on the other side: a well-built community is a force to be reckoned with!

NON-STANDARD CAREERS

This is the second in our series of (auto-, so far) biographies of women in mathematics with unusual career paths (either the destination or the trajectory or both). Again we would like to suggest that if you either are or know a woman in a mathematical field who is enjoying what is in some way a non-standard career you let Ginger Warfield know (warfield@math.washington.edu). She would be happy either to receive your prose or to receive your information and produce some prose.

How I Have Balanced Family and Career

What are some of the ways to raise a family and still maintain a career as a mathematician? When I was a new assistant professor and was thinking about raising a family, I would have liked to hear about different ways to balance children with a career. So I am writing this essay for those of you who are wondering about combining family and mathematics, so that you will know an example of a non-standard career path. For me it has worked well to act on my personal priorities and to ask directly for arrangements that helped me have the family life I wanted. My way has worked for me; for you, something entirely different might be better. So don't be

Sybilla Beckmann, University of Georgia

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. The Schafer Prize was established in 1990 by the Executive Committee and is named for AWM president and one of its founding members, Alice T. Schafer, who has contributed a great deal to women in mathematics throughout her career. 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. She must either be a US citizen or have a school address in the US. The fourteenth annual Schafer Prize will be awarded at the Joint Prize Session at the Joint Mathematics Meetings in Phoenix, Arizona, January 7–10, 2004.

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

With letter of nomination, please include a copy of transcripts and indicate undergraduate level. Nominees must be undergraduates as of October 1, 2003. Any additional supporting materials (e.g., reports from summer work using math, copies of talks given by members of student chapters, recommendation letters from professors, colleagues, etc.) should be enclosed with the nomination. Send *five* complete copies of nominations for this award to: The Alice T. Schafer Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2003**. If you have questions, phone 301-405-7892, email awm@math.umd.edu or visit www.awm-math.org. Nominations via email or fax will not be accepted.

afraid to propose your own creative ways of combining your work with your family.

When I went to graduate school I did not think about whether I would want to have children later, or what the consequences would be if I did. I was interested in mathematics and thought only about continuing my studies. I earned a Ph.D. in arithmetic algebraic geometry from the University of Pennsylvania and then took a two-year Gibbs Instructorship at Yale University. I was on my way to a research career in mathematics. As I neared the age of 30, I began to want to have a family. Like many 30-year-old women, a desire that I never even knew I had rapidly grew ever stronger. I married a mathematician, Will Kazez, and we managed to solve the "two-body problem," both taking jobs in the math department of the University of Georgia. Two years later, in 1990, our son, Joey, was born, followed by our daughter, Arianna, three years later.

Even before our children were born, I suspected that I would not be content to be with them only in the evenings and on weekends. My initial hunch was confirmed when the children arrived: I could not bring myself to return to work full time. Since we were fortunate enough to be able to pay our bills with less than two full-time incomes, I asked and was allowed to work part-time, maintaining my status as assistant professor. In doing this, I knew that I was jeopardizing my chances at tenure and promotion, and while I was not pleased about this, I knew I would feel greater displeasure at spending less time with the children. And so I made what was the logical choice for me.

In fact, I did get tenure and was promoted to associate professor, although there was nearly a snag in the process. At one point it was unclear if my maternity leave and part-time work had caused me to lose credit for my years of service, thereby rendering me ineligible for tenure. Normally, this would only have resulted in a year's delay, but in my case, since I was pregnant with Arianna at the time and planning a full year's leave of absence, it would have meant losing all my credit towards tenure. Fortunately, reason prevailed and my tenure and promotion did go through.

After Arianna was born I spent a whole year at home full-time with the children. I returned to work part-time in the spring of 1994. From then until the fall of 2000, I worked part time in the academic years, generally between 1/2-time and 2/3-time, and stayed home full-time in the summers. I will be forever grateful to my department that over the course of 10 years, and under three different department heads, not one of my requests for a leave of absence or for part-time work was ever refused. Because I wanted to make it easier for my unusual requests to be granted, I did always make a point of making them favorable to my department. I usually taught slightly more than I was budgeted for, and I tried to give good service to my department despite being part-time.

After ten years of part-time work and leaves of absence, I returned to work full-time a few years ago. Even so, I have often been able to be at home with my

AFTER TENURE: WOMEN MATHEMATICIANS TAKING A LEADERSHIP ROLE (A WORKSHOP DEDICATED TO THE MEMORY OF RUTH MICHLER)

Supported by the University of North Texas and the National Science Foundation through Ruth Michler's POWRE grant

Preliminary Announcement: The AWM will hold a workshop (*pending final funding approval*) to prepare women who have already established careers in the mathematical sciences to become leaders in the profession. The target audience will be women who have been recently tenured at academic institutions or who are at a similar level in an industrial or government position. The workshop will bring together this audience with senior women who are leaders in the profession.

Format: Leadership activities will include panels, informal discussions and case studies. The panels and discussions will address issues concerning being a department chair or college administrator, being involved in the professional societies, being a research leader, and being an effective mentor. Mathematical activities will include expository talks.

Where and When: The workshop will be held at the University of Maryland, College Park, during the weekend of March 12–14, 2004.

Eligibility: Applicants must be women holding tenure or equivalent experience and must have a work address in the USA. The applicant's research must be in a field that is supported by the Division of Mathematical Sciences of the NSF.

children in the afternoons. The miracles of the internet and cable modem allow me to synchronize my files and to be in email contact with my colleagues and students so that I can conveniently work from home.

Naturally, ten years of working less than full-time has had consequences. While stepping back from my career in order to raise a family, I spent a lot of time reflecting on my values and on what I hoped to accomplish both personally and professionally. These reflections led to an increasing desire to do work to benefit my fellow man. As my children entered elementary school I became more aware of mathematicians' responsibility for the mathematical education of teachers. This is major responsibility, because a teacher can affect hundreds of children over the course of a career. So several years ago, I decided to revise our mathematics courses for prospective elementary teachers. I have developed three such courses, am writing a book for them, and have directed and participated in a number of grants on teacher education and professional development. I have found this work to be challenging and rewarding, and, somewhat to my surprise, I find it intellectually stimulating. This work is also very time-consuming, and so in the meantime I have not been able to do research in mathematics. Once again, I have made a choice that may prevent me from further promotion, but once again, I believe it is the right choice for me, even though I'm not happy with the possibility of not achieving the rank of full professor.

For me it has been very important to have a career that fits with my values and priorities. I am very fortunate that I have been able to afford to make the choices I have. I am also very fortunate that my colleagues have supported me in those choices. For someone else, the choices I have made might be completely wrong. But I think it is not the particular choices we make that are important, but rather that we think about what we do and that we strive to have a career that fits with our own goals and values. So this is my advice to those of you who are wondering about balancing mathematics and children. First, don't be afraid to think about what you really want—not what you think others expect of you, not what you think you should do—but what you believe will bring you and your family satisfaction. Then see if you can find a way to do what you really want to do. It has worked for me.

TEXAS CONFERENCE

The Texas Conference for Women will be held on October 1, 2003 at the Austin Convention Center. This conference features sessions on leadership, strategies for success, and encouraging young women to make informed career planning choices. See the website www.txconferenceforwomen.org for further information.

CALL FOR NOMINATIONS: THE 2005 NOETHER LECTURE

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

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

The letter of nomination should include a one-page outline of the nominee's contribution to mathematics, giving four of her most important papers and other relevant information. *Five* copies of nominations should be sent by **October 15, 2003** to: The Noether Lecture Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461; phone: 301-405-7892; email: awm@math.umd.edu.

GRAD SCHOOL EXPERIENCES

Last issue, AWM president Carolyn Gordon asked students in graduate programs where they feel supported or encouraged to write about their experiences. Trisha Moller of Lehigh University is the first to send us a contribution.

Lehigh University

As a female graduate student in the Department of Mathematics at Lehigh University, I was recently asked to comment about women in mathematics. Some of the questions posed include: "Why did you decide to do your graduate work at Lehigh? How do you feel, as a female enrolled in the mathematics program? What do you feel accounts for the anomaly between the national percentage of females awarded Ph.D.'s, and Lehigh's percentage? What has your experience been like?" Here are my thoughts, my story....

First, my choices for graduate school were limited by distance (I am from NJ and did not want to go too far from home). Once my focus was narrowed, I looked for a school which had a good reputation, was at my academic level (since I was coming from a state school—I was being realistic), and which had a similar atmosphere to the one I had enjoyed as an undergraduate. Lehigh University made my "short list."

Ultimately, what differentiated Lehigh from the rest of the schools was the atmosphere of the math department. Here were some of my impressions the day I visited Lehigh (which still hold true):

1. The professors and graduate students were accommodating.

I could only to visit on a Saturday, yet people came in to speak with me!

2. They were friendly and welcoming.

On this Saturday visit, the professors and graduate students were actually conducting a math competition. Needless to say, it was a hectic day for all of them. However, the graduates were so nice—joking, making me feel relaxed and comfortable about diving into this new experience. Also, they were very helpful—giving me honest advice about this whole graduate school

NSF-AWM TRAVEL GRANTS FOR WOMEN

The objective of the NSF-AWM Travel Grants program is to enable women to attend research conferences in their fields, thereby providing a valuable opportunity to advance their research activities and their visibility in the research community. By having more women attend such meetings, we also increase the size of the pool from which speakers at subsequent meetings may be drawn and thus address the persistent problem of the absence of women speakers at some research conferences.

Travel Grants. These grants provide full or partial support for travel and subsistence for a meeting or conference in the applicant's field of specialization. A maximum of $1000 for domestic travel and of $2000 for foreign travel will be applied. For foreign travel, US air carriers must be used (exceptions only per federal grants regulations; prior AWM approval required).

Eligibility. These travel funds are provided by the Division of Mathematical Sciences of NSF, and the research conference must be in an area supported by DMS. For example, this includes certain areas of statistics, but excludes most areas of mathematics education and history of mathematics. Applicants must be women holding a doctorate (or equivalent experience) and having a work address in the US (or home address, in the case of unemployed mathematicians). Anyone who has been awarded an AWM-NSF travel grant in the past two years is ineligible. Anyone receiving significant external governmental funding (more than $1000 yearly) for travel is ineligible. Partial travel support from the applicant's institution or from a non-governmental agency does not, however, make the applicant ineligible.

