AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

Volume 36, Number 2 NEWSLETTER March–April 2006

President's Report

Hidden Help

The AWM election results are in, and it is a pleasure to welcome Cathy Kessel, who became President-Elect on February 1, and Dawn Lott, Alice Silverberg, Abigail Thompson, and Betsy Yanik, the new Members-at-Large of the Executive Committee. Also elected for a second term as Clerk is Maura Mast. AWM is also pleased to announce that appointed members Bettye Anne Case (Meetings Coordinator), Holly Gaff (Web Editor) and Anne Leggett (Newsletter Editor) have agreed to be re-appointed, while Fern Hunt and Helen Moore have accepted an extension of their terms as Member-at-Large, to join continuing members Krystyna Kuperberg and Ann Trenk in completing the enlarged Executive Committee. I look forward to working with this wonderful group of people during the coming year.

In San Antonio in January 2006, the Association for Women in Mathematics was, as usual, very much in evidence at the Joint Mathematics Meetings: from the outstanding mathematical presentations by women senior and junior, in the Noether Lecture and the Workshop; through the Special Session on Learning Theory that AWM co-sponsored with AMS and MAA in conjunction with the Noether Lecture; to the two panel discussions that AWM sponsored/co-sponsored. AWM also ran two social events that were open to the whole community: a reception following the Gibbs lecture, with refreshments and music that was just right for a networking event, and a lunch for Noether lecturer Ingrid Daubechies. The JMM is also the occasion for AWM's largest Executive Committee meeting of the year and for our annual Business Meeting. All these events went off beautifully, were well-attended, and showcased the many accomplishments, and growing repertory of accomplishments, of women in mathematics, mathematical sciences, and mathematics education.

Planning for a meeting like this begins years in advance, and the smooth execution of our most important public event depends on the help of many people,

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AWM
ASSOCIATION FOR WOMEN IN MATHEMATICS

The purpose of the Association for Women in Mathematics is

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

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

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

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most of them unseen by the participants and beneficiaries. AWM Executive Committee members Bettye Anne Case, Meetings Coordinator; Anne Leggett, Newsletter Editor; and Holly Gaff, Web Editor, worked tirelessly to arrange events within the AMS and MAA schedules, to publicize our activities, and to write, edit, proofread and distribute the program brochure of AWM events. It takes months of work with AMS meetings staff, headed by Diane Saxe, to fit our events into the immensely complex JMM program.

Everyone who is honored with an AWM lecture, prize or place in a workshop has been selected by a committee, which itself has been chosen, usually by a committee. Let's make two points here. First, the sincere thanks of AWM go to all these committee members, whose names are never listed in the program. Second, and perhaps more important: this is a process whose point may not always be apparent to those doing the work or those who are chosen. Women have been deprived of opportunities to present talks at meetings in the past, not through lack of merit but as victims of a system that allowed organizers to choose their own friends and colleagues, perpetuating the dominance of an "in group" at many publicly supported events—the infamous "old-boy network." And every time we form a committee, go through a selection process, test ourselves carefully for conflict of interest or question our own expertise and ability to make judgments, we are, consciously or unconsciously, trying to correct a system that has denied us opportunities in the past. This year, we had many more applicants, especially for the workshop for women graduate students and recent Ph.D.'s, than there was space to accommodate. Our sincere regrets go to those who were not chosen to speak or present posters: we would have liked to find space for everyone. But at the same time, we rejoice at the strong competition and salute all the talented young women who are coming onto the mathematical scene.

Elsewhere in this newsletter, you will find details of the program. Here I will single out some of the highlights. First, the prizes. Our Louise Hay Award went to Patricia Clark Kenschaft, whose book *Change is Possible* has just been published by the AMS and was featured at the book exhibit. The winner of the AWM Schafer Prize is Alexandra Ovetsky, a senior at Princeton; runner-up and honorable mention went to Allison Bishop, also a senior at Princeton, and Ellen Gasparovic, a senior at Holy Cross. Kenschaft and Ovetsky received their awards at the prize ceremony, always a gala affair, and we were surprised and delighted to discover more AWM familiars on the platform receiving MAA prizes: Jacqueline Dewar and Judy Walker received Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching of Mathematics and Jennifer Quinn, with Arthur Benjamin, the Beckenbach Book Prize for *Proofs that Really Count: The Art of Combinatorial Proof.* Jackie is a member of our Education Committee; Judy, a former Executive Committee member, was an organizer of this year's workshop; and Jenny is now AWM's Executive Director. Marjorie Enneking, Ivy Knoshaug, and Kay Somers received MAA Certificates of Meritorious Service for their service to their Sections of the MAA. One of the most exciting surprises, among the large number of

women receiving prizes on the platform (9 of the 29 individuals were women!), was Cathleen Synge Morawetz, winner of the George David Birkhoff Prize in Applied Mathematics, a joint award of AMS and SIAM, one of the highest honors awarded by the AMS or SIAM. This prize is given only once every three years, and Cathleen Morawetz is the first woman, in the history of the prize, to have won it.

This year's Noether Lecture, "Mathematical Challenges of Learning Theory," was given by Ingrid Daubechies. In an engrossing tour that included interdisciplinary research and mentoring of students, Ingrid explained how she had come upon a chance to study the process by which search engines associate terms—an optimization problem in a very high dimensional space. In the process, she and her coworkers improved the prize-winning algorithm AdaBoost. Some of the results discussed by Ingrid were joint work with Cynthia Rudin, who organized an AMS-AWM-MAA Special Session, also titled "Mathematical Challenges of Learning Theory."

The AWM Workshop for Women Graduate Students and Recent Ph.D.'s at the Joint Mathematics Meetings is sponsored by NSA and ONR; this year it was organized by Claudia Polini, Marie Vitulli, and Judy Walker. It took place on Sunday and achieved excellent attendance, even though the meeting was winding down by then. The eight talks were superb, and the lively poster session illustrated the extent to which the younger generation is learning to communicate with this medium. (It also indicated how many university departments have invested in the technology to produce splendid visuals.)

In this report, I would like to offer a special thanks to the six panelists who offered their views on "Lawrence H. Summers: One Year Later" and to mention the large and attentive audience who heard them out and offered comments and questions. In order of presentation: Mary W. Gray, founding member and first president of AWM, took as her theme, "How bad were the bad old days?" She remarked that no one told her in high school or college that "women don't do math": it was only in graduate school—only when women actually became a threat—that women's roles began to be questioned. She reminded us that she and Alice Schafer had written papers on this topic starting in 1973, repeating the thread every couple of years, up to the present. Stephanie Frank Singer, who now runs a company called Campaign

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Student, unemployed, developing nations: $20
Friend: $1000 — Benefactor: $2500
All foreign memberships: $10 additional for postage
Dues in excess of $15 and all contributions are deductible from federal taxable income.
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Institutional Sponsors:
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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 $55/year ($65 foreign). Back orders are $10/issue plus shipping/handling ($5 minimum).

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

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

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

Addresses
Send all **Newsletter** material **except ads and material for book review and education columns** to Anne Leggett, Math Department, Loyola University, 6525 N. Sheridan Road, Chicago, IL 60626; e-mail: leggett@members.ams.org; phone: 773-508-3554; fax: 773-508-2123. Send all **book review** material to Marge Bayer, Math Department, University of Kansas, 405 Snow Hall, 1460 Jayhawk Boulevard, Lawrence, KS 66045-7523; e-mail: bayer@math.ku.edu; fax: 785-864-5255 and all **education column** material to Ginger Warfield, Math Department, University of Washington, Seattle, WA 98195; e-mail: warfield@math.washington.edu. Send everything else, **including ads and address changes**, to AWM, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030; phone: 703-934-0163; fax: 703-359-7562; e-mail: awm@awm-math.org.

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

AWM DEADLINES

NSF-AWM Travel Grant::
May 1, 2006 and October 1, 2006

Call for Nominations:
2007 Louise Hay Award
April 30, 2006

Sonia Kovalevsky High School Mathematics Days:
August 4, 2006

AWM/MSRI Workshop
Funding: March 25, 2006
Registration: May 1, 2006

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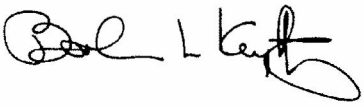
Scientific, complained that the playing field is not level and that the hostility she had faced from many colleagues had driven her from a tenured position into the private sector. Addressing young women in the audience, she offered the advice, "Know where your bottom line is, and don't be pushed beyond it to the point of compromising your health"; but she also admonished us that "the next generation is looking up to you." Ellen Kirkman, a professor at Wake Forest University, focused on some positive indicators: based on the survey conducted by the AMS, ASA, IMS and MAA, one can see that participation by women in mathematics departments is increasing and can identify which institutions are the leading producers of women Ph.D.'s. However, she noted that overall, mathematics is becoming less popular as a course of study. Richard M. Dudley, of MIT, was introduced as a debunker of behavioral genetics. He proceeded to pick apart some of the statistics that purport to show intrinsic differences in performance by girls and women. This theme was taken up by Mary Beth Ruskai of Tufts. Finally, Alice Silverberg, from the University of California at Irvine, mocked some of the inconsistencies in Harvard's attitudes towards women, including the ambivalent position of Radcliffe in the university structure. Many members of the audience picked up on these themes, variously supporting or contesting the panelists' conclusions. One concern that was voiced was that the tone of the panelists was discouraging to young women; another was that, despite the rhetoric, institutions like Harvard are actually working hard to rectify the imbalance in the proportion of women on the faculty, and that Harvard itself has made a number of offers to women recently, without success. But, in the end, the panelists stuck to their guns, while the moderator (me) threatened to bring everyone back in another year to see whether things had improved yet. A friend tells me that the whole business is referred to, around Harvard, as "one-fourteen." We will see how long its fame will linger.

Returning to the theme of the first paragraph of this report, in February a new set of volunteers came onto the Executive Committee, and more organizational changes were undertaken. These will be the subject of a future report. Meanwhile, thanks again to all the people, those whose names appeared in the program and those whose behind-the-scenes help is greatly appreciated, who made the AWM program such a resounding success.



Barbara L. Keyfitz
Toronto, Canada
January 24, 2006

AWM at the San Antonio JMM

The Association for Women in Mathematics is grateful to the American Mathematical Society and the Mathematical Association of America for their efforts on behalf of all the AWM activities. AWM also wishes to thank all the members who volunteered their time and expertise for these meeting events, and the staffs of the Marriott Riverwalk and the Henry B. Gonzalez Convention Center for all their assistance.

