credentials, he served for two years on the editorial board of the *Philadelphia Daily News*, where, as with his newspaper book, ABC columns, and stint at the Columbia School of Journalism, he tried to straddle the disparate realms of Pythagoras and Pulitzer.

Response from John Allen Paulos

I'm very honored to receive the JPBM Communications Award, especially given its previous recipients and the fact that communicating mathematics is a significant part of what I do. Like many of you, I was greatly influenced by popular communicators of mathematical ideas when I was young, particularly Martin Gardner and, a bit later, Ernest Nagel on Gödel's proof. They made clear that math wasn't just about algorithms but said something about games, magic tricks, science, math itself (Gödel), and the world. Bertrand Russell was also an early influence, although *Principia Mathematica* and his purely mathematical writings were anything but easily accessible. His philosophical and popular writings, however, primed me both to appreciate what he termed the "austere beauty" of mathematics and to realize that its study did not preclude one from commenting on topical issues and might even give one an oblique perspective on them. Nevertheless, at one time or another as an undergraduate at the University of Wisconsin in Madison, I resolved to major in classics, English, philosophy, physics, and, of course, mathematics. Despite the brief separations and flings with the above disciplines and other topics, I gradually became more deeply enthralled with the power of mathematics and came to see it as a sort of imperialist discipline capable of invading and occupying almost every other domain.

An opportunity to further the invasion came with *Innumeracy*, and I've been doing my best to advance the occupying forces for a long time, writing about the connections between mathematics and humor, philosophy, journalism and a variety of news stories, the stock market, storytelling, and other endeavors.

Much, perhaps too much, has been written about mathematical pedagogy, and I certainly don't wish to add to it here, but there is one under-appreciated motivating factor I would like to mention. Show kids that with mathematics, some facts, and sometimes a bit of psychology they can vanquish blowhards' nonsense, no matter their age or size. For some, at least, this may be a better initial selling point than mixture problems or factoring techniques.

My communicating the charm and relevance of mathematics to a large audience has been an honor in itself, as is—I want to reiterate—recognition of my efforts by the JPBM and the mathematics community generally.

—JPBM announcement

MAA Prizes Awarded in San Diego

At the Joint Mathematics Meetings in San Diego, California, in January 2013, the Mathematical Association of America awarded several prizes.

Gung and Hu Award for Distinguished Service

The Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics is the most prestigious award made by the MAA. It honors distinguished contributions to mathematics and mathematical education, in one particular aspect or many, whether in a short period or over a career.

The 2013 Gung and Hu award was presented to WILLIAM A. HAWKINS JR. of the University of the District of Columbia and Director, MAA Strengthening Underrepresented Minority Mathematics Achievement (SUMMA), for his work to improve the mathematical education of underrepresented minorities and to increase their representation in the mathematical community. Since 1990 he has directed the SUMMA program. In this capacity, he has been a leader in analyzing and interpreting the current status of minorities in mathematics and in calling attention to the need for action. He has also been active in raising funds and organizing programs to bring about change.

Hawkins was one of the cochairs when the MAA Committee on Minority Participation in Mathematics was first established in the late 1980s. In 1990 he resigned from that position and took a leave from the University of the District of Columbia to become director of the then-new MAA program SUMMA. At first the MAA position was salaried through a grant from the Carnegie Corporation, but that funding ran out in the mid-1990s. Bill has continued to work, without pay, approximately half-time, directing the SUMMA program while

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working full time at the University of the District of Columbia. So although Bill is listed on the MAA staff page and works in the MAA office, he has been an unpaid volunteer for many years.

Under his leadership SUMMA has been responsible for bringing more African Americans, Chicanos, Latino Americans, and Native Americans into mathematics at all levels. He has provided sustained efforts to keep them there, from the precollege students who participated in SUMMA-supported intervention projects through the undergraduates who are learning the excitement of research experiences in the National Research Experiences for Undergraduates Program (NREUP) to underrepresented minority Ph.D.'s in mathematics and mathematics education. Their success stories are told in Hawkins's archival record, on up to the chairs of the nation's minority-serving mathematics departments. For these chairs, the annual Minority Chairs Breakfast and Meeting organized by Hawkins at the Joint Mathematics Meetings has become a primary networking event.