Target dates. There are three award periods per year. An applicant should send *five* copies of 1) a cover letter, including the conference name, conference dates and location (city/state/country), and amount of support requested, 2) a description of her current research and of how the proposed travel would benefit her research program, 3) her curriculum vitae, 4) a budget for the proposed travel, and 5) a list of all current and pending travel funding (governmental and non-governmental) and the amounts available for your proposed trip to: Travel Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. If you have questions, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted. The next two deadlines for receipt of applications are **October 1, 2003** and **February 1, 2004**.

process, even if the best advice was not in favor of Lehigh. No "schmoozing" at all! This honesty weighed heavily in my decision; I felt that even *if* another school was so-called "better" (by some standard), I respected the school that was friendly, honest and straightforward with me. To me, these qualities were of more importance in choosing a new "home."

3. The relationships—between graduates and between grads and professors—were comfortable, open, friendly, and most importantly, non-competitive.

I was looking for a new "home", where I would receive support—academically, socially, and emotionally. Academically, I realized how much I still had to learn and so I depended on my fellow co-workers to help me. I wanted to work with people, to strengthen each other, instead of working against people. Not only did/do I feel comfortable with the graduates, but I was/am not afraid to talk with the professors either. The people of the math department have become my "other" family.

4. I liked the city of Bethlehem.

The feel of the university was similar to my undergraduate college, which I had loved. For me, the city of Bethlehem was a perfect balance of city life and suburban life.

5. Finally, yes, the number of female graduate students in the math department was another factor in my decision.

I didn't intentionally look for a graduate school which had "x" number of females. However, out of the 4 schools that I had visited, Lehigh *did* have the highest number of female graduate students. I only noticed this when I visited Lehigh. It wasn't that I was *un*comfortable at the other schools; I just felt *more* comfortable being amongst the women at Lehigh.

Maybe because I am female, it was important for me

COLLABORATIVE RESEARCH GRANTS FOR WOMEN

Dedicated to the memory of Ruth Michler
Supported by the University of North Texas and the National Science Foundation
through Ruth Michler's POWRE grant (*pendiing final approval*)

The objective of the Collaborative Research Grants is to enable women who are already tenured to carry out collaborative research at other institutions. (Women who are not yet tenured are referred to the Mentoring Grants Program.) The length of stay may vary from one week to several months, although only partial support will be provided for the longer stays. Each grant will fund travel, accommodations, and other required expenses for a tenured woman mathematician to travel to an institute or a department to do research with a specified individual. Typical grants will be under $4000, although higher amounts may be awarded in exceptional cases. All travel must be completed by August 31, 2004. For foreign travel, US air carriers must be used (exceptions only per federal grant regulations; prior AWM approval required).

Eligibility: Applicants must be women mathematicians with a work address in the US. Preference will be given to women who have been recently tenured or who have an equivalent level of experience in an industrial or governmental position. The applicant's research must be in a field which is supported by the Division of Mathematical Sciences of the National Science Foundation.

Each applicant should send *five* copies of: 1) a cover letter; 2) a curriculum vita; 3) a research proposal (approximately five pages in length) which specifies why the proposed travel would be particularly beneficial; 4) a supporting letter from the proposed collaborator (who must indicate his/her availability at the proposed travel time), together with the curriculum vita of the proposed collaborator; 5) a proposed budget; and 6) information about other sources of funding available to the applicant to: Collaborative Research Grant Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, Maryland 20742-2461. A final report will be required from each awardee. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM. If you have questions, contact AWM by phone (301-405-7892) or email (awm@math.umd.edu). Applications via email or fax will not be accepted. The deadline for receipt of applications is **October 10, 2003**.

to be in a place where there could be a support group for me. I was moving away from family and friends, and I knew that I would need new friends, especially girlfriends, who would understand my laughter and tears. Although I was going to school for a degree, I would also be living a life ... living through probably the most life-altering years, maturing from college kid to full-blown adult (including wife!). *Yikes!* I thought. I didn't think I could do it all on the math alone. Girlfriends, I have learned, are a necessity of life.

6. A bonus: One of my math professors at my undergraduate school earned her Ph.D. here at Lehigh. And, yes, she is a young, female mathematician. Hearing her personal stories and her opinion of Lehigh added to the benefits of Lehigh.

In General: I believe that most female graduate students of the math department initially look for a good school, a perfect match for them (academically, personality-wise, etc.) Once they visit Lehigh, I think that the personality of the math department—the "family dynamics"—win them over. Not only seeing other female math graduate students, but also seeing other women who are happy, healthy, and possibly future friends makes the potential female grad students want to make Lehigh their home, as well.

The math department attracts graduates from the same undergraduate schools; we have a great track record in that sense. There are many graduate students (male and female) either from the same undergraduate college or who have had Lehigh alumni as professors (as in my story). Thus, tradition plays a key part in this cycle.

Let me end with some thoughts from a letter I wrote to the Lehigh administration:

> I chose Lehigh University not just on academics (although it is a strength of Lehigh), but also as a place where I would be happiest. And five years later, I would not have changed my decision. I was brought to Bethlehem because of this wonderful school. Yes, I have gained tremendous knowledge here, but I have also met a new "family" and friends, miraculously found a husband (a fellow math graduate student!?!), and together we have made "The Valley" our permanent home. Although I will be proud to have earned a Ph.D., at Lehigh I have gained far more than I ever dreamed.

BOOK REVIEW

Virginia Valian, **Why So Slow**, The MIT Press, Cambridge MA & London, 1998, 401 pages.

Reviewer: Judy Roitman, University of Kansas

A couple of months ago Kristin Bowman-James, a professor of chemistry here at the University of Kansas, gave a talk in the mathematics department partially based on the book *Why So Slow* by the cognitive psychologist and linguist Virginia Valian. Her enthusiasm encouraged me to buy the book, and it was indeed as wonderful as she said it was. Clearly it should be reviewed in the AWM *Newsletter*.

As it turned out, it was, in the May–June 1999 issue, by Cathy Kessel. I didn't remember the review because the book Kessel reviewed didn't sound like the one I was reading, so we talked over email and decided that another review was appropriate.

Kessel, as a mathematician turned social scientist (education) is very familiar with the notion of schemas (see below) and focused her review on how well they explain issues in mathematics education (her short answer: important but not the whole picture). Valian's focus is the slow professional advancement of women, but this is not the focus of Kessel's review, nor will it be the focus of mine. Not being well read in the social sciences, I found the notion of schemas, especially gender schemas, and the way they play out, powerful in explaining all sorts of things I'd never quite understood. It is this aspect of Valian's book that I want to emphasize in this review. While Valian focuses particularly on the application of gender and related schemas to the situation of women in the professions, especially the professions with relatively few women, much of the book is applicable to the situation of all women, because all women are caught between their reality and the ways in which they are perceived by others, and the latter are heavily influenced by gender schemas. (So are the former, but somewhat less.)

When my son was three, we took a road trip to New Orleans to see my husband's family. Somewhere around Talla Bena. MS, a small voice piped up from the back seat, "Where do babies come from?" "From their

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

mama's tummies," I inaccurately replied. "Then what do daddies do?" he asked. And before anyone could answer he responded, excitedly, "I know! They lift heavy things!"

This, to my mind charming, incident (we are, after all, talking about my son) provides a glimpse into the construction of gender schemas. The notion of schema differs from the notion of stereotype because it is an attempt to deal with serious cognitive questions: what are the differences between men and women? what functions belong to the sphere of men and what functions belong to the sphere of women?

The mind is constructed to make schemas—without schemas we would not be able to efficiently deal with the world, each object being an object unto itself without relation with any other. But schemas tend not to be individualized. They are robust within societies and even across societies. They tend to be based on some sort of averaged fact: women are perceived to be more nurturing than men because most women give birth and no man ever has; women are perceived as shorter than men because on the average women are shorter than men.

And schemas tend to be self-perpetuating, which is the start of the trouble. Valian is very clear on how schemas affect perception, ' citing experiment after experiment on judgments of attributes, from objective properties such as height to such difficult issues as evaluating merit. In the studies cited, perceptions are clearly warped by the need to conform to schemas. Furthermore, women and men tend to fall into the same traps, no matter how feminist their stated beliefs. We simply see what we expect to see, all of us.

So we expect to see men as successful, because most successful people are men. And we expect to see women as unsuccessful, because most successful people are men. The many studies showing that men tend to attribute success to their talents and women to luck (and that men tend to attribute lack of success to bad luck and women to lack of talent) are not glimpses into individual psychology but glimpses into a common schema shared by men and women.

I had always thought of studies focused on women's status and accomplishments as, in some sense, studies in differentiation—what is the rate of change? But Valian is looking at the definite integral: she focuses on the accumulation of small differences. Men tend to be slightly overrated and women slightly underrated (even, remember, on something as objective as height). Over time these differences accumulate so that lives begin to take very different courses. Furthermore, this accumulation of difference accounts for the self-perpetuation both of gender schemas and the underlying social realities which shape them.

Valian is eloquent and moving on the contradictions women face when gender schemas conflict with other relevant schemas (e.g., professional schemas) and the difficult decisions they have to make in what are essentially lose/lose situations with no graceful way out. She has many examples of this, and to me they form the heart of the book. I will mention just one.

It is well known that women's contributions to discussions are often ignored, even though a man making the same comment later will find it taken seriously. I'd be surprised if there's a woman reading this who hasn't experienced this phenomenon. When it's happened to me I've felt not just disenfranchised but confused about how to deal with it, and never really understood where the confusion came from. After reading Valian's discussion, the confusion makes sense: the woman is caught in a lose/lose trap. If she points out that she made the same comment earlier, she is pointing out that she was ignored, hence validating an important part of the gender schema—that women need not be paid attention to—and thus reminding everyone that, as a woman, she is someone who can be ignored. But if she doesn't say anything she will be, of course, ignored. The safe thing to do is not to remind everyone of the gender schema and to hope that next time you will be heard, and that is what most women instinctively do. But in so doing they have lost a little something, just as in speaking out they may lose a little more. Either way they lose, and the accumulation of those losses mounts up.