AWM Noether Lecture

The 2006 Noether Lecture, "Mathematical Results and Challenges in Learning Theory," was delivered by Ingrid Daubechies, Department of Mathematics and Program in Applied and Computational Mathematics, Princeton University. Barbara Keyfitz, AWM President, welcomed the audience, and Lenore Blum, Carnegie Mellon University, introduced Daubechies.

Abstract: One of the most widespread applications of learning theory is in ubiquitous search engines, which have to (and do!) classify enormous databases according to (almost) arbitrary criteria. Computer scientists have developed powerful algorithms for these very high-dimensional problems, which typically cannot be tackled by gradient-descent or similar optimization methods. These algorithms and the problems they attack provide very interesting mathematical challenges. The talk will discuss in particular the widely applied AdaBoost algorithm and its properties, as well as some variants. It will review joint work with Cynthia Rudin and Rob Schapire (co-inventor, with Freund, of AdaBoost, for which they were awarded the 2003 Gödel Prize).

Biographical Information

Ingrid Daubechies grew up in Belgium and received both her bachelor's and Ph.D. degrees (in 1975 and 1980) from the Free University in Brussels. As far as she can remember, she was always interested in mathematics and how things worked, and from an early age, was encouraged by her father, a civil mining engineer, and her mother, a criminologist, to pursue her interest in science. Although she studied to become a physicist, her work has always been very mathematical.

Barbara Keyfitz, Ingrid Daubechies, and Lenore Blum

Daubechies held a research position at the Free University until 1987. From 1987 to 1994 she was a member of the technical staff at AT&T Bell Laboratories, during which time she took leaves to spend six months (in 1990) at the University of Michigan and two years (1991–1993) at Rutgers University. She is now a professor in the Department of Mathematics, the first woman to hold that position, and in the Program in Applied and Computational Mathematics at Princeton University. Her research interests have focused on the mathematical aspects of time-frequency analysis, in particular wavelets, as well as applications. In 1987 she constructed a class of wavelets that were identically zero outside a finite interval, now among the most common type of wavelets used in applications. Currently, she is applying her techniques to learning theory.

Daubechies has received many awards in recognition of her groundbreaking work. In 1984, she received the Louis Empain Prize in Physics, awarded once every five years to a Belgian scientist on the basis of work done before the age of 29. In 1998, she was elected to be a member of the National Academy of Sciences and a Fellow of the Institute of Electrical and Electronics Engineers. The American Mathematical Society awarded her a Leroy P. Steele prize for exposition in 1994 for her book *Ten Lectures on Wavelets,* as well as the 1997 Ruth Lyttle Satter Prize for "her deep and beautiful analysis of wavelets and their applications." In 2000, she became the first woman to receive the National Academy of Sciences Award in Mathematics, presented every four years, for excellence in published mathematical research. From 1992 to 1997 she was a fellow of the John D. and Catherine T. MacArthur

Foundation. She is a member of the American Academy of Arts and Sciences, the American Mathematical Society, the Mathematical Association of America, the Society for Industrial and Applied Mathematics, and the Institute of Electrical and Electronics Engineers.

Daubechies has been very involved in helping communicate mathematics to the public, in particular in coming up with ideas for the K–12 mathematics curriculum that reflect present-day applications of mathematics. Her husband is also a mathematician, and they have two children, Michael and Carolyn. When she is not working or asleep, she likes to spend time with her family.

AWM Prizes

Louise Hay Award for Contributions to Mathematics Education

AWM established the Louise Hay Award to recognize outstanding achievements and contributions in any area of mathematics education. While Louise Hay was widely recognized for her contributions to mathematical logic and for her strong leadership, 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.

Pat Kenschaft and husband Fred Chichester

Citation for Patricia Clark Kenschaft

In recognition of her long career of dedicated service to mathematics and mathematics education, the AWM is pleased to present the Sixteenth Annual Louise Hay Award to Patricia Clark Kenschaft of Montclair State University.

Trained as a functional analyst (Ph.D., University of Pennsylvania, 1973), Pat Kenschaft found her true calling, not only in teaching university-level mathematics, but also in writing about, speaking about, and working for mathematics and mathematics education in the areas of K–12 education, the environment, affirmative action and equity, and public awareness of the importance of mathematics in society.

Call for Nominations: 2007 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. The annual presentation of this awarded 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, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. Nominations must be received by **April 30, 2006** and will be kept active for three years. For more information, phone (703) 934-0613, e-mail awm@math.umd.edu or visit www.awm-math.org. Nominations via e-mail or fax will not be accepted.

The wide scope of her interests and influence are evidenced by the titles of her published books and articles. Regarding equity, affirmative action, and the promotion of women and minorities in mathematics, she has written *Change is Possible: Stories of Women and Minorities in Mathematics* (AMS, 2005) and edited and/or contributed chapters to *Winning Women into Mathematics* (MAA, 1991), *Complexities: Women in Mathematics* (Princeton University Press, 2005), and *Black Women in America: An Historical Encyclopedia.* With Catherine Wick, she wrote the chapter "Multicultural and Gender Equity in the Mathematics Classroom" (1997 NCTM Yearbook), detailing a series of "micro-inequity skits," based on real-life experiences, which point out in a good-natured way the sorts of small injustices that may occur daily to females in mathematics.

In the 1980s, Kenschaft surveyed black mathematicians in New Jersey and asked, "What can be done to bring more blacks into mathematics?" The most common answer was, "Teach mathematics better to all American children. The way it is now, if children don't learn mathematics at home, they don't learn it at all, so any ethnic group that is underrepresented in mathematics will remain so until children are taught mathematics better in elementary school." These results led Kenschaft to found and direct PRIMES, the Project for Resourceful Instruction of Mathematics in the Elementary School, which was supported by 14 Eisenhower grants and served teachers in nine urban and suburban schools. As a result of her work on this project, Kenschaft developed the book *Math Power: How to Help Your Child Love Mathematics Even If You Don't,* and, in order to encourage other mathematicians to play a more active role in teacher education, she wrote the February 2005 AMS *Notices* article, "Racial Equity Requires Teaching Elementary Teachers More Mathematics." Kenschaft has also promoted a broader understanding of the nature and importance of mathematics through her call-in radio show, Math Medley, which she hosted for six years and which was an innovative way of bringing experts on mathematics, mathematics education, and the environment in contact with the general public.

The final important set of contributions made by Kenschaft broadens our knowledge and understanding of the environment. Through her textbook, *Mathematics for Human Survival,* her volume *Environmental Mathematics* (co-edited with Ben Fusaro), and her work for the MAA Special Interest Group on Environmental Mathematics, she has helped to raise understanding of the effects of human activity on the earth. Closer to home, she works to raise awareness of environmental issues and promote local food, and she grows her family's vegetables without pesticides. A colleague wrote, "Her influence has been crucial to the emerging presence of *environmental mathematics,* that combination of the most critical challenge of our time and the most powerful technology of our time."

One of Kenschaft's insights is that problems—sexism, racism, environmental degradation, and poor teaching—are often caused by systems, rather than individuals, and that damaging individual behavior is often unconscious and may even be well-intentioned. While chair of the MAA Committee on the Participation of Women, she wrote, "I believe that in the late twentieth century we are all guilty of sexism, even those of us trying hardest to overcome the problem. The continual observations of my own teen-age son with the undimmed vision and precise tongue so characteristic of youth relieved me of any illusions that I might be an exception."

As one of her colleagues wrote:

> She deserves to be recognized for her decades of dedication to mathematics and math education and for her innovative and unique contributions in these areas. In particular, her special attention to children and their parents, women, minorities, and the environment, all with respect to mathematics, have been and continue to be of benefit for the mathematical community and our society as a whole.

Response from Kenschaft

I am, of course, delighted and deeply honored with this award. It is probably the award that means most to me. This citation makes me feel understood. I am especially glad that its author observed my dedication to changing *systems,* not people—although, like every good teacher, I do enjoy affecting individual people.

I myself have been especially fortunate in the systems in which I found myself—family, neighborhood, schools, and socio-economic systems. Yes, I have worked hard, but so has every other person who has earned a doctorate in mathematics. Yes, I have loved mathematics, but so have many others, and we are a fortunate group.

I was especially fortunate to have been born into a loving family that wanted me to experience as much of life as possible. Both my father and mother's father supported their women in reaching for the highest. Before I started kindergarten, my father explained the concept of π to me. During a lunch in second grade, my mother showed me how using x to represent "any number" could help me understand why a math puzzle "worked." When I asked her in fifth grade what "algebra" was, she suggested we find the encyclopedia, and we went through the entire description there while she did the ironing. My first grade teachers sat me in the back of the room with the two slowest students, thereby starting my love of teaching.

Belle Kearney, my ninth grade algebra teacher, was not angry that I already knew the subject when I came to her. She lent me her "college algebra" text and offered to meet with me once a week to go over my questions. A few years later, she won a fellowship to earn a doctorate, and then died of breast cancer.

She was my last female math teacher, but I can't remember any math teacher in high school, college, or graduate school who ever implied that I couldn't succeed because of my sex. I have continued to meet amazingly wonderful men and women in both my personal and professional lives. Lee Lorch mentored my equity writing. Lou Giglio, a high school math teacher, phoned the dean at Montclair State and asked for a collaborator to start a program supporting elementary school teachers mathematically, thereby beginning a great seven-year adventure. Ben Fusaro reached out to me with a variety of activities in environmental mathematics. Fred Chichester, my husband of thirty years, has shared my love of math and always supported my aspirations.

There is much still to do, but I have been repeatedly fortunate. Why not others? I wish that every person in my infant grandson's generation could be supported by a culture that is nurturing, equitable, and environmentally safe and sustainable. It might be possible if we all try. I am deeply grateful for this recognition that I have tried.

Visit our website at www.awm-math.org for the latest news!

Alexandra Ovetsky, Allison Bishop, Barbara Keyfitz, and Ellen Gasparovic

Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman

In 1990, the Executive Committee of the Association for Women in Mathematics (AWM) established the annual Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman. The prize is named for former AWM president and one of its founding members, Alice T. Schafer (Professor Emerita from Wellesley College), who has contributed a great deal to women in mathematics throughout her career. The criteria for selection include, but are not limited to, the quality of the nominees' performance in mathematics courses and special programs, an exhibition of real interest in mathematics, the ability to do independent work, and if applicable, performance in mathematical competitions.

AWM is pleased to present the Sixteenth Annual Alice T. Schafer Prize to Alexandra Ovetsky, Princeton University. Also, Allison Bishop, Princeton University, was recognized as runner-up and Ellen Gasparovic, College of the Holy Cross, as an honorable mention recipient.