Since 1990 SUMMA has raised more than US$4 million in grants for programs and publications to increase minority participation in mathematics. Receiving a grant is just the first step. Hawkins has followed through, leading one successful project after another with the support of the MAA staff. Under Hawkins's guidance, in 1991 SUMMA obtained funding to carry out Middle and High School Intervention Projects. The SUMMA Intervention Projects ultimately provided seed funding, professional support, and a consortium network (SUMMAC) for over one hundred precollege mathematics enhancement programs for underrepresented minority students in forty-two states, Puerto Rico, the District of Columbia, and Canada.

SUMMA's NREUP provides an example of Hawkins's service and leadership in the mathematical community. With a small amount of start-up funding from the National Security Agency (NSA), he designed a project to support underrepresented minority students. He used that funding to give small grants to multiple sites, each having a few underrepresented minority students working together on mathematics-based research projects. In the first year there were three sites with a total of eight students; of those eight, three have entered or completed doctoral programs in the mathematical sciences and two more have done the same with master's programs in mathematics. The program has been expanded with enhanced funding from the NSA, the NSF, and other sources; to date, NREUP has hosted 386 students in eighty-six summer REU projects. Almost as important as the student success stories from these REU projects is the large cadre of project directors who now network at SUMMA panels and activities at the Joint Mathematics Meetings. Some directors have moved from NREUP support to continue their projects with funding from other sources.

Hawkins continues to provide extensive support to the Committee on Minority Participation in Mathematics. He finds topics that need to be discussed, does much of the work in putting together the agenda and getting the special guests there, and follows up on the decisions the committee has made—in brief, he acts as at least a full cochair without that title. He assumes most of the responsibility for the arrangements, agenda, invitations, and rounding up of speakers for the annual Minority Chairs Breakfast and Meeting. Bill also organizes panels, workshops, and other networking activities related to SUMMA efforts at the Joint Mathematics Meetings.

Leveraging collaborations with the Tensor Foundation, the Benjamin Banneker Association, Texas Instruments, and the Sloan Foundation, Hawkins promotes access, equity, and encouragement for traditionally underrepresented mathematicians at all levels. Whether it be supporting precollege intervention projects, providing otherwise unaffordable technology, or making available other resources for success, he has done wonderful work throughout the years and is not bothered by the fact that his efforts often are taken for granted. He works to address issues and needs in the mathematics community without regard to compensation, recognition, or expressions of appreciation.

Hawkins earned his B.S. in mathematics and M.S. in physics from Howard University before earning an M.A. and Ph.D. in mathematics from the University of Michigan. He joined the faculty of what became the University of the District of Columbia (UDC) in 1970 and served as department chair for five years. Taking leave, he worked as the director of the MAA Strengthening Underrepresented Minority Mathematics Achievement (SUMMA) program from 1990 through 1996, when he returned to UDC. He continues to direct SUMMA.

Chauvenet Prize

The Chauvenet Prize recognizes a member or members of the MAA for the writing of an outstanding expository article. First awarded in 1925, the prize is named for William Chauvenet, who was a professor of mathematics at the United States Naval Academy.

The 2013 Chauvenet Prize has been awarded to ROBERT GHRIST of the University of Pennsylvania for his article "Barcodes: The persistent topology of data", *Bulletin of the American Mathematical Society* **45** (2008), no. 1, 61–75. This article is an intriguing survey of some recent developments in computational algebraic topology that find application in the detection of patterns in large sets of high-dimensional data. The author uses attractive illustrations to introduce the reader to the mathematical concept of persistent homology and

to its graphical representation through barcodes. Although the human eye and brain are marvelously adept at recognizing features inherent in a pointillist painting, discovering structure in a cloud of points in three dimensions or in thirty dimensions presents a formidable challenge that demands effective computational tools. A promising idea is to fatten the points into balls and to seek topological information that is stable under variation of the radii of the balls. This idea underlies the new theory of persistent homology, which has been developed by various researchers over the past decade. Barcodes—parametrized versions of Betti numbers—provide a convenient picture of persistent homology. The author's engaging exposition includes a discussion of how persistent homology has been exploited to tease out subtle regularities within a large set of nine-dimensional vectors derived from a database of digital photographs. This survey article reveals modern applied mathematics at its best: sophisticated abstract mathematics in the service of real-world data analysis.