Valian is also precise in her delineations of schema boundaries. Even something as ordinarily uncontrolled as who looks at whom during a conversation—at whom does the speaker look? for how long? at whom does the listener look? for how long?—are loaded with gender and other schemas (schemas of power, for example). And even with such simple actions what is approved of in men can be disapproved of in women. In particular, the subtle signals that are interpreted positively as signs of leadership in men are often interpreted negatively in women because of conflicts with the gender schema for women, so it becomes very difficult for women to be seen as leaders. As most of us who have found ourselves in leadership positions know, we often have to find other

ways of signaling leadership than those men use. In Valian's last chapter, she suggests some ways for women to signal leadership. While I recognize the need, I was disappointed; it's the only place in the book where she seems to be caving in to the status quo.

Adding to the difficulty, people are very attached to the schemas for their own gender, which form a major part of their sense of personal identity. So breaking part of a gender schema can carry grave emotional consequences, and people go through all sorts of contortions to, if not conform, at least convince themselves that they are conforming to an aspect of their gender schema that in fact does not suit them. The coming-out literature in the gay and lesbian community is full of such examples. While the interplay between schemas and a sense of identity is not a major theme in Valian, it does enter into the discussion, especially in the early chapters which focus on the development and pervasiveness of gender schemas in our lives.

There are positive parts to the picture. The gender schema for women is much more inclusive than for men—when was the last time you saw a man wearing a skirt?—which gives women a wider range of choices. Furthermore, the conflict between gender schemas and other schemas tends to diminish markedly when women become well represented in the population, and to diminish also when women clearly have superior knowledge relevant to a specific task. Valian's last chapter is entitled "Remedies," and while I found it the least convincing chapter, I agree with her that knowledge is power, and that simply knowing about schemas and how they play out can help us resist their spell. Affirmative action workshops would look very different if people paid attention to her analysis, and I suspect they would be more effective. In some sense men need this book more than women, because while Valian is naming experiences most women have had, even if they haven't articulated them clearly to themselves, men may not have had the experiences, certainly not in the context of gender, and may not even realize the connection.

Writing this review, I am acutely aware of the extent to which I am oversimplifying Valian's careful and complex discussion and leaving out many of the important issues she raises. I would be disappointed if anyone walked away from this review feeling that they knew enough about the subject and didn't need to read the book. Preparing to write this review I thought it would be helpful to mark exceptional passages with Post-It stickers. Expecting to mark a dozen or so I ended up with over 50 passages, covering between 20 and 30 distinct topics, and the marked passages are far more subtle and careful than anything I have said. For those of us who have not studied these issues from the cognitive psychology perspective, I strongly encourage the reading of this book. It has made me look at many things in my life very differently, and suspect that it will have the same effect on many others, both women and men.

CALL FOR NOMINATIONS: LOUISE HAY AWARD

The Executive Committee of the Association for Women in Mathematics has established the Louise Hay Award for Contributions to Mathematics Education, to be awarded annually to a woman at the Joint Prize Session at the Joint Mathematics Meetings in January. The purpose of this award is to recognize outstanding achievements in any area of mathematics education, to be interpreted in the broadest possible sense. While Louise Hay was widely recognized for her contributions to mathematical logic and for her strong leadership as Head of the Department of Mathematics, Statistics, and Computer Science at the University of Illinois at Chicago, her devotion to students and her lifelong commitment to nurturing the talent of young women and men secure her reputation as a consummate educator. The annual presentation of this award is intended to highlight the importance of mathematics education and to evoke the memory of all that Hay exemplified as a teacher, scholar, administrator, and human being.

The nomination documents should include: a one to three page letter of nomination highlighting the exceptional contributions of the candidate to be recognized, a curriculum vitae of the candidate not to exceed three pages, and three letters supporting the nomination. It is strongly recommended that the letters represent a range of constituents affected by the nominee's work. *Five* complete copies of nomination materials for this award should be sent to: The Hay Award Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, MD 20742-2461. Nominations must be received by **October 1, 2003**. For more information, phone (301) 405-7892, email awm@math.umd.edu or visit www.awm-math.org. Nominations via email or fax will not be accepted.

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

supported by the Air Force Office of Scientific Research, the Office of Naval Research, and the Association for Women in Mathematics

Over the past fourteen years, the Association for Women in Mathematics has held a series of workshops for women graduate students and recent Ph.D.'s in conjunction with major mathematics meetings.

WHEN: The next AWM Workshop to be held in conjunction with the Joint Mathematics Meetings will take place in Phoenix, AZ, January 7–10, 2004 (*pending final funding approval*). The workshop is scheduled to be held on Saturday, January 10, 2004 with an introductory dinner/discussion group on Friday evening, January 9.

FORMAT: Twenty women will be selected in advance of the workshop to present their work; the graduate students will present posters and the recent Ph.D.'s will give 20-minute talks. AWM will offer funding for travel and two days subsistence for the selected participants. The workshop will also include a panel discussion on areas of career development, a luncheon and a dinner with a discussion period. 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 program. Departments are urged to help graduate students and recent Ph.D.'s who do not receive funding to obtain some institutional support to attend the workshop presentations and the associated meetings.

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

ELIGIBILITY: Applications are welcome from graduate students who have made substantial progress towards their theses and from women who have received their Ph.D.'s within approximately the last five years, whether or not they currently hold a postdoctoral or other academic position. Women with grants or other sources of support are still welcome to apply. All non-US citizens must have a current US address. All applications should include a cover letter, a concise description of research (two or three pages), a title of the proposed poster or talk, a curriculum vitae, and at least one letter of recommendation from a faculty member or research mathematician who knows the applicant's work. In particular, graduate students should include a letter of recommendation from their thesis advisors. Nominations by other mathematicians (along with the information listed above) are also welcome. For some advice on the application process from some of the conference organizers see the AWM web site.

Send **five** complete copies of the application materials (including the cover letter) to:

Workshop Selection Committee
Association for Women in Mathematics
4114 Computer & Space Sciences Building
University of Maryland
College Park, Maryland 20742-2461

Phone: 301-405-7892
Email: awm@math.umd.edu URL: www.awm-math.org

APPLICATION DEADLINE: Applications must be received by **September 1, 2003**.
Applications via email or fax will not be accepted.

AWARDS AND HONORS

CONGRATULATIONS to the women listed below for their meritorious achievements.

The team of ANNA NAGURNEY (University of Massachusetts, Amherst), PATRIZIA DANIELE (University of Catania, Sicily), and MONICA COJOCARU (Queens University, Canada) has been invited by the Rockefeller Foundation to conduct research at the Bellagio Center on Lake Como in northern Italy. These three professors will be resident at the Bellagio Center next March to work on their project, "Dynamics of Complex Networks in an Environment of Risk and Uncertainty: Theoretical Foundations and Applications to Global Supply Chain and International Financial Networks." The Bellagio Center was established in 1959 to bring together scholars, writers, and artists for scholarly and creative activity.

EMMA PREVIATO, professor of mathematics at Boston University, has been selected by the Northeastern Section of the MAA for its Distinguished Teacher of the Year Award, which was presented at the section's meeting in June. In choosing Previato for this distinction, the selection committee noted how the BU professor stood out from the field of excellent candidates because of "the extent to which her influence on students extends beyond the classroom." Nominations for Previato noted the "enormous effort she devotes to mentoring students" as well as her role as "a guide, an encourager, a friend, a mentor, and a life-long learner."

Previato believes teaching and research are inseparable and regularly involves students in mathematics research. This is important, she says, so that students "understand immediately that they can do research, that they can ask questions and create the answers themselves." This year Previato originated what will become an annual symposium on undergraduate research: RUMBUS, Research by Undergraduates in Mathematics Boston University Symposium.

Outside the classroom Previato has developed an exceptional range of mathematics-related initiatives and activities to share her love of mathematics, a discipline she believes has much in common with music and the arts. She founded and serves as advisor to BU's student chapter of MAA and also serves as advisor to BU's teams for the annual William Lowell Putnam Exam, administered by MAA, and for the annual international Mathematical Contest in Modeling, sponsored by the Consortium for Mathematics and its Applications.

Previato founded the BU Humanities–Mathematics Project, which publishes the interdisciplinary journal *Inclusions* and sponsors an annual symposium linking scholars, students, and non-academics from a variety of disciplines. She also initiated the BU Masterclasses, topical lectures in mathematics at which University students and faculty interact with students and faculty from Boston University Academy, a private secondary school run by Boston University.

"This award is a tribute to my students and an inspiration to me," says Previato. "I feel gratitude when I go into the classroom. I believe we have great students at BU. One of the rewards of teaching is the way your ideas get picked up by the students, acquire a life of their own, and come back to you grown and unrecognizable. The culture at Boston University is exceptionally supportive. Being here is a privilege."

MARIA KLAWE, a computer scientist who was formerly dean of science at the University of British Columbia, became dean of Princeton's School of Engineering and Applied Science on January 1, 2003. She was also appointed professor of computer science.

"As dean of science at the University of British Columbia, Maria Klawe has shown a remarkable effectiveness in helping talented people from diverse disciplines work together to achieve results far greater than anything they expected to produce on their own," said Princeton President Shirley M. Tilghman.

After receiving bachelor's and doctoral degrees in mathematics from the University of Alberta, Klawe held faculty positions in mathematics and computer science at Oakland University in Michigan and the University of Toronto in Canada. She then joined the IBM Almaden Research Center in California, where she founded and managed the Discrete Mathematics Group and served as manager of the Department of Mathematics and Related Computer Science.

After eight years at IBM, she returned to academia in 1988 to become the head of the Department of Computer Science at the University of British Columbia. She was appointed vice president for student and academic

Material from press releases.

services in 1995 and dean of science in 1998. Klawe is president of the Association for Computing Machinery, the international association of computer professionals.

Klawe said that Princeton's engineering school should take the opportunity to interact more closely with the natural sciences, the social sciences and the humanities. "In so many ways," she said, "the current issues that need to be addressed require perspectives not just from different engineering disciplines, but from other communities of disciplines."

"Technology plays a huge role in our society today, a fact that will become increasingly more important in coming decades. Leaders of the future need a good understanding of the potential benefits and pitfalls of technology," she said. "When we look at the education of every undergraduate at Princeton, I want to make sure that each has benefited from the fact that the University has an outstanding engineering school."

Recently Klawe's research has focused on the use of interactive multimedia technologies in teaching mathematics, reading and science. She has helped lead an interdisciplinary group of researchers in computer science and education, as well as teachers and software developers. She led the design of several software products, including "Phoenix Quest," a mathematical computer adventure game geared toward students aged 10 to 14, with particular attention to the interests of girls. Klawe also has a strong research record in theoretical computer science and discrete mathematics, especially in algorithms and data structures.