Citation for Alexandra Ovetsky

Alexandra Ovetsky is a senior at Princeton University. A Goldwater scholar, Ovetsky is also the recipient of the Princeton math department's Andrew H. Brown prize for outstanding research in mathematics as a junior. Her coauthored paper "Surreal Dimensions" has been published in *Advances in Applied Mathematics.*

In the summer of 2004, Ovetsky participated in the REU program at the University of Minnesota at Duluth. There she wrote a professional-level paper about well-covered graphs, turning the idea around and showing that the property of being not well-covered behaves well under Cartesian products. In the summer of 2005, Ovetsky participated in the Director's Summer Program at the National Security Agency. There she tackled three problems and made significant progress on all three. This work is being published internally at NSA.

For her junior paper at Princeton, Ovetsky proved a result in graph theory, generalizing a famous theorem of Claude Shannon from 1948. Oversky's theorem relates the chromatic number to the clique number for quasi-line graphs. One recommender reports, "She already has the research capabilities of an advanced graduate student or junior faculty member."

Response from Ovetsky

I am grearly honored to be this year's recipient of the Alice T. Schafer prize. I would like to thank the AWM for being such an encouragement to women in mathematics, in particular those at early stages of their careers.

I became passionate about mathematics at a very early age; however I only discovered the true beauty of this subject when I was introduced to mathematical research by Dr. Ted Chinburg of the University of Pennsylvania. I would like to thank him for his inspiration and patience in working with an enthusiastic but inexperienced high school student. I would also like to extend my gratitude to Joe Gallian for

NSF-AWM Travel Grants for Women

The objective of the NSF-AWM Travel Grants program is to enable women researchers in mathematics or in mathematics education 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. All awards will be determined on a competitive basis by a selection panel consisting of distinguished mathematicians appointed by the AWM.

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, U.S. 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 (DMS) and the Division of Research, Evaluation and Communication (REC) of the NSF. The conference or the applicant's research must be in an area supported by DMS. Applicants must be women holding a doctorate (or equivalent experience) and with a work address in the USA (or home address, in case of unemployed mathematicians). Anyone who has been awarded an AWM-NSF travel grant in the past two years is ineligible. Anyone receiving a significant amount of external governmental funding (more than $2,000 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.

Applications. An applicant should send *five* copies of 1) the AWM Travel Grant Form, where conference name, conference dates and location (city/state/country), and amount of support requested should be provided, 2) a cover letter, 3) a description of her current research and of how the proposed travel would benefit her research program, 4) her curriculum vitae, 5) a budget for the proposed travel, and 6) 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, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. If you have questions, contact AWM by phone at 703-934-0163 or by e-mail at awm@awm-math.org. Applications via e-mail or fax will not be accepted. There are three award periods per year. The next two deadlines for receipt of applications are **May 1, 2006** and **October 1, 2006**.

giving me the opportunity to interact with a group of the nation's top young mathematicians that he gathers at his REU at Duluth, Minnesota. Finally, I would like to thank Maria Chudnovsky, my thesis and junior independent work advisor at Princeton University, for encouraging me to continue working in the field of graph theory and for her excellent guidance of my research endeavors with her. The support of many other faculty members of the Princeton math department has also been invaluable.

Citation for Allison Bishop

Allison Bishop is a senior at Princeton University. She is a Goldwater scholar, and in 2003 she was the recipient of Princeton's Shapiro Prize for Academic Excellence. Bishop's strengths in—and passion for—mathematics are evident in a wide variety of fields, including game theory, classical analysis, number theory, and algebraic geometry. In her coursework and her research endeavors, Bishop's versatility, creativity and tenacity earn high praise. She is described as a natural leader and also a team player.

In Summer 2004, Bishop participated in the REU program at the University of Nebraska, Lincoln. Her project mentor writes of Bishop's ingenuity as well as her remarkable mathematical sophistication. Allison Bishop's research project used game theory to study the evolution of cooperation; that is, the probability of a single cooperator taking over in a non-cooperating population. This work generalizes previous studies, modifying a fixed population to a growing one. At the NSA's Director's Summer Program in Summer 2005, Bishop's performance was again exceptional. Of her project, one advisor writes, "By the midpoint of the summer program, Ms. Bishop had demonstrated a solution far better than the project mentor had anticipated."

Bishop's senior thesis at Princeton is an undergraduate mathematics textbook, which aims to introduce readers to the fundamental concept of mathematical proof, while demonstrating the wide variety of mathematical fields, the connections between them, and their applications.

Response from Bishop

I am very honored to be recognized by the Association for Women in Mathematics. The support and encouragement of female mathematicians has been a crucial element of my positive experiences in mathematics and I am glad that the Association provides such support for other women in the field. In particular, I am greatly indebted to Wendy Hines at the University of Nebraska, as well as Alice Chang, Ingrid Daubechies, and Alina Cojocaru at Princeton University, all of whom have guided me through my mathematical studies and research. I would also like to thank Jamie Radcliffe at the University of Nebraska and Jordon Ellenberg for his wonderful teaching and encouragement in my first semester at Princeton. Last, but certainly not least, I would like to thank my high school calculus teacher, John Kotmel, who first taught me that mathematics could be creative to a degree far beyond my expectations. My mathematical interests came a bit late and unexpectedly in my academic life, but I have been very lucky in having great advisors and fellow students to help me learn and discover mathematics. I am very excited about continuing my studies and pursuing a mathematical career.

Citation for Ellen Gasparovic

Ellen Gasparovic is a senior mathematics major in the College Honors Program at the College of the Holy Cross, where she has been a Dana Scholar for three years and a recipient of the "Rising Star" Award. During her junior year, Gasparovic undertook research with professor Sharon Frechette related to the theory of partitions and presented her results at the Seventh Annual Nebraska Conference for Undergraduate Women in Mathematics. She has been named one of only three Fenwick scholars in the class of 2006 at Holy Cross. This special status affords her the opportunity to spend her spring semester studying the group of Lie sphere transformations, imported subgroups, and their recent applications under the tutelage of Professor Thomas Cecil.

In addition to Gasparovic's mathematical rhymes, her letter writers comment on her enthusiasm and love for the subject. Her willingness to share mathematics with others through wonderful talks is valued by her colleagues and teachers.

Response from Gasparovic

I am thrilled to be selected as the honorable mention recipient for the Alice T. Schafer Prize. I thank the Association for Women in Mathematics for this tremendous honor and for the outstanding opportunities the organization provides for women in mathematics. Through this award, the AWM demonstrates its commitment to recognize and support young women with a passion for mathematics, and I am excited to be a part of this wonderful endeavor. Thank you to the entire College of the Holy Cross community for

the excellent education I have received. In particular, I am grateful for the unique opportunity I have had this year to design a year of independent study, providing me with a strong foundation for a career in mathematical research and education. Deepest thanks go to professor Thomas Cecil, my research advisor, mentor, and nominator. He is an incredible source of inspiration and encouragement for me, and I am so grateful to work with such a remarkable professor. Furthermore, I appreciate very much the great wisdom and support of professors Sharon Frechette, Cristina Ballantine, and Steven Levandosky of the Holy Cross mathematics department. Finally, I thank my parents for introducing me to a love of learning and for never ceasing to remind me of my potential as a woman in mathematics.

Sonia Kovalevsky High School Mathematics Days

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

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

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

The decision on funding will be made in late August. The high school days are to be held in Fall 2006 and Spring 2007. 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 or by May 15, 2006, whichever comes first. Reimbursements will be made in one disbursement; no funds will be disbursed prior to the event date. An additional selection cycle will be held February 4, 2007 for Spring 2007 only if funds remain after the August 2006 selection cycle.

Send *five* complete copies of the application materials to: Sonia Kovalevsky Days Selection Committee, Association for Women in Mathematics, 11240 Waples Mill Road, Suite 200, Fairfax, VA 22030. For further information: phone 703-934-0163, e-mail awm@awm-math.org, or visit www.awm-math.org. Applications must be received by **August 4, 2006**; applications via e-mail or fax will not be accepted.

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AWM Workshop

The workshop talks, poster session and panel were open to the entire math community attending the Meetings. Selected graduate students and recent Ph.D.'s presented and discussed their research and met with other mathematicians. Thanks to Claudia Polini (University of Notre Dame), Marie Vitulli (University of Oregon) and Judy L. Walker (University of Nebraska) for organizing this successful workshop and to ONR and NSA for their support of the AWM workshop program. Thanks also to the volunteers who served as mentors, discussion group leaders and panelists. See the photo spread on pages 20–21 for some of the action!

Research talks by recent women Ph.D.'s were:

Hilbert's Tenth Problem for Function Fields of Characteristic Zero
Kirsten Eisenträger, University of Michigan

The Topology of Symplectic and Hyperkähler Quotients
Megumi Harada, University of Toronto

The Road to Super Quantum Groups
Gizem Karaali, University of California, Santa Barbara

The Motion of a Thin Liquid Film Driven by Surfactant and Gravity
Rachel Levy, Duke University

Tensor Decompositions and Compression
Carla D. Moravitz Martin, Cornell University

Measuring Ergodicity and Mixing at Different Scales
Sherry E. Scott, University of North Carolina at Chapel Hill

Hide-and-Seek and a Geometic Spectral Invariant on Surfaces
Jean Steiner, Courant Institute, New York University

The Existence of a Volume-Preserving Ergodic Hyperbolic Flow on Any Manifold of Dimension at Least 3
Anna Talitskaya, Northwestern University

The graduate students and their posters are listed next.

Non-Simple Non-Stationary Bratteli-Vershik Systems
Sarah E. Bailey, University of North Carolina at Chapel Hill

Continuous Dependence Results for Inhomogeneous III-Posed Problems
Beth M. Campbell-Hetrick, Bryn Mawr College

The Core of Ideals
Louiza Fouli, Purdue University

Syzygies of Toric Varieties
Milena Hering, University of Michigan

Layer Potential Techniques for Parabolic PDEs in Nonsmooth Cylinders
Tunde Jakab, University of Missouri-Columbia

Spinning Rods: Experiments and Theory
Terry Jo Leiterman, University of North Carolina at Chapel Hill

Dimensional Languages and Their Automata
Joni Burnette Pirnot, University of South Florida

Constitutive Restrictions for Isotropic Hyperelastic Material Modeled Using Invariants of Logarithmic Strain
Tsvetanka Sendova, Texas A & M University

A Stochastic Dynamical System for the Evolution of Repeat Strings
Suzanne S. Sindi, University of Maryland

Arithmetic Properties of the Coefficients of Modular Forms
Stephanie Treneer, University of Illinois at Urbana – Champaign

A Fast Multipole Method-based Poisson Solver for Use in Fluid Simulation
Sarah A. Williams, University of California, Davis

Jet Schemes of Monomial Schemes
Cornelia Oichi Yuen, University of Michigan

AWM Sessions and Panels

The panel discussion held on Thursday is featured in the President's Report.

