

MAA Prizes Awarded in San Francisco

At the Joint Mathematics Meetings in San Francisco in January 1995, the Mathematical Association of America (MAA) awarded a number of prizes.

Haimo Awards for Distinguished College or University Teaching

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. Deborah Tepper Haimo was President of the MAA (1991-1992).

The 1995 Haimo Awards were presented to: ROBERT L. DEVANEY of Boston University, LISA MANTINI of Oklahoma State University, and DAVID MOORE of Purdue University.

The citation for Professor Devaney said, "From the day he arrived at Boston University, Professor Devaney has received accolades from his students, both in large freshman classes and in upper division and graduate courses. He has the rare talent to present mathematics as an exciting, living and breathing subject..."

"Professor Devaney's area of research is chaos theory with over fifty research publications and five books in this field. Due to his extraordinary talent for exposition, he has been nicknamed 'Dr. Chaos'.

"He takes his responsibility to the broad mathematical community very seriously. He considers it a sacred mission to excite young people

about mathematics. He has written expository books aimed at high school audiences. He is almost continuously on the road visiting high schools, undergraduate colleges, and universities, telling them the chaos story... [He] has initiated a highly technological program in mathematics that reaches out directly to Boston center-city high school students. This program has been instrumental in rejuvenating interest in both the students and their teachers...

"Clearly, Professor Devaney's achievements make him an ideal candidate for the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. It is a great pleasure to be able to recognize his extraordinary teaching success in this way."

Robert L. Devaney is a graduate of Holy Cross College and the University of California, Berkeley, where he received his Ph.D. in 1973. After appointments at Northwestern and Tufts Universities, he joined the faculty of Boston University in 1980, where he served as chair of the department between 1983 and 1986. He has held visiting appointments at the University of California, Berkeley; Université de Paris-Sud; Max-Planck-Institut für Mathematik, Bonn; and the Mathematical Sciences Research Institute. Professor Devaney has written numerous articles and books, the most recent being *A first course in chaotic dynamical systems: Theory and experiment*, published by Addison-Wesley in 1992.

The citation for Professor Mantini said she "is committed to encouraging, engaging, challenging, and giving unselfishly of herself to her students. Through her many out-of-class mathe-

matics activities, she is a visible role model to all students. As a successful female, she recognizes the importance of having women as role models.

"While at Harvard, where she received her Ph.D., she was recognized for outstanding teaching by an appointment to the Danforth Center for Teaching and Learning....

"Since joining the Mathematics Department at Oklahoma State University in 1985, she has had a tremendous impact in the department as well as throughout the state. She has a most impressive record of successful research and educational accomplishments, ranging from publishing in Lie theory to directing her first student's Ph.D. thesis to organizing the Oklahoma State High School Mathematics Contest...

"Professor Mantini was awarded an NSF grant to conduct an REU program in the summer of 1993. She spent eight weeks working with four talented undergraduates on a very interesting and successful project in representation theory...

"Professor Mantini's accomplishments distinguish her as an exceptional teacher of mathematics. These accomplishments, together with her energy and ongoing commitment to contribute to the mathematical learning of all students, make her eminently qualified for the Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. It is a great pleasure to be able to honor her in this way."

Lisa Mantini received her undergraduate degree at the University of Pittsburgh and her A.M. and Ph.D. at Harvard University, where her advisor was Michèle Vergne of the Massachusetts Institute of Technology. After an appointment at Wellesley College, she joined the faculty of Oklahoma State in 1985, where she is currently associate professor of mathematics. She has had visiting appointments at the Georg-August-Universität in Göttingen, Princeton University, and the Institute for Advanced Study, where she is currently working, having earlier spent the 1989–1990 year there.

The citation for Professor Moore said: "[He] is both one of Purdue's best teachers and a widely recognized contributor to statistics education nationally and internationally. A review of his most recent video project describes him 'as one of the top two or three leaders in the world in statistics education.'

"Professor Moore was the content developer for the Annenberg/Corporation for Public Broadcasting college-level telecourse 'Against all odds: Inside statistics', a course of twenty-six half-hour programs. He was previously the content developer for the five statistics programs in the Annenberg/Corporation for Public Broadcast-

ing telecourse 'For all practical purposes: Introduction to contemporary mathematics', and has recently completed five hours of video modules, 'Statistics: Decisions through data', for use in teaching data analysis in schools with NSF support...

"In these projects Professor Moore has succeeded in presenting complex statistical ideas in exciting and understandable contexts. The video and print materials he authored have been used by hundreds of thousands of undergraduate students and have had a profound effect on the teaching of undergraduate mathematics...

"Through his writing and lecturing Professor Moore has elevated the art of teaching to new heights and has helped thousands of students to learn about the joys of statistics and mathematics. This clearly qualifies him superbly for a Deborah and Franklin Tepper Haimo Award for Distinguished College or University Teaching of Mathematics. It is a great pleasure to be able to confer this honor on him today."