SONIA KOVALEVSKY HIGH SCHOOL MATHEMATICS DAYS

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

AWM anticipates awarding 10 to 14 grants ranging on average from $1500 to $2200 each ($3000 maximum per school) to universities and colleges; more grants may be awarded if additional funds become available. Historically Black colleges and universities are particularly encouraged to apply. Programs targeted toward inner city or rural high schools are especially welcomed. If selected, institutions will receive (upon request) an information packet consisting of model schedules of activities, a check list for the sorts of arrangements that need to be made, suggestions for securing additional funding and for obtaining prizes to be awarded to contest winners, recruitment and publicity material to be adapted for local use, lists of possible workshop topics for students and teachers, model problem solving contest material, and guidelines for follow-up activities and evaluation.

Applications, not to exceed five pages, should include: a) plans for activities, including specific speakers to the extent known; b) qualifications of the person(s) to be in charge; c) plans for recruitment, including the securing of diversity among participants; d) detailed itemized budget (i.e., food, room rental, advertising, copying, supplies, student giveaways, etc. Honoraria for speakers should be reasonable and should not, in total, exceed 20% of the overall budget. Stipends and personnel costs are not permitted for organizers. This grant does not permit reimbursement for indirect costs or fringe benefits. Please itemize direct costs in budget.); e) local resources in support of the project, if any; and f) tentative follow-up and evaluation plans.

The decision on funding will be made in late August. The high school days are to be held in Fall 2003 and Spring 2004. If selected, a report of the event along with receipts (originals or copies) for reimbursement must be submitted to AWM within 30 days of the event date or by June 1, 2004, whichever comes first. Reimbursements will be made in one disbursement; no funds can be disbursed prior to the event date. An additional selection cycle will be held February 4, 2004 for Spring 2004 *only if* funds remain after the August 2003 selection cycle.

Send *five* complete copies of the application materials to: Sonia Kovalevsky Days Selection Committee, Association for Women in Mathematics, 4114 Computer & Space Sciences Building, University of Maryland, College Park, Maryland 20742-2461. For further information: phone 301-405-7892; email awm@math.umd.edu; or visit www.awm-math.org. Applications must be received by **August 4, 2003**; applications via email or fax will not be accepted.

SKHS MATHEMATICS DAYS

Sonia Kovalevsky High School Mathematics Days are funded through grants from the National Security Agency and Coppin State College. Thanks to our funding agencies!

The organizers of each program are asked to submit an activity report, to provide a valuable resource for others to consider when setting up their own programs.

Mississippi State University and Mississippi University for Women

"Dodge Ball and Infinity" was presented by Bruce Ebanks. The abstract reads: What does infinity mean? Can we comprehend it? We start by playing a game called Dodge Ball, which holds the key to understanding sizes of infinity. Then we explore the mathematical idea of correspondences. Finally we work out the answer to the question: Are some infinities larger than others?

We start by handing out a Dodge Ball sheet to each pair of students in the audience. Dodge Ball is a game for two players. Player 1 has a 6-by-6 grid of empty squares, while Player 2 has a 1-by-6 row of empty squares. The rules of the game are as follows. First, Player 1 fills in her first row with a sequence of X's and O's. Then Player 2 fills in her first blank square with either an X or an O. Play continues, with the players alternating turns, until both players' game boards are completely filled in with X's and O's. Player 1 wins if one of her rows exactly matches the row of Player 2; otherwise Player 2 wins. [Acknowledgement: This game was taken from *The Heart of Mathematics*, by Ed Burger and Michael Starbird, Key College Publishing, 2000.] After playing the game a couple of times, most students realize that Player 2 has the advantage. (A prize was offered to a student who volunteered to play as Player 2 against the professor on the overhead projector.) In fact, Player 2 has a winning strategy: At the n^{th} play, Player 2 should choose the opposite of the symbol used by Player 1 in the n^{th} position of her n^{th} row. Now students are told that this game holds the key to understanding different sizes of infinity.

Next we explore the mathematical idea of one-to-one correspondence. If someone has an apple in each hand, then she knows she has two apples. If someone matches a valentine to each friend, then she knows she has the same number of valentines as friends, without counting either valentines or friends. If one sees two long sequences of symbols written side by side, then it is easy to see whether the numbers of symbols match or not. This gives rise to the notion of cardinality. Everyone knows there are infinitely many counting numbers. Any set that can be put in a one-to-one correspondence with the counting numbers is a *countable* set. We then explore some examples of countable sets, starting with the set {2, 3, 4, ...}. Initially, many students will not want to accept that this set has the same size as the set of counting numbers, since we "threw out" one number.

Finally, we go hunting for a set that is bigger than the set of counting numbers. We first take a look at the set of rational numbers, which seems much larger. But students are shown that the set of rational numbers has the same cardinality as the set of counting numbers. Then students are told that Georg Cantor shocked the mathematical world in 1872 by showing that the set of real numbers is larger than the set of counting numbers! Students can be shown that Cantor's diagonal argument is essentially an extension of the Dodge Ball strategy. In fact, we can use only the real numbers between 0 and 1 with decimal expansions consisting only of 4's and 7's. We show that the assumption that this set can be listed in a countable fashion leads to a contradiction, hence it is not countable. So we demonstrate that there is a larger size of infinity!

North Dakota State University

One of the workshops in the 7^{th} North Dakota State University Sonia Kovalevsky Mathematics High School Day, held on May 3, 2003, was about recursive relations and cellular automata. The workshop, presented by the keynote speaker, Ellen Hill of the Department of Mathematics, Minnesota State University–Moorhead, was "Mathematical Games: Towers of Hanoi and the Game of Life." The workshop was very engaging and was received enthusiastically by the entire audience, students and teachers alike. Participants were invited to go to an appropriate website for the games introduced and explore some features on their own, to derive various interesting features of recursive relations. Then during

Jane L. Harvill and Vivien G. Miller, MSU, event organizers. They have information on other workshops and advice for organizers that they are willing to share.

Dogan Çömez, dogan.comez@ndsu.nodak.edu

the break following this workshop, the students kept themselves busy in front of the laptops (available in the room), discovering and talking about how to solve some of the problems posed there.

Ellen began her "show" by logging into a website about Towers of Hanoi and explaining/playing simpler versions of the game. By making careful observations, she derived the recursive relation about the number of moves needed at each difficulty level, finalizing the actual number of moves needed for the real (historical!) game itself. She then moved to recursive relations in general. Later, moving into more complicated situations that also involve some dynamics, she introduced cellular automata.

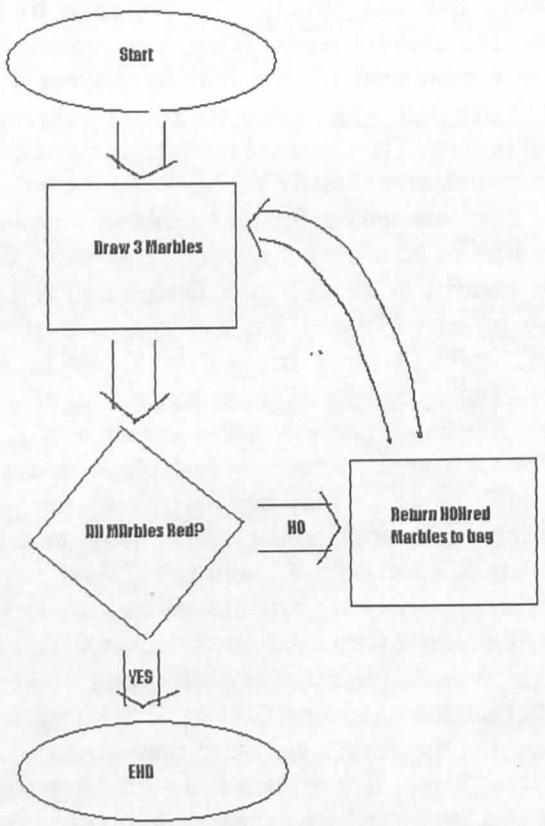
She started with some basic examples, while frequently asking questions to the audience at each step of application of the rules for a set of "initial squares," ending up with the general behavior and basic structural properties of such systems. She provided some simple examples of stable, periodic and expanding systems and challenged the participants to come up with their own examples of each type. After these, she showed a few examples of complicated systems with some peculiar properties (e.g., exhibiting certain configurations, or containing both stable and periodic parts). Ellen finished her workshop by providing some mathematical insights to the concept of cellular automata and by giving the students URLs of various mathematically entertaining and educational websites.

Seattle University

The abstract for the featured activity, "Decision Making Mathematics," is: Decisions shape each of our lives. Mathematical (logical) thinking helps in the sifting of information and the balancing of alternatives inherent in any decision. We can use mathematical models to describe and predict the world around us. Mathematical models and mathematical thinking underlie computer programs that support decision making. These same models bring order and understanding to the overwhelming flow of data that computers produce. Decision Making Mathematics serves to present and clarify options, to model available alternatives and their consequences, and even to control the smaller decisions necessary to reach a larger goal.

I. Decision Making Mathematics Demonstration

In this portion of the activity, a large, life-sized flow diagram "Flowing through Decisions" (made out of poster board) is placed on the floor. The girls draw from a sack of colored marbles held by the assistant. The girls process through the diagram until they satisfy the requirements to jump out of the loop. During this, the mentor can discuss the decision making process, how the shapes in the diagram give clues to the process, and how the diagram helps to funnel the information involved in the decision.



II. Formalizing the Flow Chart Details

In this section, the mentor formalizes the flow diagram process, defining terms and clarifying concepts: Flowcharts, Making Work Flow through Steps.

A flowchart is used to show all the steps that are involved in a process. The symbols in a flowchart include a circle for the beginning and end, plus a rectangle for each of the steps in between. If a step involves a decision or a question, a diamond-shaped box is used instead.

Flowcharts help to organize our thinking about the things that we do; then we can reflect on how to do them better. The hardest part of the flowchart is the decision point. Knowing that a decision must be made involves really looking ahead. This is not always easy. By looking at the decision point, it is easy to see the problem.

In creating a flowchart to reflect a process it is important to think of the points where you must make a decision in order to take the right actions. These decision points are shown on a flowchart as diamond-shaped boxes.