On Friday, Terri Bennett (Southern Connecticut State University) moderated the MAA-AWM panel "Teaching a Course on Women and/or Minorities in Mathematics." Helen Moore (American Institute of Mathematics) and Bonnie Shulman (Bates College) spoke about women in science courses, John Kellermeier (Tacoma Community College) spoke about a course on ethnomathematics, and Sarah Greenwald (Appalachian State University) spoke about a women and minorities in mathematics course. The content level ranged from including a great deal of mathematics, to critical studies of the available statistical research, to historical, sociological, and feminist perspectives. For more information, see http://www.mathsci.appstate.edu/~sig/wm/. The panel is soliciting related article contributions. If you have taught such a course and are interested in participating, please contact greenwaldsj@appstate.edu.

On Sunday, Cynthia Rudin from NYU moderated the AMS/AWM/MAA special session "Mathematical Results and Challenges in Learning Theory." Other speakers included Kristin Bennett (Rensselaer), John Lafferty (Carnegie Mellon), Phil Long (Google), and Martin Zinkevich (University of Alberta). Many aspects of machine learning were discussed, including online convex optimization, orthogonal features, boosting, ranking, and sparse regression. The session ended with an informal discussion. Related papers will be posted on Cynthia's webpage: www.cns.nyu.edu/~rudin.

The workshop panel, "Shaping a Career in Mathematics," was also held on Sunday. Moderated by Marie Vitulli (University of Oregon), the panelists were Barbara Lee Keyfitz (Fields Institute and University of Houston), Suzanne Lenhart (University of Tennessee), Mara D. Neusel (Texas Tech University) and Michelle D. Wagner (National Security Agency).

Awards of Other Societies at the JMM

Nine of the twenty-nine individuals receiving awards at the Joint Prize Session at the Joint Mathematics Meetings in San Antonio, January 2006, were women. Two of these were AWM awards and have been reported on in the preceding pages. Here, we reprint citations and responses for the awards given by AMS, MAA and SIAM, in the order of presentation. See the prize booklet "January 2006 Prizes and Awards" online at www.ams.org/ams/prizebook-2006.pdf.

Haimo Awards

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

Citation for Jacqueline Dewar

On the LMU campus, Jackie has profoundly influenced the mathematics curriculum, as initial architect of the original biomathematics program, as a fashioner of the secondary education subject matter program in mathematics, as developer of several innovative courses (Mathematics Laboratory for Elementary Teachers, Women and Mathematics, and Workshop I and II for freshmen mathematics majors), and as a developer of individualized courses for the Master of Arts in Teaching students. The freshman-level Workshop course, most often taught by Jackie, is credited with improving retention of math majors; graduating seniors confirm that it was one of two classes they "absolutely could not have done without." Currently Jackie is working with colleagues on redesigning a core mathematics course through the NSF-funded project Science Education for New Civic Engagements and Responsibilities (SENCER).

Co-founder of the Math Science Interchange, an all-volunteer organization that sponsors annual Expanding Your Horizon Conferences for middle and high school girls, Jackie has played an important role in the recruiting and retention of women in mathematics. For 25 years, she organized these conferences on the LMU campus.

For her passionate devotion to the art of teaching, it is a great pleasure to present Jacqueline Dewar with the Deborah

and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics.

Biographical Note

Jacqueline M. Dewar is Professor and Chair of the Mathematics Department at Loyola Marymount University in Los Angeles. She has directed the Master of Arts in Teaching Mathematics program and coordinated the Mathematics Concentration for future elementary teachers. From 1995–2001, she worked with a team of faculty from ten institutions of higher education in the greater Los Angeles area to form the Los Angeles Collaborative for Teacher Excellence (LACTE), a five-year, $5,500,000 NSF-funded initiative with the goal of improving K–12 teacher preparation programs in science and mathematics. In 2003, she was selected as one of 26 national scholars by the Carnegie Academy for the Scholarship of Teaching and Learning. In 2005, she received Loyola Marymount University's Fritz B. Burns Distinguished Teaching Award.

Response from Jacqueline Dewar

I am deeply honored to receive the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. In reflecting back over a 32-year career I see that the landscape of higher education and the special terrain of college mathematics teaching have incorporated many new figures into the scene. The list of "new" arrivals includes calculators, microcomputers, computer algebra systems, graphics and spreadsheet programs, calculus reform, cooperative group work, email, the Internet, cameras, mathematics awareness programs, competitions, affirmative action, diversity initiatives, service learning, integrative learning, civic engagement, and assessment. All have influenced college mathematics teaching, some more broadly than others. The scholarship of teaching and learning (SoTL) is a relatively recent arrival and, I believe, holds great promise for improving the quality of teaching and learning. SoTL invites faculty to frame and investigate questions about their teaching and their students' learning, and to share the results of those investigations with their colleagues in ways that can be built upon. Making the private work of teaching public and available for peer review can increase the value of teaching and provide ideas and motivation for continued improvements.

Citation for Judy Leavitt Walker

Judy Leavitt Walker is "an amazing teacher" who cares deeply about her students' intellectual growth and well-being. Her students testify that her courses are among the most demanding they ever had, yet consistently praise her ability to guide the direction of a class through questions. Superb at explaining mathematics and communicating the joy of discovery, she is readily available outside of class for special problem sessions and is in demand as a doctoral thesis advisor. Since joining the faculty at the University of Nebraska-Lincoln (UNL) in 1996, Walker has had a profound impact on the department and the larger mathematical community.

One major innovation at UNL was her creation of a freshman honors seminar for non-majors, *The Joy of Numbers: Search for the Big Primes,* adapting materials developed at Georgetown University. Later she adapted much of the course to serve elementary and middle school teachers. In class, she guides students to discover and prove ideas about number theory and to present their results; after class, she documents their work with typed notes, including examples worked out by students, questions asked and answered, and theorems proved. At the end of the semester, students receive a copy of the book they have thus created. More than one freshman decided to switch to a mathematics major because of this challenging course that awakened a love of mathematics.

Colleagues testify that Walker's high expectations and successful methods have had a great impact on their own teaching, setting a new standard of excellence for the department. Her exceptional teaching was recognized in 2000 with two prestigious teaching awards from UNL.

In 1997, Walker and a colleague created ALL GIRLS/ ALL MATH, a program to encourage high school girls to pursue mathematics; it has received grants from the MAA Tensor and the AMS Epsilon programs. She created for the camp a weeklong course in elementary number theory and cryptography in which students learn about the mathematics behind the secure transmission of data. In 1999, at the Mentoring Program for Women at the Institute for Advanced Study in Princeton, she gave a series of lectures (on her area of research) titled Codes and Curves; these lectures were later

published as a book by the AMS. She also created the Nebraska Conference for Undergraduate Women in Mathematics, which has attracted 800 participants in its first seven years. Currently she is PI for an NSF grant to UNL for Mentoring (graduate students) through Critical Transition Points.

For her dynamic leadership and passionate commitment to teaching mathematics, we are delighted to award Judy Leavitt Walker the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics.

Biographical Note

Judy Leavitt Walker is an associate professor of mathematics at the University of Nebraska-Lincoln, where she has been on the faculty since 1996. Her research is in the area of algebraic coding theory; she has graduated one Ph.D. student and currently advises four others. She is a founding organizer of both the ALL GIRLS/ALL MATH summer camp for high school girls and the Nebraska Conference for Undergraduate Women in Mathematics, and she is the Project Director on the Nebraska Mentoring through Critical Transition Points project. She is on the editorial board of the *Rose Hulman Undergraduate Mathematics Journal* and an editor for the *Journal of Pure and Applied Algebra.*

Response from Judy Leavitt Walker

I am deeply honored to have been chosen to receive a 2006 Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics from the Mathematical Association of America. I have been fortunate so far in my career to have had many wonderful and diverse teaching experiences, and I thank those who have given me these opportunities and those who have helped to make these experiences successful.

I especially thank my current and former department chairs, John Meakin and Jim Lewis, for creating a climate that nourishes excellence in both research and teaching.

George David Birkhoff Prize in Applied Mathematics

This prize was established in 1967 in honor of George David Birkhoff. It is awarded for an outstanding contribution to "applied mathematics in the highest and broadest sense." From 1968–1998, the prize was normally awarded every five years. Beginning in 2003, the prize will be awarded every three years. The award is made jointly by the American Mathematical Society and the Society for Industrial and Applied Mathematics.

Citation for Cathleen Synge Morawetz

The 2006 George David Birkhoff Prize in Applied Mathematics is awarded to Cathleen Synge Morawetz for her deep and influential work in partial differential equations, most notably in the study of shock waves, transonic flow, scattering theory, and conformally invariant estimates for the wave equation.

Biographical Note

Cathleen Morawetz was born in Toronto, Canada, in 1923 where her father, Irish born and educated John L. Synge, was a professor of mathematics. The family returned to Ireland from 1925 to 1930. From 1930 to 1945 Morawetz received her education in the public schools of Toronto and later her B.A. at the University of Toronto. She started graduate school at MIT, receiving an M.S. in 1946. In October 1945 she married Herbert Morawetz, who became a professor of Polymer Chemistry at Brooklyn Poly. In 1946 Morawetz began working at NYU with Courant and Friedrichs, editing their book on compressible flow. In 1950 she completed a Ph.D. thesis on imploding shocks. From 1950 to 1951 she worked at MIT with C. C. Lin on fluid dynamic stability. In 1951 she returned to NYU on a part-time basis and worked with Friedrichs and Bers mainly on the problems of transonic flow and mixed equations. In the late fifties, at Courant's suggestion she began working under Harold Grad on the mathematical problems of plasma physics where she showed how a collisionless shock could exist without invoking turbulence. In 1957 she was appointed to the faculty of the Courant Institute. She continued to work in partial differential equations, mainly of mixed type but also on the wave equation. There she solved problems of decay by new conservation laws and later used the same type of estimates with Ludwig to justify geometrical optics in the lit region of a star shaped object. She continued to concentrate on these topics for the rest of her career. She retired in 1993 and became President of the AMS in 1995 (where she had served as trustee in the 1980s).

Cathleen Synge Morawetz was awarded the National Medal of Science in 1998.