After earning an undergraduate degree in mechanical engineering from the University of Toledo, Robert Ghrist earned a Ph.D. in applied mathematics from Cornell University (1995), writing a thesis on knotted flowlines. In 2008 Ghrist was appointed as the Andrea Mitchell University Professor of Mathematics and Electrical and Systems Engineering at the University of Pennsylvania. Ghrist is the recipient of NSF CAREER (2002) and PECASE (2004) awards for work focusing on topological methods in applied mathematics, with applications including robotics, sensor networks, fluid dynamics, and more. His joint work with Vin de Silva was honored by *Scientific American* (2007) in "SciAm50 Top Research". He is the recipient of several teaching awards and enjoys teaching not only his Penn students but also his four children at home, as well as his tens of thousands of calculus students via Coursera, starting January 2013.

Euler Book Prize

The Euler Book Prize is given to the author(s) of an outstanding book about mathematics. Mathematical monographs at the undergraduate level, histories, biographies, works of mathematical fiction, and anthologies are among the types of books eligible for the prize. The prize was given for the first time in 2007, the three-hundredth anniversary of the birth of Leonhard Euler.

Persi Diaconis (Stanford University) and Ron Graham (University of California San Diego) have been awarded the 2013 Euler Book Prize for *Magical Mathematics: The Mathematical Ideas That Animate Great Magic Tricks* (Princeton University Press, 2011).

This magical book, based on the authors' lifelong passion for magic and mathematics, presents a selection of entertaining tricks that are easy to perform and yet have interesting mathematics inside them. The tricks are surprising yet curiously difficult to explain; the mathematics is simple yet fundamental; the explanations are beautifully clear and even elegant. Along the way we are treated to interesting asides about the people and ideas that inspire magical mathematics. Many of the card tricks discussed are mathematically elegant and some are new. Usually a trick is described by its effect, followed by how and why it works and, for many tricks, variations. For some tricks the discussion continues with new mathematics, new tricks, and suggestions for further investigation. The exposition is enlivened by personal anecdotes, some history of the tricks or of outstanding magicians, and digressions to related topics. Martin Gardner and the authors were longtime friends, and nine pages of Chapter 10 include several of Gardner's tricks. The mathematical prerequisites (e.g., permutations, binary arithmetic, modular arithmetic) are gently introduced and accessible to novices. But there's also plenty of substance for mathematicians, who will enjoy interesting applications of basic graph theory, combinatorics, topology, de Bruijn sequences, Penrose tiles, Steiner trees, elementary group theory, and a special shuffle leading to a result known as the Ultimate Gilbreath Principle, with its mysterious connection to the Mandelbrot set. The writing is relaxed and conversational and so casual and unstudied that even the theorems and proofs are irresistible. It's a perfect coffee table book that can be picked up, thumbed through, and sampled at will, with lots of pictures and diagrams to make it tempting. The book perfectly fits the description of the Euler Book Prize, being "exceptionally well written," having "a positive impact on the public's view of mathematics," and presenting "mathematics as it is related to other areas of arts and sciences." Martin Gardner's expository mathematics has been described as "capable of turning innocent youngsters into mathematicians and mathematicians into innocent youngsters." This book is a worthy companion to Gardner's collection and will have the same effect. Diaconis and Graham have made a significant contribution to the literature of expository mathematics.

Persi Diaconis is the Mary Sunseri Professor of Mathematics and Statistics at Stanford University. He works in probability, mathematical statistics, combinatorics, and group theory, with a focus on real-world applications, such as "How many times should a deck of cards be shuffled to mix it?" (work with David Bayer) and "Is coin tossing 'physics' or 'random'?" (work with Susan Holmes and Richard Montgomery). He has been on the faculty of Harvard and Cornell but is most well known from ten years on the road as a traveling magician. An early MacArthur Fellow, Diaconis is a member of the U.S. National Academy of Sciences.