The flowchart is a way of recording the following: steps in a process, decisions to be made in that process, and useful data about these steps.

III. Continuation of Flow Chart Demonstration

In this section, the mentor carries the flow diagram discussion further by asking the girls to think about the following questions: Is there a maximum number of times you can go through the loop before ending? Does the number of marbles you have at the end tell you anything about how many times you went through?

At this point (when the students answer, or are led to answer, "no"), the mentor then leads them through the development of a counter. The students now develop a new flow diagram to make use of counters to record the number of times through a loop.

Suggestions for making flowcharts: Walk through a process before you make your flowchart, taking notes as you do this. Make a first draft of your flowchart. Try out your flow diagram, making sure that the process you desire is being achieved. Ask someone else to go through your process, using only the flowchart to do it. This is a good way to see if you have left anything out.

IV. Decision Making Mathematics Discussion

The mentor discusses the uses of flow diagrams and counters, tying into her work with programming and web development.

Mathematics is at the heart of a multitude of decisions, including those that generate electric power economically, make a profit in financial markets, approve effective new drugs, weigh legal evidence, fly aircraft safely, manage complex construction projects, and choose new business strategies. Mathematical areas like statistics, optimization, probability, queuing theory, control, game theory, modeling and operations—a field devoted entirely to the application of mathematics in decision making—are essential for making difficult choices in public policy, health, business, manufacturing, finance, law and many other human endeavors.

V. Explanation to Others

At this time, the girls break into small groups (2–4) to discuss how they will explain what they have learned to others. They experiment with creating their own flow diagrams, being as creative and complex as they like. The mentor guides these groups, making suggestions to the decision modeling process as needed. The girls decide which of their flow diagrams they will ask their audience to try and how they will explain the decision making steps involved in the process.

St. John's University

This year, two special featured activities were offered, one taking place in a workshop and the other during lunch.

Our featured workshop was on the Chinese game of tangrams. Each student had a seven-piece tangram set to work with, and all worked eagerly on problems such as the following:

1. Using all seven pieces of the puzzle, form a square.
2. If the square is a unit square, what is the area of each piece? Be prepared to justify your answers.
3. If one of the small triangles has an area of one, what is the area of the entire square?
4. If the square is a unit square, what is the perimeter of each piece?

At the end, to the delight of the students, each received a five-piece tangram on a keychain.

Our second feature was a Math Jeopardy Game led by two math majors. One week before SK Day, five schools were chosen at random and asked to choose two girls to play as a team. Not only were five teams playing to win, but the entire audience excitedly played along, enjoying mathematics with their lunch. Jeopardy I had three topics and Jeopardy II had four, including "The Shape of Things," "Number Sense," "History," "Spell This," and "Vowels," where each response describing a

Rora Iacobacci, Iacobacr@stjohns.edu and Anne Hughes, hughesa@stjohns.edu

math property began with a vowel. The winning team was awarded pyramids with globes inside and the others received cylinders cut by a slant plane section. Everyone enjoyed this activity and many expressed hope that it would be continued in the future.

Valdosta State University

Our featured activity was "The Path Less Traveled: Exploring Path Connected Topology."

Topology, like mathematics, is found almost everywhere. There are many different subgroups within the broad field of topology, such as point set, algebraic, and differential topologies. There is very little overlap between these subgroups, as each explores a different aspect of this fascinating topic. Many great mathematicians have explored topological ideas from Euler to Lhuilier to Möbius to Listing (he used the word topology first) to Riemann to Jordan to Cantor to Hilbert, to name a few. Almost all students in mathematics or engineering have studied several of the topological theories these mathematicians investigated putting into practical usage. Today we will take the opportunity to look at some ideas in path-connected topology.

The Königsberg,Bridge Problem

The people of this small town in Germany wondered if a clever enough person could determine a path such that as they walked around the city they would cross every bridge only once. (A map for this may be found at the website www-groups.dcs.st-and.ac.uk/~history/HistTopics/Topology_in_mathematics.html.) Leonhard Euler (1707–1783) published a paper in 1736 generalizing the topological ideas necessary for such a trek.

Investigation 1: Consider that each piece of land acts as a vertex and each bridge is a path connecting to its two end vertices. Then a simplified version of the Königsberg bridge problem might look something like Figure 1.

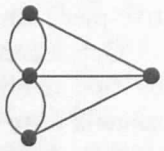


Figure 1

Try tracing a path on Figure 2, without lifting up your pencil, over every line once and only once (vertices may be visited multiple times). Keep track of where you start and where you finish.

Try tracing a path on Figure 3, without lifting up your pencil, over every line once and only once. Keep track of where you start and where you finish.

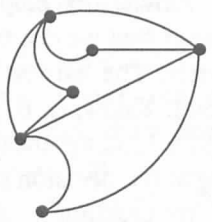


Figure 2

Now try to trace a path on the simplified bridge model, Figure 1. Can you trace a path, without lifting up your pencil, tracing over every line once and only once? Write a conjecture about why you could trace Figures 2 and 3, but not Figure 1.

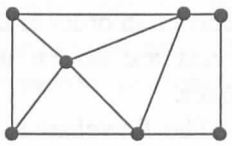


Figure 3

Euler looked at the simplified models and noted some vertices had an even number of paths connecting to them and some had an odd number of paths connecting to them. Euler proved that if there are only even vertices as seen in Figure 2, then the path is traversable type 1, starting at any point in the network and ending at the same point. He further noted that if there were exactly two odd vertices the network was traversable type 2, like in Figure 3, starting at one odd vertex and ending at the other odd vertex. If there were more than two or less than two odd vertices, then the network was not traversable. Examine the bridge network in Figure 1. Why isn't it traversable?

Euler examined this problem in terms of a real world application, could a person actually walk a path, and applied ideas associated with Euclidean geometry. He showed no solution was possible. Other mathematicians have since toyed with this notion and found that solutions are possible if one removes the problem from a real world setting and uses a modified torus, allowing the solution seen in Figure 4. Note that this method in essence converts two of the odd vertices into even vertices, leaving exactly two odd vertices and thus allowing a solution.

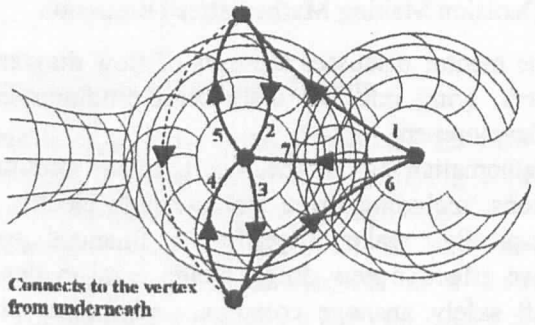


Figure 4

Peggy L. Moch, plmoch@valdosta.edu

Trihexaflexagons

In 1939 a graduate student at Princeton by the name of Arthur Stone accidentally folded the first trihexaflexagon from trimmed notebook paper (after earning his Ph.D., Stone took a position at Rochester University and eventually became Professor Emeritus in mathematics). So what is a trihexaflexagon? A regular hexagon cut out of a piece of paper has six sides with a top and a bottom, or two faces. A trihexaflexagon has six sides and three faces! The third face is hidden until the hexagon is flexed and the face is revealed.

Investigation 2: To begin construction of a trihexaflexagon fold a narrow strip of paper into 10 congruent connected equilateral triangles as shown in Figure 5. This can be accomplished by estimating the first 60 degree angle and then folding the paper back and forth to obtain the string of triangles. Carefully remove the excesses as indicated by the dashed lines in Figure 5. Lay the strip of paper down with the same orientation as Figure 5.

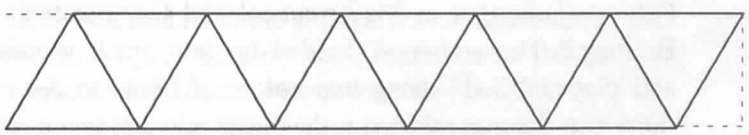


Figure 5

Next fold the strip on the line segment shared by the third and fourth triangles as shown in Figure 6. Fold the bottom up to complete the hexagon with an extra triangle sticking out at the top left as shown in Figure 7. The A in Figure 6 is then covered by the B in Figure 7, and C denotes the extra triangle. Flip A to the top so that B is covered as shown in Figure 8. Apply double stick tape to the back side of C, fold it under, and secure it into place.

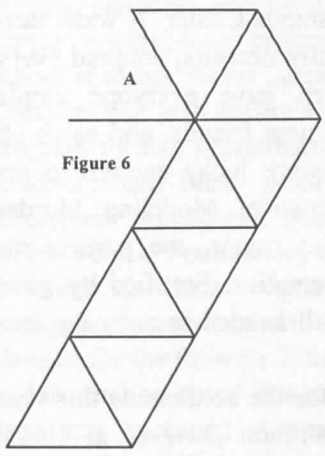


Figure 6

Decorate the top and the bottom of your trihexaflexagon using the markers that have been provided. To flex your trihexaflexagon, pinch two adjacent triangles together and then push in the rest of the trihexaflexagon (kind of looks like a T looking straight down at it). Gently pull it open from the area of the center of the trihexaflexagon (if it does not seem to want to open, slide over one triangle and repeat the flexing procedure). Use the stickers to decorate the hidden face which has now been revealed.

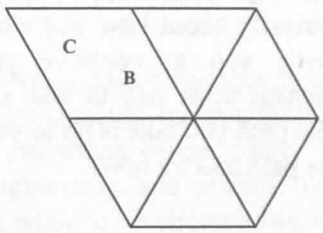


Figure 7

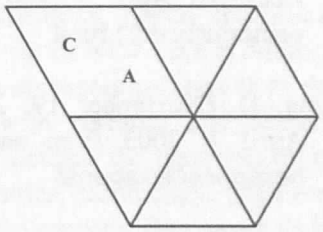


Figure 8

Tetrahexaflexagons (two hidden faces), pentahexaflexagons (three hidden faces), and hexahexaflexagons (four hidden faces) may also be constructed using similar techniques and patience. Instructions and more information about flexagons may be found at these websites: www.geocities.com/CapeCanaveral/Hangar/7773/flexagon.html#tri and hometown.aol.com/verndrei/ flexh01.html.