Response from Professor Morawetz

It is a totally unthought of and a wonderful surprise to receive the Birkhoff Prize. I am very, very grateful to the two societies, AMS and SIAM, for choosing me. There are many, many people whom I would have liked to thank for helping me over the years, but I would not have room for their names on this page. But one person stands out for supporting and encouraging me when I was between the crucial professional ages of 23 and 35. I worked part time on my Ph.D., part time as a postdoc, and I had four children. That person was Richard Courant, the creator of the Courant Institute at New York University where I have been a professor ever since.

MAA Certificate of Meritorious Service

Citation for Kay Somers, Eastern Pennsylvania-Delaware Section (EPADEL)

For her years of service to the EPADEL Section and to the wider MAA community, it gives us great pleasure to nominate Kay Somers for the MAA Certificate of Meritorious Service. Kay has worked in both academia and industry, and this unique perspective on mathematics, together with her cheerful commitment to service, has made her a valued member of the mathematics community. Kay has taught mathematics at Moravian College since 1981, chairing her department from 1992 to 1998. For a thirteen-year period, she served in almost every office of the EPADEL Section, including Secretary/Treasurer, Vice President, President, and Governor. She has handled local arrangements for Section meetings held at Moravian College and for several years was responsible for the MAA book displays at all Section meetings. Nationally, she has served on MAA committees and boards, including the Committee on Undergraduate Student Activities and Chapters, the Membership Committee, the Classroom Resource Materials Editorial Board, and the Carl B. Allendoerfer Awards Committee. She is a regular contributor to regional and national MAA meetings, presenting talks and organizing sessions on applied mathematics, quantitative reasoning, undergraduate teaching, and experiences beyond the classroom for students. Professionally, Kay is one of a team of four colleagues who received two FIPSE grants to develop and disseminate materials for the integration of precalculus review with the first course in calculus. She is co-author of the books *A Companion to Calculus*, now in its second edition, and *Quantitative Reasoning: Tools for Today's Informed Citizen*, currently in press. Kay Somers continues to be a champion of undergraduate mathematics in EPADEL and beyond.

Response from Kay Somers

I am very honored and delighted to receive the Certificate of Meritorious Service from the MAA. I have greatly enjoyed and benefited professionally and personally from associations with my MAA colleagues at the local, regional, and national levels. I have especially appreciated the opportunity to collaborate with faculty from Moravian College and other EPADEL institutions, to benefit from their experience, to learn things mathematical and non-mathematical from them, and to get to know them personally. Several years ago we celebrated the 75th anniversary of the EPADEL Section. As I read the history of the Section and looked at pictures taken at our anniversary meeting, I realized what rich traditions and wonderful "mathematics ancestors" we have in EPADEL. Thank you very much for this very special honor.

Citation for Ivy Knoshaug, North Central Section

Ivy Knoshaug has been teaching mathematics to college and high school students since 1965. She has been a member of the faculty at Bemidji State University continuously, beginning in 1981. In addition to her current efforts as Director of the Honors Program, Ivy played a key role in the success of the Northern Minnesota Mathematics Contest, was a leader in Bemidji State's implementation of graphing calculator technology, and has served on departmental and college committees too numerous to mention. She has been a bulwark to her colleagues and an inspiration to many grateful students.

Ivy's contributions to the North Central Section are awe-inspiring. Whether organizing summer seminars or Section meetings, serving as Newsletter Editor, President, or member of the Executive Committee, she is someone we all count on.

She is one of our stalwart core members and personifies our section at its best.

For dedicated service to her students and colleagues in the Department of Mathematics at Bemidji State University and for her unflagging devotion to the work of the North Central Section of the Mathematical Association of America, the North Central Section bestowed upon Ivy Knoshaug its eighth Certificate of Meritorious Service in April, 2001 and its twelfth Distinguished Teaching Award in April, 2005.

Response from ***Ivy Knoshaug***

I am deeply honored to receive this award and I thank the North Central Section for nominating me. It has been my privilege to work with many dedicated, talented, and creative people in the North Central Section. I thank them all for their leadership, support, and inspiration.

Citation for Marjorie Enneking, Pacific Northwest Section

It is a pleasure to nominate Marjorie Enneking for the MAA's Certificate of Meritorious Service. Marj Enneking has a long history of loyal and helpful service to the Pacific Northwest Section of the MAA. She was Vice Chair of Four-Year Colleges from 1980–1981, Section Chair from 1983–1985, and Section Governor from 2000–2003. She served the Section well in all of these important leadership roles. She is a very active participant at Section meetings and her presence at these annual events takes many forms. She has led panel discussions on topics from "Issues in K–12 Education" to "Family Issues" and spoken about the importance of universal participation in preparation of future teachers. After her time in Washington DC as an NSF program director, she shared with the Section much valuable information by leading a minicourse on writing grant proposals. We know from direct experience that Marj's advice, encouragement, and grant-writing wisdom has helped our Section in obtaining NSF funds for curriculum improvement. There are undoubtedly many in the Section who owe her a round of heartfelt applause.

She was also supportive of our Section NExT during its early years. As a consultant, she spent valuable time talking with our new NExT Fellows and encouraging them in their academic plans and her active participation at our meetings was always appreciated.

As her voluminous service record and accomplishments are of the highest order, the Pacific Northwest Section is proud to nominate Marjorie Enneking for the MAA's Certificate of Meritorious Service.

Response from Ivy Knoshaug

I am grateful to the Pacific Northwest Section for selecting me for this honor. I have much affection for MAA and the greatest admiration for its many members who have shared so much of their time and energy through MAA to promote mathematics and the teaching of mathematics. Through its many programs and conferences, especially the National and Section NExT programs, MAA has created an amazing potential for the future. With the continued dedication of long-time MAA leaders and enthusiastic commitment of talented newer leaders, I am confident that MAA is in good hands. MAA has enriched my life. I salute you all and thank you.

Beckenbach Book Prize

The Beckenbach Book Prize, established in 1986, is the successor to the MAA Book Prize which was established in 1982. It is named for the late Edwin Beckenbach, a long-time leader in the publications program of the Association and a well-known professor of mathematics at the University of California at Los Angeles. This prize is awarded to an author of a distinguished, innovative book published by the MAA. The award is not given on a regularly scheduled basis, but is given only when a book appears that is judged to be truly outstanding.

Citation for Arthur Benjamin and Jennifer Quinn for Proofs that Really Count: The Art of Combinatorial Proof

Few mathematicians are immune to the limpid charms of a clever counting argument; in *Proofs That Really Count,* Arthur Benjamin and Jennifer Quinn will charm you over and over again. The authors claim that counting arguments make the most compelling, natural, and memorable proofs.

It is hard to disagree with them after dipping into this lovely volume. Benjamin and Quinn begin by noting that the number of ways to tile a 1 x n array of squares with tiles that are either 1 x 1 or 2 x 1 is exactly the $(n + 1)$th Fibonacci number. This elementary observation becomes the key to discovering and proving just about every Fibonacci identity you've ever heard of by simple counting of tilings.

There is something here for every fan of counting. For example, do you know how many odd numbers there are in the 76th row of Pascal's Triangle? Do you know what happens when you reverse the order of the terms in a finite continued fraction? *Proofs That Really Count* illustrates in a magical way the pervasiveness and power of counting techniques throughout mathematics. It is one of those rare books that will appeal to the mathematical professional and seduce the neophyte.

The Beckenbach Book Prize is awarded to "distinguished, innovative MAA books" that are "truly outstanding." The Prize Committee can think of no better adjectives to describe *Proofs That Really Count* except, possibly, charming.

Biographical Note

Arthur Benjamin earned his B.S. in Applied Mathematics from Carnegie Mellon and his Ph.D. in Mathematical Sciences from Johns Hopkins. Since 1989, he has taught at Harvey Mudd College, where he is currently Professor of Mathematics and past Chair.

Along with Jennifer Quinn, Art Benjamin is co-Editor of *Math Horizons* magazine. Currently, he is Governor of the Southern California-Nevada Section of MAA and has served as Editor of the Spectrum Book Series and on the editorial boards of *Mathematics Magazine* and *The UMAP Journal*. In 2000, he received the MAA's Haimo Award for Distinguished College Teaching. In addition to spending time with his wife and two daughters, he enjoys playing backgammon, watching live theatre, racing calculators, and performing magic.

Response from Arthur Benjamin

It is an honor and a privilege to receive this award. Writing this book was a labor of love for Jenny and me, and I am pleased that so many people enjoy viewing the world through a combinatorial lens. There are "countless" people to thank, among them Francis Su, Ira Gessel, and Dolciani Editor Dan Velleman, whose input made this a better book than we had any right to expect. This book also benefited from the contributions of many former undergraduates, especially Chris Hanusa and Jeremy Rouse. Above all, I must thank my wife Deena, who proofreads everything I write (including this response)!

Biographical Note

Jennifer Quinn is the recently appointed Executive Director of the Association for Women in Mathematics. She continues her work as co-Editor of *Math Horizons* and as a Visiting Research Scholar at the University of Puget Sound. Jennifer Quinn earned her B.A., M.S., and Ph.D. from Williams College, the University of Illinois at Chicago, and the University of Wisconsin, respectively.

For the past twelve years, she taught at Occidental College, rising to the rank of full professor and serving as department chair. In 2001, she was awarded the MAA Southern California Section Award for Distinguished Teaching and in 2005, Occidental College's Graham L. Sterling Award for Faculty Excellence. She has served on the boards of the Spectrum Book Series, *Mathematics Magazine,* and the Phi Beta Kappa Alumni Association of Southern California. She lives in Tacoma, Washington, with her husband Mark Martin, a microbial geneticist, and bookends Anson and Zachary.

Response from Jennifer Quinn

Writing a book and having it published originally seemed unimaginable. But by working on the Spectrum editorial board and seeing how books get published through the MAA, it became remotely possible. A deep love of the material plus encouragement from colleagues, students, family, and friends made it a reality. To be awarded the Beckenbach Book Prize is a lifetime accomplishment beyond my wildest dreams.

For me, Art's description of our book as a "labor of love" is more meaningful than he may have intended. We began writing while I was on maternity leave with my first son, Anson. Publication coincided with the birth of my second son, Zachary. They will forever be my bookends to this work.

MAA Undergrad Poster Session

The MAA Undergraduate Poster Session was held on Saturday. AWM was among the organizations supporting the session. Many of the 37 prize-winning posters were presented or co-presented by women, including our Schafer honorable mention winner, Ellen Gasparovic. The listing is in order by poster number.