Ron Graham is the Irwin and Joan Jacobs Professor of Computer and Information Sciences and professor of mathematics at the University of California San Diego. He works in a variety of mathematical areas that include combinatorics, number theory, discrete geometry, and theoretical computer science. He spent many years at Bell Labs, during which time he also taught at Princeton University, Stanford University, the California Institute of Technology, the University of California Los Angeles, and Rutgers University. He has served as president of both the American Mathematical Society and the Mathematical Association of America, as well as president of the International Jugglers Association. He is a recipient of the Leroy P. Steele Prize for Lifetime Achievement from the AMS, and he is a member of the U.S. National Academy of Sciences.

Haimo Awards for Teaching

The Deborah and Franklin Tepper Haimo Awards for Distinguished College or University Teaching were established in 1991. These awards 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.

The 2013 Haimo Awards were presented to MATTHIAS BECK (San Francisco State University); MARGARET ROBINSON (Mount Holyoke College); and FRANCIS SU (Harvey Mudd College). The following is taken from their prize citations and biographical information.

Matthias Beck uniquely and excellently combines teaching and research with writing textbooks, mentoring, and outreach to the wider community. Students in his classes at all levels—from classes for prospective elementary school teachers to analytic number theory—are interested and active participants. Beck is an accomplished research mathematician who also knows pedagogy. Colleagues who have observed Beck's classes testify that he is a superb lecturer, one who asks just the right questions to keep the students thinking about the key issues. His presentations appear almost spontaneous, but through Beck's choice of examples and order of development, reveal a master teacher at work.

Beck has received a National Science Foundation (NSF) research grant and was a member of the editorial boards of the *Journal of Number Theory* and of *Expositiones Mathematicae*. Beck is the author of forty-seven published papers, most in prominent journals. Eleven of these papers, which include publications in the *Journal of Combinatorial Theory Series A, Mathematische Annalen*, and *Mathematische Zeitschrift*, have student coauthors. Beck has coauthored two well-reviewed undergraduate textbooks published by Springer: *The Art of Proof: Basic Training for Deeper Mathematics* and *Computing the Continuous Discretely: Integer-Point Enumeration in Polyhedra*. Both books appear on the MAA's Basic Library List; Springer has published the second also in German and Japanese.

Another grant from the NSF supports Beck's work in enhancing the preparation of graduate students, with the goal of increasing the percentage entering Ph.D. programs, particularly among underrepresented minorities. In the first two years of this program, fifteen of the sixteen M.A. students supported were accepted into Ph.D. programs, all but one with funding. One of the students Beck mentored in the program won the award for Best Graduate Presentation in Mathematics at the 2011 SACNAS (Society for the Advancement of Chicanos and Native Americans in Science) national conference. Another such student, currently in graduate school at a major research university, speaks for many in calling Beck "a professor, advisor, and mentor who is both skillful in mathematics and in the ways of life."

Since 2005 Beck has been codirector of the San Francisco Mathematics Circle, an integrated program for public school teachers and their students in grades 6–11. He has involved in the Circle both graduate students in his NSF-sponsored program and also undergraduates in a community service course organized for that purpose. His students collaborate with public school teachers to enrich their students' mathematics experiences. His work in the Circle thus benefits middle school students, high school students, mathematics graduate students, and middle school and high school mathematics teachers.

After studies at the University of Würzburg, the State University of New York (SUNY) Oneonta, and Temple University and postdoctoral positions at SUNY Binghamton, the Mathematical Sciences Research Institute (MSRI), and the Max Planck Institute in Bonn, Matthias Beck arrived at San Francisco State University, where he is currently an associate professor in the mathematics department. His research is situated at the intersection of combinatorics, geometry, and number theory; he is particularly fond of counting integer points in polyhedra and the application of these enumeration functions to various combinatorial and number-theoretic topics and problems. His two books, *Computing the Continuous Discretely* (with Sinai Robins) and *The Art of Proof* (with Ross Geoghegan), hint at the fact that he enjoys mixing research and teaching activities; another sign of the same fact is his track record of mentoring numerous research students and postdocs at the Mathematical Sciences Research Institute–Undergraduate Program (MSRI-UP), San Francisco State, and the University of California Berkeley.