Those really interested in the topic of topology should visit David King's website, www.drking.worldonline.co.uk/hexagons/flexagons. King is the Chief Scientific Advisor to H. M. Government and Head of the Office of Science and Technology at Cambridge University in England. He welcomes comments and reactions from those who share his interest in this fascinating subject.

Trihexaflexagons are topologically related to the möbius strip, named for August Möbius (1790–1868). A möbius strip has some very different properties and some rather surprising practical uses. It can be constructed using a strip of paper by twisting one end of the strip and then taping the bottom side to the top side of the strip. Amazingly, the möbius strip only has one side! The idea was applied to conveyor belts so they will wear evenly as opposed to conventional belts which become worn much more quickly. An Australian company owns the patent on the möbius conveyor belt. M. C. Escher (1898–1972) used the möbius idea to construct a drawing of ants traversing a möbius strip constructed out of web-like material.

Today we just barely scratched the surface of a few

topological ideas. Hopefully we have engaged your curiosity about how and why things are connected. We invite you to continue your mathematical training, perhaps some day to take a formal course in topology. The path you take is up to you, but perhaps you will take the path less traveled.

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HRUMC

Once again, more than 370 students and faculty gathered for the annual Hudson River Undergraduate Mathematics Conference (HRUMC). On Saturday, April 12th, 2003, Union College, Schenectady, NY welcomed budding and established mathematicians to talk about their first love, mathematics. But this year wasn't just any year. This year was the Tenth Annual HRUMC. And it has aged beautifully. From its not-so-humble beginnings of 69 talks, this year the HRUMC boasted more than 130. Most of the talks were given by undergraduate students, but there were some talks given by high school students and college faculty. Each talk was 15 minutes long and had been organized by topic and level in the program. Everyone was handed a program when they registered at the start of the day and had the chance to select talks then, if they had not used the schedule on the website to plan their day in advance. Talks were designated as either Level I (understandable to first and second years) or Level II (for the more advanced). With all the talks so fascinating and more than ten of them occurring simultaneously, it was very difficult to decide which ones to attend.Some sample talks included: "A Simple Model for the Human Cardiovascular System" (David Vella, Skidmore College), "How to Construct a Universe" (Ned Campion, Union College), "Constructing the Moduli Space of Surfaces with a G-(k,l,m,n) Action" (Kathryn M. Zuhr, Mount Holyoke College), and "How to Create a World in Six Minutes" (Jason Winokur, Manhattan College).

At 11:00, everybody gathered at the Memorial Chapel to hear the keynote speaker, Louis Gross from the University of Tennessee, speak about "Current and Future Challenges in Mathematical and Computational Biology." The audience divided up into small groups and played "God" using two colors of beans to determine the demographics of the bean population on an isolated island. Gross also spoke about his study of the Hudson River delta and the effect humanity has on the surrounding flora and fauna.

The main talk was followed by a scrumptious lunch served at Union's Reamer Campus Center. A wide variety of delicious food, especially desserts, tempted every palate. The 90-minute lunch gave everyone ample opportunity to mingle, make new friends, and catch up with old ones. People who were lucky enough to get tickets went to the Mathematical Modeling Murder Mystery, where, according to rumor, the participants solved a murder using mathematics. Fortified by good food and entertainment, we all headed back to the second and third sessions.

The Steering Committee for the conference this year was headed by Professor William Zwicker at Union College. Next year's Conference, the Eleventh Annual HRUMC, will be hosted on April 3, 2004 by Mount Holyoke College in South Hadley, MA. Stay tuned to www.skidmore.edu/academics/mcs/hrumc.htm for dates and further information.

Aatekah Owais '05 and Namrata Mahadevan '05, Mount Holyoke College.

WOMEN COUNT

"Women Count: A Conference for Directors of Mathematics Outreach Programs for Young Women" in Boulder, CO will be held on July 29, 2003 preceding Mathfest 2003. This conference is organized by the Women and Mathematics Network under the auspices of the MAA Committee on the Participation of Women. Although the application deadine has passed, late applications will be reviewed on a space-available basis.

The purpose of this conference is to disseminate information about current successful outreach programs for young women and to encourage the establishment of more programs throughout the nation. By associating this effort with the Mathfest scheduling, the conference will be professionally beneficial to the Women Count participants and provide an opportunity to better publicize outreach efforts to the broader mathematical community. Support is being provided by AWM, the National Security Agency, and the Tensor Foundation.

The participants in the Women Count Conference will be selected from the applications of experienced and prospective program directors. Team entries that pair an experienced director with a prospective director from the same geographic region are encouraged because this enhances the opportunities for continued mentoring following the conference. Partial travel support will be provided.

The conference will include a workshop on grant writing, breakout sessions grouped by one-day programs versus week(s)-long programs, and programs for high school students versus those with a middle school focus. Speakers will lead sessions on such issues as selection of program format, recruitment of young women, types of hands-on activities, possible funding sources, and assessment procedures. Representatives from the NSA, MAA–Tensor Foundation, and the NSF will be invited to speak on their programs that assist and support mathematics outreach activities. A follow-up session is planned for the Phoenix Joint Meetings.

Information about this conference and an application form may be found at www.mystery.com/WAM/events/Women_Count.html. The conference co-organizers are Jennifer Hontz, Virginia G. Kasten, Kathleen Sullivan, and Betsy Yanik.

Elizabeth (Betsy) Yanik, Emporia State University

GENDER EQUITY PROJECT

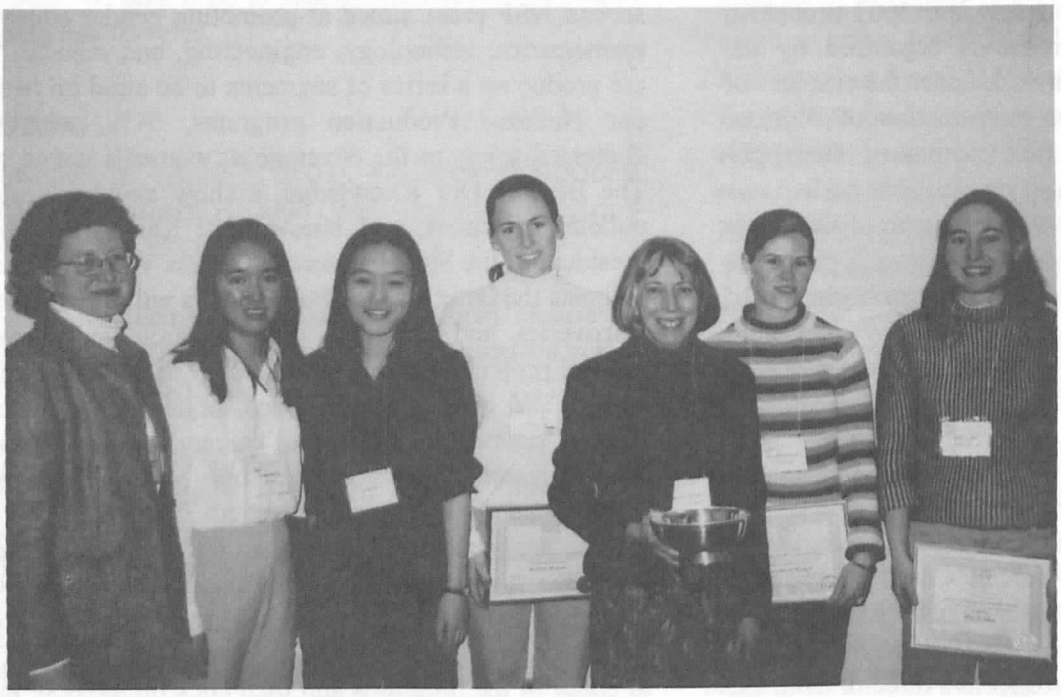
WAMC is a major public radio station headquartered in Albany, New York. We have received funding for our second NSF grant aimed at promoting gender equity in mathematics, technology, engineering, and science. We are producing a series of segments to be aired on two of our National Production programs, 51%, which is dedicated solely to the coverage of women's issues, and The Best of Our Knowledge, a show about education policies, practices, and innovations. Karen Hitchcock, president of the State University of New York at Albany, co-hosts the latter show. The segments will report on the discoveries and activities with research and demonstration projects working to increase the participation of women and girls in mathematics, technology, engineering and science education and careers. Our target audiences include educators, academics, researchers, and institutional and organization leaders.

The programs are available on our station plus more than two hundred other public and commercial radio stations nationwide. They are also available worldwide on the Internet. Our website is www.wamc.org. Log on to either of the programs and then click on the NSF logo to hear the segments that have already aired.

We aim to make a significant impact on young women, educators, academics, and institutional and organizational leaders through the dissemination of information. Such information will provide educational and inspirational stories about the importance and availability of education and careers, including information about the latest research, demonstration projects, and tools for engaging young women in these disciplines. This information will provide concrete strategies for including, inspiring and encouraging young women to pursue mathematics, technology, engineering and science education and careers, including a means of access to both.

In September 2003, we will be producing a CD album containing all of the segments in the series. The album will be available free of charge, while quantities last, to members of our target audiences. Requests for the CDs and for further information about the project can be requested via email to tsabian@wamc.org, by telephone to 518-465-5233, ext. 192, or by surface mail to Toby Sabian, WAMC, 318 Central Avenue, Albany, NY 12206.