The Structure of Zero-Divisor Graphs
Helen A. Hauser, Natalia Cordova and Clyde Gholston, Summer Undergraduate Mathematical Sciences Research Institute
Advisor: Reza Akhtar, Miami University, Oxford, Ohio

Rupture in Thin Fluid Films
Robin M. Baur, Harvey Mudd College
Advisor: Andrew J. Bernoff, Harvey Mudd College

The Linear Cutwidth of Complete n-Partite Graphs
Chelsea Rae Weitzel, California State University, San Bernardino
Advisor: Joe Chavez, California State University, San Bernardino

Robustness and Transients Applied to Harvesting Peregrine Falcon Populations
Ellen Peterson, Wittenberg University
Advisor: Richard Rebarber, University of Nebraska-Lincoln

Eulerian Graph Representations for siRNA Sequence Structure
Karen Lostritto, Brown University
Advisor: Stanley Dunn, Rutgers University

Locating Circular Inclusions Within a Bounded Region
Hilary M. Spring, Mount Holyoke College
Advisor: Kurt Bryan, Rose-Hulman Institute of Technology

Heart Rate Regulation During the Postural Change from Sitting to Standing
Robert W. Benim, University of Portland, Sarah Lynn Joyner, Meredith College and Eamonn Tweedy, North Carolina State University
Advisors: Mette Olufsen, Hien Tran and Laura Ellwein, North Carolina State University

Analysis of Microarray Data Using Monte Carlo Neural Networks
Patricia A. Carey, East Tennessee State University
Advisor: Jeff Knisley, East Tennessee State University

The Effect of Immune Response and Combination Drug Treatment on the Progression of Multi-Strain HIV
Kelly Rose Smith, Clarion University of PA
Advisor: Carlos Castillo-Chavez, Arizona State University, Mathematical and Theoretical Biology Institute

Modeling of the Growth of the Loosening Zone around a Borehole Using Integro-Differential Equations
La'Nita D. Ward, Spelman College
Advisor: Alla Balueva, Spelman College

A Continuous Model of Gene Expression
Lissette LaPlace, University of the Virgin Islands; Elizabeth Miller, Ferris State University; Jason Pham, California Polytechnic State University and Joseph Hunt, Lamar University
Advisor: Erika Camacho, Loyola Marymount University

Tiling with 4 x 6 and 5 x 7 Rectangles
Rachell Ashley and Frances Cabrera, Rochester Institute of Technology
Advisor: Darren A. Narayan, Rochester Institute of Technology

Alcohol's Effect on Neuron Firing
Edna Susan Joseph, University of the Virgin Islands
Advisors: Stephen Wirkus and Erika Camacho, Applied Mathematical Sciences Summer Institute

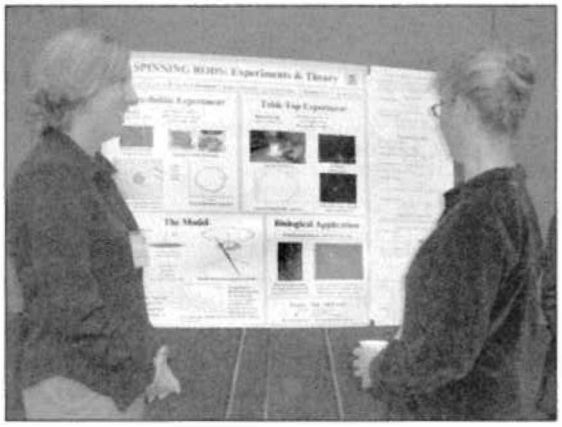
Polytopes, Toric Varieties, and Ideals: A Look at Pyramids and Prisms
Lisa D. Byrne, St. Mary's College of Maryland
Advisor: Jessica Sidman, Mount Holyoke College

On the Frequency and Generation of Sturmian and One-Dimensional Cut and Project Sequences
Kensey L. Riley, Truman State University
Advisor: David Garth, Truman State University

Dawn Lott, Carolyn Green, Catherine Roberts

Workshop speakers Rachel Levy and Gizem Karaali

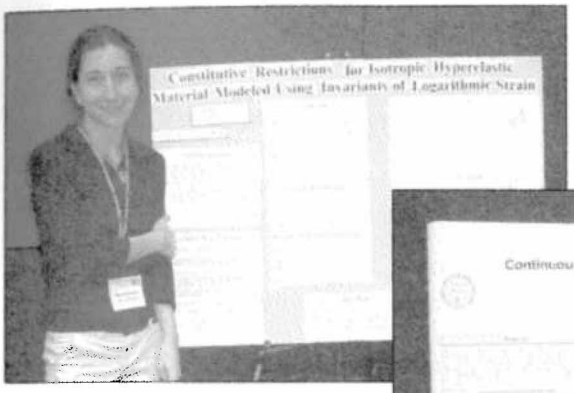
Workshop speaker Megumi Harada



Terry Jo Leiterman explaining her Workshop poster to Cathy Kessel

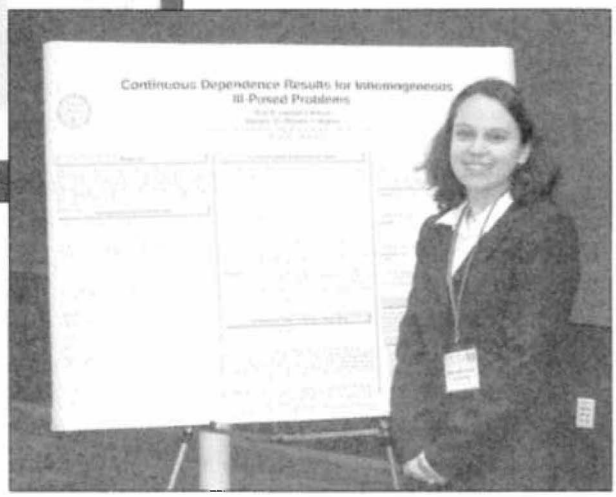
Photo below: Noether Lunch
Seated around table: Judith Armes, Barbara Keyfitz, Ingrid Daubechies, Mary Beth Ruskai, Mary Gray, Susan Friedlander. Standing front: Sandra Hayes, Irene M. Gamba, Chuu-Lian Terng, Cynthia Rudin, Shumei Richman, Jean Taylor, Christine Bennett, Bettye Anne Case. Standing back: Svetlana Katok, Lenore Blum, Ruth Favro.

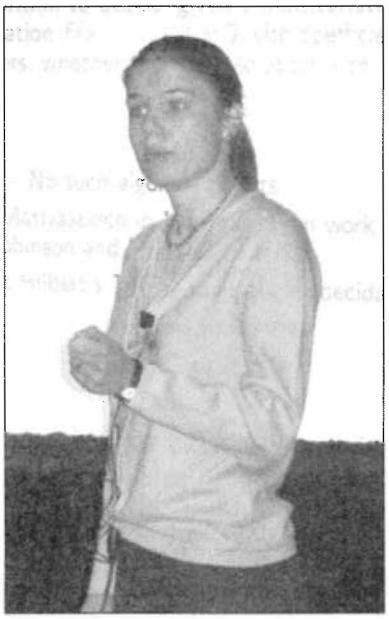
At the Workshop dinner



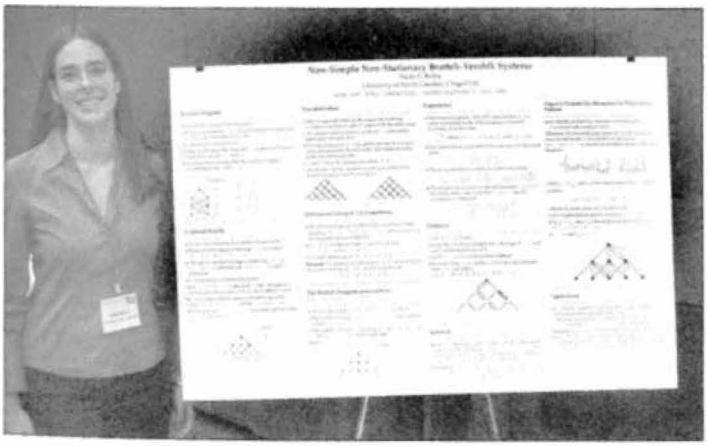
Above: Tsvetanka Sendova at her Workshop poster

Below: Beth Campbell-Hetrick at her Workshop poster





Workshop speaker Kirsten Eisenträger



Sarah Bailey at her Workshop poster

AWM President (Barbara Keyfitz), Managing Director (Jennifer Lewis), and Executive Director (Jenny Quinn)

Lie Sphere Transformations
Ellen K. Gasparovic, College of the Holy Cross
Advisor: Thomas Cecil, College of the Holy Cross

Nimber Sequences with no Preperiod for Three-Element Subtraction Sets
Brittany C. Shelton, Montclair State University
Advisor: Michael Jones, Montclair State University

A Newton Polyhedron Method for Explicit Calculation of the Igusa Local Zeta Function Associated with a Degenerate Polynomial
Adrienne B. Rau, Barnard College, Columbia University
Advisor: Margaret Robinson, Mount Holyoke College

In Search of an 8: Rank Computations on a Family of Quartic Curves
Kathleen Ansaldi, Loyola College of Maryland
Advisor: Edray Goins, Purdue University

Girls Just Want to Have Sums

Sarah J. Greenwald, Appalachian State University

The Simpsons is the longest-running sitcom of all time, and it is also one of the most literate television programs on the air, containing many references to subject matter and scholars from various academic fields, including mathematics. Andrew Nestler and I have found that the program is an ideal source of fun ways to introduce important mathematical concepts to students and to reduce math anxiety and motivate students in courses for non-majors. Our website contains information about mathematics in the show and our use of it in mathematics classrooms, and on August 25, 2005, we were thrilled to have the opportunity to speak with Jeff Westbrook, one of the writers of the show. Jeff has a bachelor's degree in physics and the history of science from Harvard University and a Ph.D. in computer science from Princeton University. Jeff was an associate professor at Yale University and also worked at AT&T Labs before writing for the animated sitcom *Futurama,* and he has been writing for *The Simpsons* since 2004. An edited transcript of the portion of our conversation related to women in mathematics in episodes of *The Simpsons* follows.

Sarah: You mentioned that the "galgebra" joke is yours. How did that come about?

> **Lisa is examining a Yale Course Catalogue:** *It's so great that Yale has finally forbidden man from taking science. Now let's see...Should I major in "femistry" or "galgebra"? [The Simpsons* GABF12: *Future-Drama]*

Jeff: It was for the *Future-Drama* episode where Lisa was going to Yale and we were talking about what Yale was going to be like in the future, and the whole women in math thing was at the top of our brains at that point.

Sarah: Around the Lawrence Summers time?