Margaret Robinson is a dedicated professor with a deep passion for mathematics and an incredible understanding of people. She is praised for

her energy, joyful and generous spirit, creativity, imagination, patience, and ability to inspire. Her students appreciate her hands-on, animated teaching style and her ability to bring the inquisitive nature of mathematics to life. Her colleagues admire the way in which she is able to inspire students to do "Herculean amounts of work" in order to meet the high standards she sets for her classes. She pushes students to move beyond their comfort zone while providing a supportive and encouraging learning environment. She has a special gift for transforming students into mathematicians. Exhibiting incredible flexibility, Robinson brings her passion for mathematics into every one of her courses—courses that span the introductory and upper levels, as well as the pure, applied, and interdisciplinary. In her twenty-five years at Mount Holyoke, she has taught well over eighteen different courses, including an interdisciplinary introductory course entitled Unity of Science, an intermediate course (developed with a biologist and a physicist) entitled Making Sense of Biological Signals, Introductory Statistics, Design of Experiments and Analysis of Variance, Differential Equations, History of Mathematics, Real Analysis, Complex Analysis, Abstract Algebra, Algebraic Geometry, and Elliptic Curves. Most notably, Robinson's success shines in a course entitled Laboratories in Mathematical Experimentation, a course in which students learn to make conjectures and write their first proofs. Robinson empowers her students to explore and to create their own mathematical ideas while treating her students as less-experienced equals. Her success in guiding majors into mathematical research is extraordinary, and she has shared this success with over thirty-five other undergraduates from across the nation who have participated in the seven Research Experiences for Undergraduate (REU) programs in number theory she has conducted over the past two decades. In 2010 Robinson's success was recognized with the Mount Holyoke College Teaching Award.

Robinson has also had a profound impact on numerous young women nationwide who have been fortunate enough to participate in short courses she has taught through the Summer Math Program (SMP) at Carleton College and the Summer Program for Women and Mathematics at the Institute for Advanced Study (IAS). In 2009 and again in 2011 she taught an intensive four-week course in p-adic analysis for the SMP, and in 2006 she taught a course exploring zeta functions for the IAS program. These young women cite admiration for Robinson's talents and appreciation for the role model she has become for them.

Margaret Robinson received her B.A. from Bowdoin College in 1979 and her Ph.D. from Johns Hopkins University in 1986. Before coming to Mount Holyoke College, she taught for one year at Hampshire College. Her research interests are in number theory, especially p-adic analysis and local zeta functions. She conducted her first summer REU program during the summer of 1992, and in 1997 her department jointly coauthored the book *Laboratories in Mathematical Experimentation: A Bridge to Higher Mathematics* using materials from the course that had already become central to the Mount Holyoke mathematics major. Her experiences working with REU students and teaching the laboratory class have been central to her growth as a teacher of mathematics.

Francis Su is an outstanding teacher who inspires students to discover and explore the fun and excitement of mathematics. In a memorable 2006 James R. C. Leitzel Lecture that served as the basis for a 2010 *American Mathematical Monthly* article, Su describes how he tries to turn students into discoverers, teachers into coadventurers. He accomplishes this laudable goal not only with his own students at Harvey Mudd College but also with middle school students that he regularly visits, with students around the world who read his fun facts and watch his videos on the Internet, and with fellow teachers who read his articles and attend his presentations and workshops. Su teaches a wide repertoire of courses at Harvey Mudd College. Students at all levels praise his enthusiasm and clarity, while colleagues effuse that he maintains very high standards. He has instituted a highly successful program of undergraduate student research that has produced twelve peer-reviewed papers with undergraduate coauthors, with several more in progress. More impressive than the research findings of these projects is the impact that the research experiences have had on students, the vast majority of whom have continued their study of mathematics and credit Su with kindling their love of mathematics and their ability to think mathematically. Su has also been involved with curricular reform at Harvey Mudd College, developing innovative courses for both math majors and general education students. He has also overseen an explosion of interest in the Putnam Exam on his campus.