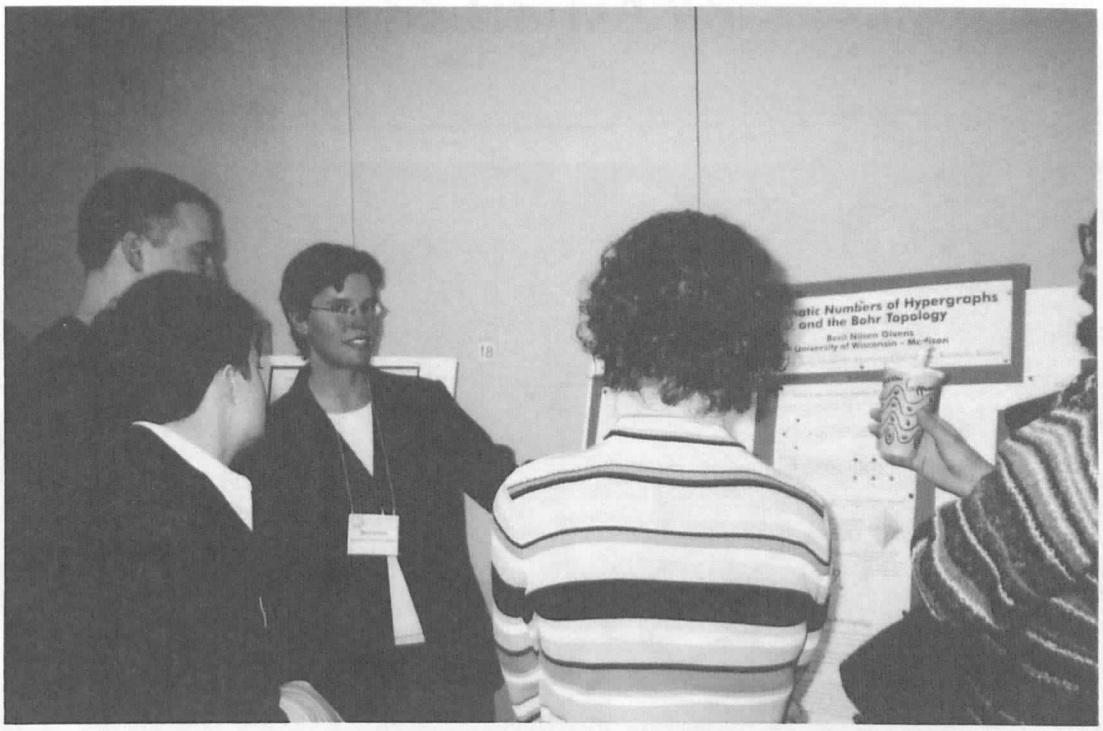
AWM IN BALTIMORE



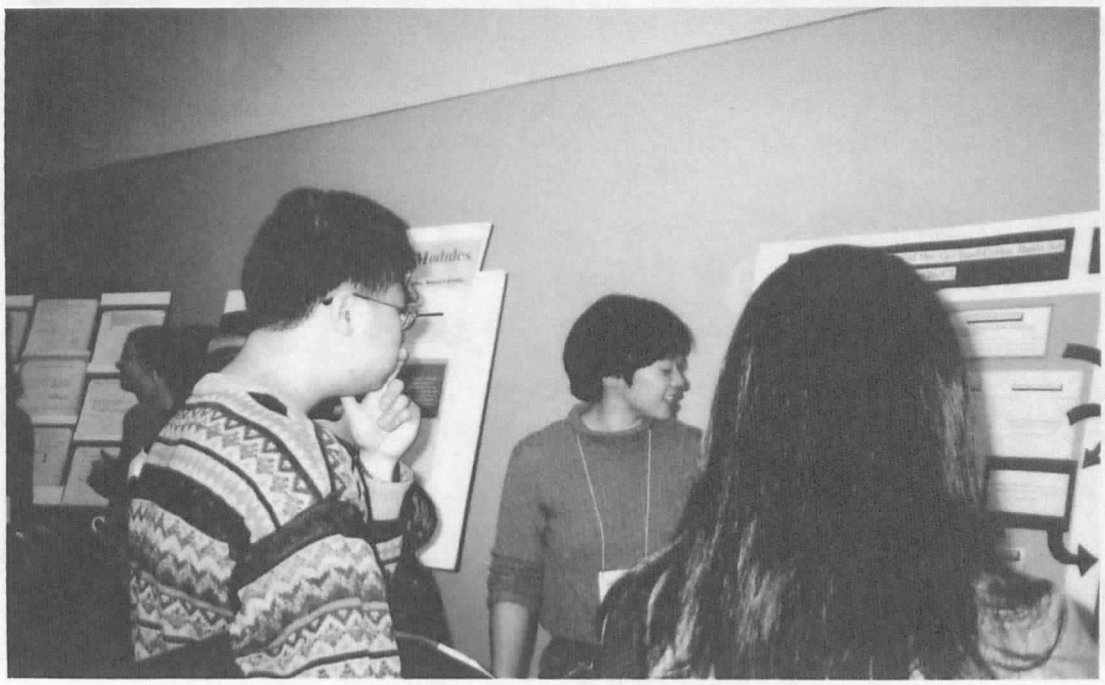
AWM Past President and President with Schafer Prize honorees: Suzanne Lenhart, Josephine T. Yu (runner-up), Wei Ho (runner-up), Kathryn M. Zuhr (honorable mention), Carolyn Gordon, Annalee Wiswell (honorable mention), and Kate Gruher (winner)

Anne Leggett (AWM Newsletter Editor) receiving gift for her 150th issue from Suzanne Lenhart (AWM Past President)

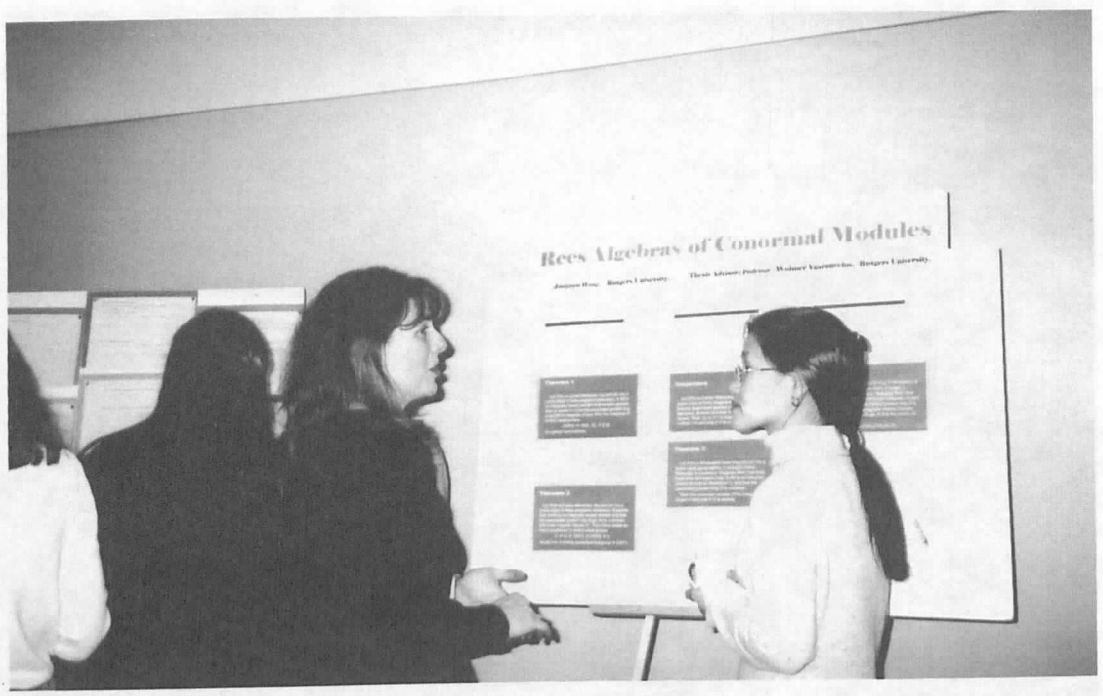
Elizabeth E. Thoren, Schafer Prize honorable mention (unable to attend; was on-route to Hungary to attend the Budapest Semesters in Mathematics for Undergraduates



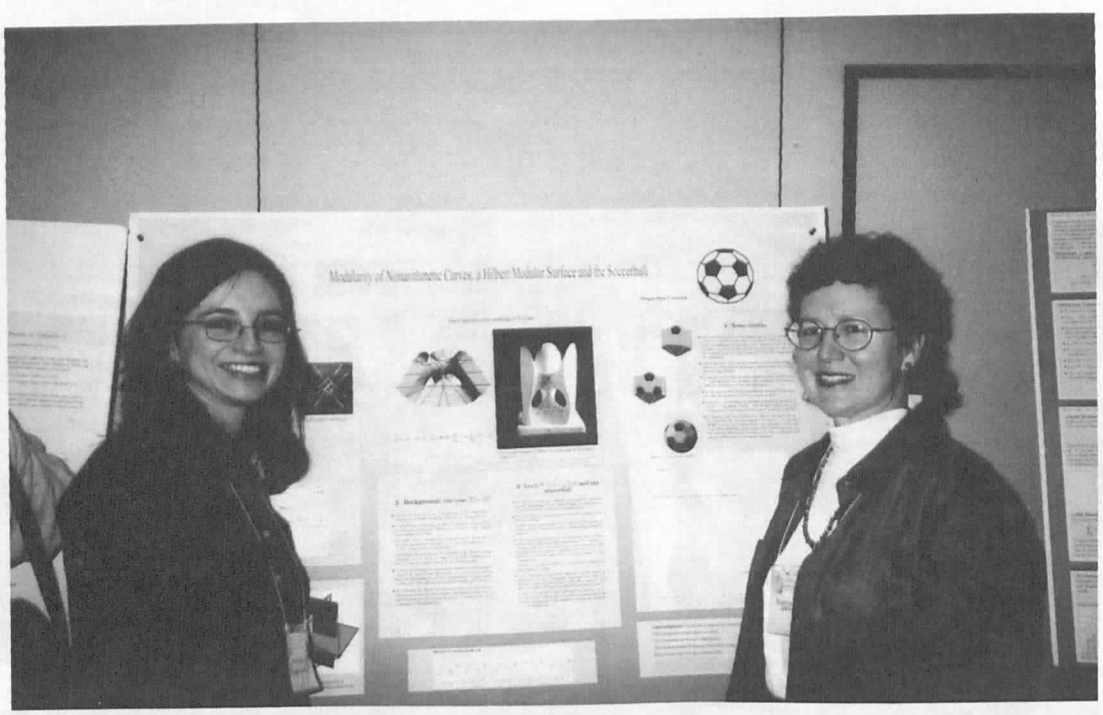
Berit Nilsen Givens, University of Wisconsin, Madison, explaining her poster