Jeff: Yes, exactly.... So we were thinking, "Well boys won't be in math anymore and they'll be teaching 'femistry' and 'galgebra' and all that kind of stuff...."

Sarah: I really like that joke. You mentioned that there might be a Lawrence Summer's related episode?

Jeff: There is. We already had that table read. That was a very difficult episode in some ways, because we wanted to deal with it, but we didn't want to toe any ideologically obvious line either way, so it was hard to come to a satisfying end, but we probably came to an interesting place, I hope. Lisa does a lot of math in that. There certainly were one or two pretty simple math things, because she is after all in second grade. I don't think we did anything really complicated.

Sarah: She's smart, but....

Jeff: Stu Burns [another writer on *The Simpsons,* who has a master's degree in mathematics from UC Berkeley] and I wanted to try and shoehorn in the Euler Königsberg bridge tour problem. So Stu and I spent about a half an hour trying to get that into a simple joke, but didn't manage.

Jeff Westbrook and Sarah Greenwald

Sarah: Oh.... Sorry to hear that.

Jeff: Oh don't give up.... We will keep fighting for that somehow or other.

Sarah: Cool!

Jeff: So there is that coming up. We have an evolution episode coming up too.

Sarah: When might these appear?

Jeff: These are all season 17, so they'll be appearing probably next spring, I would guess. Stuart wrote the evolution episode. That was really a lot easier to write, to be quite honest. It was much easier to take the correct ideological position on that than the women in math stuff.

A few months later, Jeff showed us portions of a preliminary "animatic," pictures of a storyboard synchronized with the soundtrack, from the upcoming women and mathematics episode that he mentioned in the interview. The amusing animatic revealed separate girls and boys mathematics classroom environments. Lisa Simpson, who has always been portrayed as intelligent and good at mathematics and science in addition to other subjects, wanted to work on problems instead of embracing the cooperative learning environment found in the girls' class, and so she peered into the boys' classroom window to work on the boys' problems from there. Regardless of the final product, this episode is sure to be a great opportunity for continued discussion about women in mathematics, and a chance to expose a large viewing public to some of the related issues. The title of the episode parodies the title of Cyndi Lauper's song *Girls Just Want to Have Fun.* Look for *The Simpsons* episode *Girls Just Want to Have Sums* to air in the Spring or Fall of 2006.

Acknowledgements

Greenwald, Sarah J (2005). A *Futurama* Math Conversation with Dr. Jeff Westbrook. Available: http://www.mathsci.appstate.edu/~sjg/futurama/jeffwestbrookinterview.html

Greenwald, Sarah J (2005). *SimponsMath.com: Girls Just Want to Have Sums.* Available: http://www.mathsci.appstate.edu/~sjg/simpsonsmath/sums.html

Greenwald, Sarah J and Nestler, Andrew (2005). *SimpsonsMath.com.* Available: http://www.simpsonsmath.com

Lauper, Cyndi (1983). *Girls Just Want To Have Fun.*

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Westbrook, Jeff (2005). Personal Communication.

Book Review

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

Connecting Girls and Science. Constructivism, Feminism, and Science Education Reform, Elaine V. Howes, Teachers College Press (Ways of Knowing in Science and Mathematics Series), New York, 2002, ISBN 0807742104, viii+167 pp.

Reviewer: Margaret Bayer

Elaine Howes is an educator who is informed by her feminism and her commitment to the imperative of "science for all." She worked in a scientific laboratory before entering a Ph.D. program in education. While a graduate student she was a part-time high school science teacher. She is now on the faculty at the University of South Florida. The book reports on her "teacher-research" in a high school class on human genetics. Elaine Howes was the teacher; she was the one conducting interviews and date collection; she was the one who analyzed, made conclusions and wrote about the research.

Here is what Howes did. She taught a one-semester course on human genetics in a public high school in a small, mostly White and working-class town. There were 17 students, including only three boys and only one minority student (an African-American girl). Howes conducted "interview-conversations" with individual students and groups, on a voluntary basis. All students did writing assignments on questions about being a good scientist. Group and whole-class discussions about prenatal testing and bioethics were taped. The students also did group projects and presented them in class. The activities were designed to enable the teacher to *listen* to the students, rather than to measure what the students had learned.

The theme of Howes's research is science as a social enterprise. She starts from the recognition that the development of science has always been affected significantly by social factors, including the class, racial, ethnic and gender status of scientists and the resulting bias. The text challenges the concept of objectivity in science, and rejects science that "seek[s] knowledge for its own sake" [p. 111]. Howes applies theories from constructivism and from difference feminism. The teacher's role is to provide learning contexts in which students create and develop knowledge of science, based on their experiences. The phrase "connecting girls" in the title "reflects the idea that human relationships are central to girls and women" [p. 24] and that involving girls in science requires relating science to their everyday lives.

Howes reports on her students' construction of knowledge, but it is knowledge about the uses of science, the practice of medicine, and the social structure of the scientific enterprise. Of course, the students are learning about science itself; their discussions about prenatal testing, for example, depend on their knowledge of the processes of genetics. But there is no indication of the roles of the theories of constructivism and feminism in teaching this basic science.

Chapter 2 reports on class discussions about prenatal testing. The girls tend to digress to general talk about babies. (They consistently refer to embryos and fetuses as babies.) They express distaste or even disgust at the images that came up in studying this topic. They express interest in statistics: reliability of sex prediction by ultrasound, quantification of risk to fetuses with amniocentesis. The teacher actually chides the students for worrying about statistics. (Later she regrets that, to a certain extent.) Throughout the discussion that is reported, Howes interjects to pose questions, but does not provide any information. There is no indication in the book that she directs the students to research questions that arise in their discussions. Howes succeeds at one of her goals: to get students to "question the efficacy and unquestionability of science and its attendant technologies" [p. 60]. However, I question how this relates to their study of science, and whether it is in effect granting them permission not to study science. Indeed Howes raises this issue early on, when she says that teaching based on feminist pedagogy "creates tensions between addressing students' visions of science and supporting them in their learning of accepted and socially powerful scientific knowledge." [p. 17] Unfortunately, I do not feel that she addresses this issue.

A common assertion of educational reformers is that to attract more girls to science we must stress the "real-world" aspects of science. Howes suggests that girls and women participate in biology more than in the other sciences because it makes less use of "parsimonious symbol systems," because it "is more immediately about our bodies and our world than are chemistry and physics," and because it is more closely tied to females' societal role as caretaker [p. 18]. This reflects the

author's view of our world as primarily a biological world, and perhaps a distaste for mathematics on her part. When the students wish to explore the statistical aspects of prenatal testing, she steers them away. There is scant recognition that students (even girls!) may want to study science (and mathematics) because they want to know in a fundamental, and even abstract, way how the world works, from the molecular to the cosmological level. (She ignores—no, denies [p.23]—the increase of numbers of women in mathematics and physics.)

I question the oft-repeated adage that girls have a preference for applied science over basic science, for disciplines that have more direct application to daily life. Computer Science Professor Lenore Blum moved to Carnegie Mellon just after the School of Computer Science changed its admissions policies. By broadening the skills and background used as admissions criteria, the School went from under 10% to over 30% women. Blum started a program to support the new batch of women in the program. She finds no evidence that women are more oriented towards applications and men towards programming. "To say that there are intrinsic male and female differences and you have to accommodate for those is absolutely wrong. Don't devise the curriculum so that it's female-friendly. That will only serve to marginalize women." [From an interview reported in the *Chronicle of Higher Education,* January 13, 2006]

As mathematics teachers know, infusing real applications in our courses is not easy, either for the teachers or for the students. Howes does acknowledge the difficulty of making the real connections between the science and life experiences. The students are able to discuss scientific content using scientific terminology. They are able to segue into conversation about childbirth experiences of their relatives and friends. But are they making a connection between them? Everyone has participated in scientific discussions that have been sidetracked into personal conversation. To make these discussions of life experiences meaningful in the scientific context, analysis and synthesis must occur.

In interview-conversations with individuals and small groups of students, Howes asked, "Do men and women do science differently?" (Subsequently, she realized that this is a loaded question.) From the students' responses and discussions, she concludes that all the students judge that women and men scientists "would get the job done equally well," but that they would feel differently in their work. Student responses here are presumably based on their images of scientists, of the work of scientists, and of the characteristics needed to be good scientists. As far as we know they have not observed scientists at work or learned about the institutions of science.

The students did writing assignments, once early and once later in the semester, on the following questions.

- What do you think it means to be a "good scientist"?
- Do you think that you have the traits of a "good scientist"? Why, why not, some yes, some no?
- (At the end of the semester) Have your ideas changed at all since the beginning of the year or of the semester? Please explain how and why they have or have not changed. [p. 35]

The students felt that scientists should be motivated by "doing good." But Howes is struck by the students' "insistence on objectivity and scientific method" [p. 112]. She expressed disappointment that their ideas did not lead where she wanted them to [p. 102].

I agree that science develops within the context of societies, and that the values of the scientists of a given time and place, as well as the values of those holding institutional power, influence the directions of science. Scientists do not achieve their own ideal of objectivity, and their prejudices have at times led them to give unwarranted support to some theories and to block the development of other valid scientific theories. Students bring valuable perspectives and ideas to bear on the practice of science. Science instruction is more meaningful and successful when the students are encouraged to connect new ideas with their own experiences and ideas. But their ideas should be examined and developed in relation with observations and theories of science.

Let us not discount the body of scientific knowledge, accumulated and refined over hundreds of years, as "just a theory," supported only by the biases of generations of scientists. If we do, we may end up inviting the "theory" of intelligent design into the science classroom.

Education Column

Column Editor Ginger Warfield, Department of Mathematics, University of Washington, Seattle, WA 98195; warfield@math.washington.edu

497 & Math History

This is going to be a slightly disjointed column. I spent a considerable amount of time vacillating on the question of which of two aspects of the topic at hand to emphasize, and in the end I decided on both. Stylistically ill-advised, but both deserve attention.

The topic in question is a course I just had the good fortune to teach on the history of mathematics. The first aspect worthy of the ink is the context for the course. A decade ago one of my colleagues who frequently teaches courses for future high school mathematics teachers became conscious that while we encourage all teachers to be life-long learners, once these folks graduated we were offering nothing to aid that learning—every one of our courses that might be of interest met during regular high school hours. He persuaded the department to set up a series of one-quarter courses, all called Math 497, that would meet once a week for nearly three hours in the late afternoon. This produced a three credit course which it is physically possible for an in-service teacher to attend, and over the years many have done so. The course is also open to regular students and has attracted a fair variety of them, as well as some community college faculty members. My favorite blend is about one third in-service teachers, one third undergraduates majoring in mathematics for high school teachers and one third a motley collection from all around campus, with a community college teacher or two thrown in. It makes for a wealth of perspectives and some really good conversations among the students.