Outreach to middle school students is another passion and talent of Su's. He has developed and led discovery-based mathematical enrichment lessons for local middle school students and also for Math Path, a summer camp for children aged eleven to fourteen. Participants in these lessons have remarked that Su changed their conception of what mathematics is.

Su's impact has embraced the Internet as a vehicle through which to reach larger groups of students. He developed a habit of starting each of his classes with a mathematical "fun fact" that captured students' interest, and he has produced a website that allows students and teachers around the world to learn about these fun facts. This website receives about one million visits per year.

Moreover, he has recorded videos of real analysis lectures that have become very popular online. Other avenues through which Su popularizes mathematics are his award-winning expository writing and extensive public speaking.

Su is the Benediktsson-Karwa Professor of Mathematics at Harvey Mudd College. He received his B.S. in mathematics from the University of Texas at Austin and his Ph.D. from Harvard University. His research is in geometric combinatorics and applications to the social sciences, and he has coauthored numerous papers with undergraduates. He also has a passion for teaching and popularizing mathematics. From the MAA he received the 2001 Merten M. Hasse Prize for expository writing and the 2004 Henry L. Alder Award for distinguished teaching. He authors the popular "Math Fun Facts" website and iPhone app. His hobbies include songwriting, gardening, and photography, and he is active in multiple ministries of his church. Just like mathematics, these are modes of creative expression that divinely blend structure and freedom, truth and beauty, reflection and action.

Certificates for Meritorious Service

Each year the MAA presents Certificates of Meritorious Service for service at the national level or for service to a section of the MAA. Those honored in 2013 are: JON L. JOHNSON (Elmhurst College), Illinois Section; DAN CURTIN (Northern Kentucky University), Kentucky Section; YUNGCHEN CHENG (Missouri State University), Missouri Section; JEAN BEE CHAN (Sonoma State University) and PETER STANEK (President, Global Alliance for Preserving the History of World War II in Asia), Golden Section; ROBERT ROGERS (State University of New York, Fredonia), Seaway Section; JONATHAN KANE (University of Wisconsin-Whitewater), Wisconsin Section.

—MAA announcement

AWM Awards Given in San Diego

The Association for Women in Mathematics (AWM) presented several awards at the Joint Mathematics Meetings in San Diego, California, in January 2013.

Schafer Prize

The Alice T. Schafer Prize for Excellence in Mathematics by an Undergraduate Woman was established in 1990. The prize is named in honor of Alice T. Schafer, one of the founders of AWM and one of its past presidents. Schafer passed away in September of 2009.

The 2013 Schafer Prize was presented to MURPHY KATE MONTEE of the University of Notre Dame. She is a senior mathematics major and a member of the Notre Dame Seminar for Undergraduate Mathematics Research Program. Montee has consistently excelled in mathematics classes at both the undergraduate and graduate levels and has received numerous merit scholarships rewarding her extraordinary ability and promise. She has participated in multiple undergraduate research projects at Notre Dame and in two summer NSF-REU programs. Her time at the Louisiana State University REU led to a coauthored paper on the recursive behavior of ribbon graph polynomials. The following summer Montee attended the SMALL program at Williams College, where she produced two papers. The first was a single-authored paper "with lots of clever geometric arguments," predicted to appear in a strong mathematics research journal. The second, "Knot projections with a single multi-crossing", is hailed by her advisor as "perhaps the best work I have ever done with students," containing results that will have a significant influence on future knot theory research.

Montee's mentors uniformly praise her motivation and "infectious" enthusiasm for the subject, calling her "one of the most mathematically mature students I have ever known" and "exceptionally gifted". Those who have worked with her expect that she will have many more "impressive results" and an "amazing career" ahead of her, in part because of her uncanny ability to get right at the heart of a problem.

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Louise Hay Award

Established in 1991, the Louise Hay Award for Contributions to Mathematics Education recognizes outstanding achievements in any area of mathematics education. Louise Hay was widely recognized for her contributions to mathematical logic and her devotion to students.

The 2013 award was presented to AMY COHEN of Rutgers University in recognition of her contributions to mathematics education throughout an outstanding forty-year career at Rutgers. Like Louise Hay, her career is remarkable for her achievements as a teacher, scholar, administrator, and human being. An elected fellow of the American