Megumi Harada, University of California, Berkeley, explaining her poster

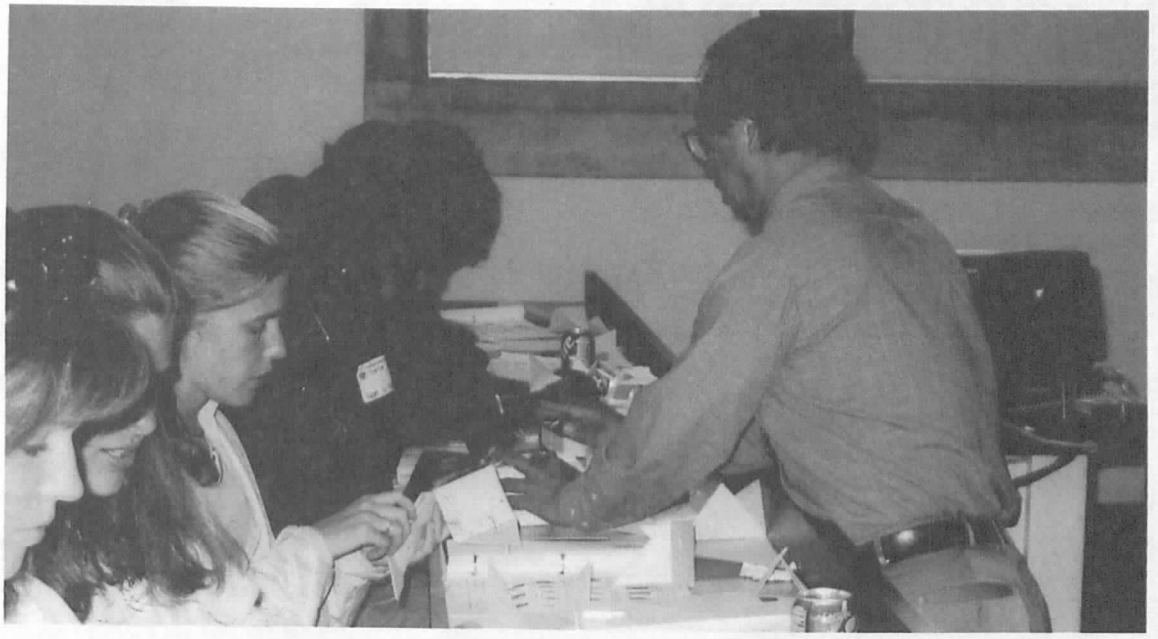


Jooyoun Hong, Rutgers University (right),
explaining her poster to Keri A. Kornelson, Texas A&M University

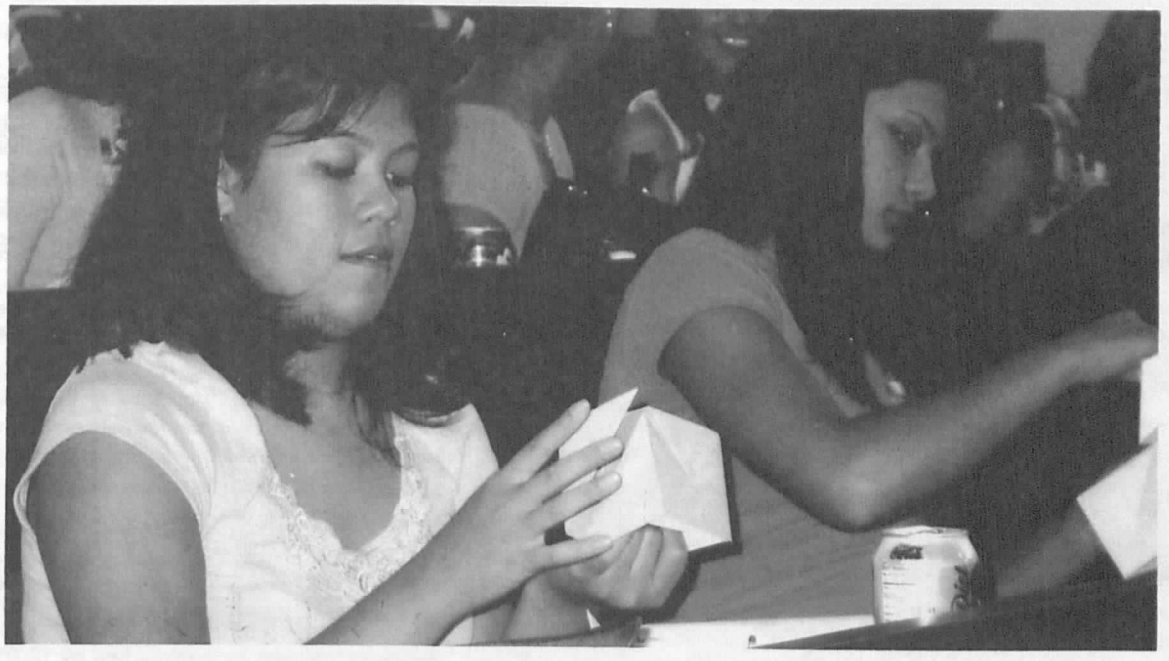


Andrea Moreira Bell, Oregon State University, and
Suzanne Lenhart, University of Tennessee, at Andrea's poster

SKHS DAYS



Wing Lee and students at his origami workshop, SKHS Math Day, Valdosta State University



Origami workshop at the SKHS Math Day, Valdosta State University

Working together at the SKHS Math Day at Seattle University

Students find that tackling tangrams takes thought (at St. John's University SKHS Math Day)

Radcliffe Institute Fellowships

The Radcliffe Institute for Advanced Study at Harvard University awards about thirty fully funded fellowships each year. Radcliffe Institute fellowships support scholars, scientists, artists and writers of exceptional promise and demonstrated accomplishment who wish to pursue work in academic and professional fields and in the creative arts. Applicants must have received their doctorate or appropriate terminal degree by December 2002 in the area of the proposed project. The Radcliffe Institute welcomes proposals from small groups of scholars who have research interests or projects in common.

The stipend amount is $50,000. Fellows receive office space and access to libraries and other resources of Harvard University. During the fellowship year, which extends from September 13, 2004, through June 30, 2005, residence in the Boston area is required, as is participation in the Institute community. Fellows are expected to present work-in-progress and attend other fellows' events.

For more information, visit our Web site at www.radcliffe.edu. For an application, contact the Radcliffe Application Office at 34 Concord Avenue • Cambridge, MA 02138 • 617-496-1324 tel 617-495-8136 fax • fellowships@radcliffe.edu.

Applications must be postmarked by 10/01/03.

AWM

Association for Women in Mathematics

2003/2004 MEMBERSHIP FORM

AWM's membership year is from October 1st to September 30th.
Please fill-in this information and return it along with your DUES to:
AWM Membership
4114 Computer & Space Sciences Building
University of Maryland
College Park, MD 20742-2461
The AWM Newsletter is published six times a year and is part of your membership. Any questions, contact AWM at awm@math.umd.edu; (301) 405-7892 or refer to our website at: **http://www.awm-math.org**

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ADDRESS_____

❑ I DO NOT wish for my AWM membership information to be released for the **Combined Membership List.**

Email: **Home Phone:** ❑ **do not** publish home number **Work Phone:** ❑ **do not** publish work number

Date of Birth (optional):_____ (MMDDYYYY) [the date of birth field is to strictly help prevent duplicate entries]

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Institution/Company:
City, State, Zip:
If **student,** GRADUATE or UNDERGRADUATE (circle one)
If not employed, leave position & institution blank

DEGREES EARNED:

	Degree(s)	Institution(s)	Year(s)
Doctorate:			
Master's:			
Bachelor's:			

JA_03

INDIVIDUAL DUES SCHEDULE

Please check the appropriate membership category below. Make checks or money order payable to: **Association for Women in Mathematics**.
NOTE: All checks must be drawn on U.S. Banks and be in U.S. Funds. AWM Membership year is **October 1st to September 30th.**

REGULAR INDIVIDUAL MEMBERSHIP	$ 50	_____
2ND FAMILY MEMBERSHIP (NO newsletter) Please indicate regular family member: _____	$ 30	_____
CONTRIBUTING MEMBERSHIP	$100	_____
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STUDENT or UNEMPLOYED MEMBERSHIP (circle one)	$ 15	_____
ALL FOREIGN MEMBERSHIPS (INCLUDING CANADA & MEXICO)....**FOR ADDITIONAL POSTAGE ADD** **All payments must be in U.S. Funds** using cash, U.S. Postal orders, or checks drawn on U.S. Banks.	$ 8	_____
BENEFACTOR [$2,500] or FRIEND [$1,000] (circle one)	$	_____
❑ I am enclosing a DONATION to the **"AWM GENERAL FUND"**	$	_____
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Indicate if you wish for your **contribution(s)/donation(s)** to remain ANONYMOUS ⇨ ❑
Dues in excess of $15 and all cash contributions/donations are deductible from federal taxable income.

INSTITUTIONAL DUES SCHEDULE

❑ CATEGORY **1** (includes 10 student memberships; 1 free ad; 25% off additional Newsletter & online ads∗)..	$250	_____
❑ CATEGORY **2A** (includes 3 student memberships; 1 free ad; 10% off additional Newsletter & online ads∗)....	$125	_____
❑ CATEGORY **2B** (includes 6 student memberships; 10% off Newsletter & online ads∗).....	$125	_____

ADVERTISING: Institutional members on Categories 1 and 2a receive ONE FREE job link ad or ONE FREE Newsletter ad (up to 4 lines) for the membership year Oct. 1st to Sept. 30th. All institutional members receive discounts on other eligible∗ advertisements (25% off for Category 1 and 10% off for Categories 2a and 2b). ∗Eligible advertisements: The institutional discount applies to both classified and job link online ads as well as classified *Newsletter* ads, but it does not apply to *Newsletter* display ads. If institutional dues have not been received by the invoice-date, the full advertising rate will be charged. *Newsletter* advertising deadlines are the 1st of every EVEN month. All institutions advertising are Affirmative Action/Equal Opportunity Employers. **STUDENT NOMINEES**: Institutions have the option to nominate students to receive the newsletter as part of their membership. List names and addresses of student nominees on opposite side or attach a separate page. [ADD $15 ($23 for foreign members) to the listed institutional rate for each student add-on over the initial 10 students for Category 1; over the initial 3 students for Category 2a & over the initial 6 students for Category 2b]. For more advertising/membership info see **www.awm-math.org**

❑ Indicate if **GIFT membership FROM:** _____ **TOTAL ENCLOSED $** _____

Volume 33, Number 4, July–August 2003

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☐ No forwarding address known for the individual listed below (enclose copy of label):
(Please Print)

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Position_____Institution/Org._____

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4114 Computer & Space Sciences Bldg., University of Maryland, College Park
Maryland 20742-2461

or E-MAIL:

awm@math.umd.edu

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