Recently, for a variety of reasons, enrollment of in-service teachers has declined somewhat. Given limited resources, the question of the course's continuation has to be addressed. We've held out, though, partly on the basis of a slightly abstract but highly relevant consideration: as a department we are committed to supporting the K–12 system. We look hard for meaningful ways to accomplish that and have had some success. Math 497 represents a quiet but solid way of conveying that support.

That covers one aspect of 497 courses—their *raison d'être* and the benefits we hope accrue from them. Of another I gave a hint above: they're great fun to teach. Part of the reason is the students, who tend to be interesting and interested. Another part is the required course material, or rather the lack thereof. What is required is a topic that has genuine mathematical content, requires thinking but doesn't rely on pieces of mathematics that may have developed rust if a teacher has been in the K–12 classroom for a couple of decades, and is engaging enough to keep people awake for three hours at the end of a full day. In other works, it needs to be something the instructor can really enjoy teaching—what a demand! It can even be something about which one knows a bit but wants to know a lot more. Most of the Graph Theory I know came from an early 497 class, and a colleague became very happily tied up in Knot Theory. Recently (and here's where we switch to the other aspect) I opted to teach a 497 class on History of Mathematics and as a result became a complete convert to teaching both about it and with it.

Given that I chose to teach it, I clearly was not converted from an adverse position. In fact, I have long been interested and wished I knew more. In the past few years this interest was reinforced by the group of mathematicians who have been advocating the uses of history and by one colleague in specific who demonstrated some of them. In the midst of a perennially oversubscribed calendar, however, kind of wanting to know more doesn't cut much ice. Enter Math 497. After thinking about it for a couple of months and weathering a few bouts of cold feet, I submitted a course title of "Where did all this mathematics come from?" and the die was cast.

The decision once made, the question then was how to balance survey and depth, information absorption and relevant activity. In this I was greatly helped by two books. The first was *A Concise History of Mathematics,* by Dirk Struik. I found it before I committed myself to the teaching, and found it admirable for showing the sweep of events and the spirit of the different ages and cultures. The other was *From Five Fingers to Infinity* by Frank Swetz. That one turned out to be out of print, but Amazon.com did us proud, and eventually everybody had a copy. It consists of 114 brief chapters, most of them reprints of articles in the NCTM journal, *Mathematics Teacher,* and each giving a focused

insight into some specific topic—the work of a particular person, or the development of some mathematical concept. Each week pairs of students were responsible for reading a small bunch of chapters and choosing one to present to the rest of the class, with the strict requirement that they must give their classmates something to do, not just report out information. The results were generally good and occasionally spectacular. They also maintained (by assignment) an ongoing on-line discussion at a class e-Post, which ranged from the dutiful to the impressively thoughtful. A major project gave them the opportunity to delve more deeply into some one topic. For the take-home final I wanted them to look back through the mathematical developments they had seen all quarter, so I asked them to inspect it all through the lens of E.T. Bell's statement, made in *Mathematics, Queen and Servant of Science:* "The pure serves the applied, the applied pays for the service with an abundance of new problems that may occupy the pure for generations." Those who were not blown away by the metaphor produced some good insights.

As should be clear, I had a lovely time with all this. I also learned a tremendous amount, including how much more I would like to know. Along with that, I have become ever more convinced that elements of history can enrich and enliven almost any mathematics course. I have even managed to get my toe in the water on that: Euler and Egyptian multiplication were both quite well received, and I have an eagle eye out for my next opportunity.

And to top it all off, I finally know the answer to a question that has been bugging me for years: how did the Romans manage to carry out multiplication and division with such an incredibly cumbersome numerical system? Answer: they didn't. They did it all on an abacus and just wrote down the result!

ICM-2006, Madrid, August 22–30

Bettye Anne Case, AWM Meetings Coordinator

In this update, we'd like to remind you that a link from the index page for the upcoming International Congress of Mathematicians, http://www.icm2006.org/paginas/?pagina=home_ing, leads to a short description of some activities planned for the Madrid Congress (click on Other activities). The latest version reads:

> Women in Mathematics
>
> Following the tradition at each ICM since 1974, a group of women is organizing special activities. The fourth Emmy Noether Lecture, the first time an invited lecture of the ICM, will be presented by Yvonne Choquet-Bruhat. There will also be a panel discussion about women working in mathematics, and other events. Women from around the world, including members of the European Women in Mathematics (EWM) and the Association for Women in Mathematics (AWM), are participating in this planning; information will be available on their websites as planning proceeds.

Other offerings will include the documentary film *"The Madrid Interviews"* made in 1996 under EWM auspices, likely to be scheduled for 18:00, Monday, August 28; it may be possible to arrange a photograph exhibition.

At least 14 invited lecturers have been identified as women. Several of them will participate on the panel discussion, including Michelle Vergne, a member of the group planning these activities and the only woman who is a plenary lecturer. Panelists who have already agreed to speak represent five continents, by place of childhool or education and/or current job! They include Vergne, Laura Fainsilber, Bryna Kra, Isabel Salgado Laboriau, Chuu-Lian Terng, and Doreen Thomas. The panel discussion will be 18:00, Friday, August 25.

Will you attend ICM-2006?

If you have tentative or definite plans to attend, we'll keep you up-to-date on activities being planned by a group of 25 women from around the world. We expect to get a listserv set up soon to expand participation beyond the preliminary organizing group; please send your comments and best e-mail address to case2@math.fsu.edu.

In Memoriam

Janet L. Andersen

press release

Dr. Janet L. Andersen, professor of mathematics at Hope College, was killed in an automobile accident on November 24, 2005. There were whiteout conditions from blowing snow at the time of the accident, police said.

Andersen had been scheduled to speak in the panel at the AWM Workshop at the San Antonio JMM.

"The Hope College community mourns Dr. Andersen's death," said Hope College President James E. Bultman. "Our sympathy goes to the Andersen family. Janet was a beloved teacher, a superb administrator and cherished colleague. She will be greatly missed."

Andersen, 47, joined the Hope College faculty in 1991. She earned her bachelor's degree from LeTourneau University, Longview, TX and received master's and doctoral degrees from the University of Minnesota. She served as chair of the department of mathematics at Hope College from 2000–04. She also served as director of the Pew Midstates Science and Mathematics Consortium, a collaboration of 11 liberal arts colleges and two research universities. The consortium promotes effective collaboration among faculty at the member institutions with the goal of improving undergraduate science and mathematics education.

Andersen served as director of general education at Hope College from 1998–2000. She chaired the Mathematical Association of America's committee on the teaching of undergraduate mathematics.

Earlier this year she and faculty colleague Todd Swanson coauthored a new mathematics textbook, *Understanding Our Quantitative World.* She was also the co-author of two other textbooks, *Projects for Precalculus* (1997) and *Precalculus: A Study of Functions and Their Applications* (2000).

In 2004 she was presented a Hope College Provost's Award for Excellence in Teaching. Her work "Projects for Precalculus" was an award winner in the Innovative Programs Using Technology competition of the MAA 1997 and was featured in the book *Exemplary Programs in Introductory College Mathematics.*

Claudia Zaslavsky

excerpted from www.binghamton.edu/zaslav/cz.html *at her son Thomas Zaslavsky's website*

Claudia Zaslavsky, an educator who advanced the study of the links between mathematics and world cultures, died on January 13, 2006, at the age of 89 from pancreatic cancer.

Ms. Zaslavsky was born in New York City and always attributed her first interest in the practical application of mathematics to her experience as a child helping in her parents' dry goods store in Allentown, Pennsylvania. She studied mathematics at Hunter College and the University of Michigan. Her interest in mathematics in African culture developed when she was a teacher at Woodlands High School in Hartsdale, New York and sought materials that would encourage her African-American students to regard mathematics as part of their cultural heritage. Carrying forward this research as a project for a course at Teachers College of Columbia University, she discovered that little of what was known about this topic was available in accessible sources.

Thus began a years-long project of assembling, organizing and interpreting a vast amount of little-known material on expressions of mathematics in diverse African cultures including number words and signs, reckoning of time, games, and architectural and decorative patterns. In 1973 she published her major work, *Africa Counts: Number and Pattern in African Culture,* which remains the classic reference on this topic.

After publication of this work, she turned her book-writing energies to bringing the message of the universality of mathematical thinking to a young audience through three children's books (including *Zero: Is It Something? Is It Nothing?*) and four resource books for teachers and parents (including *Math Games and Activities from Around the World*). She also wrote books for adults, including *Fear of Math: How to Get over It and Get on With Your Life.*

Zaslavsky was a mentor to many younger scholars and activists in the growing field of ethnomathematics. As such, she always kept foremost the importance of recognizing the mathematical accomplishments of groups

who are underrepresented in the world of mathematics, including women and people of diverse cultures, remembering her own struggles with discrimination against women and Jews in the professions during her formative years in the 1930s and 1940s. She was also a lifelong activist in movements for civil rights, peace and social justice. Her last request was to listen to a recording of Paul Robeson, a lifelong hero for his progressive activism.

A bibliography is located at www.math.binghamton.edu/zaslav/cz.biblio.html. A Google search will also give an indication of the reach of her work.

[Ed. note: Claudia was a frequent contributor to this newsletter over the years. We will miss her.]

Evelyn Silvia

press release

Evelyn Silvia, professor of mathematics at the University of California, Davis, who worked tirelessly to improve mathematics teaching at every level from fourth grade to graduate school, died January 21 following a courageous battle with ovarian cancer. She was 57.

"Evelyn has been one of the most successful, influential, respected and beloved university teachers of the nation. Her love of mathematics and care of all her students are the treasure she shared with everybody," said Motohico Mulase, professor and chair of mathematics at UC Davis.

Silvia was deeply involved in mathematics education throughout her career. In 2001, the Mathematics Association of America presented her with the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. She also won the UC Davis Academic Senate's Distinguished Teaching Award in 1990.

Her research contributions were in theoretical work on complex analysis and geometric functions. In recent years, she studied the mathematics underlying the properties of starlike, convex, or spiral shapes.

A memorial article by her colleague Angela Cheer will appear in the next issue of this newsletter.

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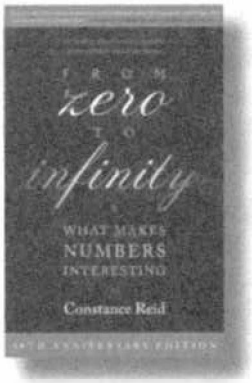

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