David Moore received his A.B. from Princeton University and his Ph.D. from Cornell University, where he worked with J. Kiefer. From graduate school he went to Purdue University, where he has remained, becoming professor of statistics in 1977. For three years he served as assistant dean of the graduate school. Professor Moore is a Fellow of the American Statistical Association and of the Institute of Mathematical Statistics. He has served as associate editor of several journals in his field and has served on numerous committees and panels of scholarly societies and of the National Research Council and the National Science Foundation. The author of many journal articles, he has also written or coauthored six books, including the upcoming *The basic practice of statistics*, to be published by W. H. Freeman.

Chauvenet Prize

The Chauvenet Prize for expository writing, first awarded in 1925 to Gilbert Bliss of the University of Chicago, is given for an outstanding expository article on a mathematical topic by a member of the MAA. The prize is named for William Chauvenet, a professor of mathematics at the United States Naval Academy. It was established through a gift in 1925 from J. L. Coolidge, then MAA president.

The 1995 Chauvenet Prize was presented to DONALD G. SAARI of Northwestern University for his article *A visit to the Newtonian N-body problem via elementary complex variables*, Amer. Math. Monthly, 97 (1990), 105–119.

"The ancient problem of predicting planetary motions has led to large parts of today's mathematics," says the citation for the prize. "After

Kepler and Newton, planetary theory focused on a more general question: N mass particles are subject to mutual Newtonian attractions. What are their consequent motions? This paper surveys some major results about this problem, making illuminating use of complex-variable representations of motions.

“The visit begins with surprising observations on pre-Copernican, geocentric planetary theory and Ptolemy’s empirical descriptions of orbits using epicycles...

“The one-body or Newtonian central force problem, governed by the differential equation for the position $r(t)$ of a moving planet as a function of time relative to a fixed sun, already illustrates some of the difficulties of the N -body problem. In the one-body problem, the paths of solutions are conics, but the question addressed here is what happens at or near collisions of the planet and the sun? In particular, the power series for $r(t)$ will have a radius of convergence equal to the distance to the nearest singularity, namely, a collision point where $|r(t)|$ vanishes...

“Assuming that the motion takes place in a plane, we can write $r(t)$ as a complex-valued function $z(t)$. At near collision the curve $z(t)$ experiences a quick reversal of direction as the particle moves around the singularity. This suggests a transformation of z that converts a reversal of direction at zero to a straight continuation. The map $z = w^2$ does this. Sundman added a special transformation of the independent variable. The net effect yielded a new governing equation: that of a linear harmonic oscillator. The eigenvalues of this new problem are purely imaginary; hence, slightly perturbed equations have solutions near those of the unperturbed equations...

“E. Stiefel suggested that the transformation to the equation of the linear harmonic oscillator must be recreated in a sufficiently high dimension. The visit continues with a sketch of P. Kustaanheimo’s achievement of this goal by using spinors and Sundman’s procedures to convert the problem to that of a linear harmonic oscillator in four-dimensional space. Happily all solutions lie in a common hyperplane, which allows solutions to be associated with those of three-dimensional problems. The visit concludes with a thoughtful description and evaluation of Sundman’s converging series solution to the three-body problem, which makes use of the ideas discussed above for continuing series past possible collisions...”

Donald Saari received his education at Michigan Technological University and Purdue University, where he earned his Ph.D. in 1967. After a one-year appointment at Yale University, he joined the faculty at Northwestern University, where he became professor of mathematics in

1974, serving as chair of the department between 1981 and 1984. In 1988 he became professor of economics as well. He has held visiting positions at the Eidgenössische Technische Hochschule in Zürich, the Federal University of Recife (Brazil), and the University of Paris, among others. In 1985 he received the Lester R. Ford Award of the MAA. He has been a Guggenheim Fellow and holds a D.Sc. *honoris causa* from Purdue. He has served as editor of *SIAM Journal of Mathematical Analysis* and is on the editorial boards of other journals. He has published over one hundred mathematical papers and in 1994 Springer-Verlag published his *Geometry of voting*.

Hu Award for Distinguished Service to Mathematics

The Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics is the most prestigious award made by the Association. This award, first given in 1990, is the successor to the Award for Distinguished Service to Mathematics, awarded since 1962, and is made possible by Dr. Hu and his wife, Yueh-Gin Gung. Dr. Hu is not a mathematician but a retired professor of geology at the University of Maryland. He has such strong feelings about the basic nature of mathematics and its importance in all human endeavors that he felt impelled to contribute generously to mathematics.

The 1995 Hu Award was presented to ANNELI LAX, professor emerita of New York University.

Written by Ivan Niven of the University of Oregon, the citation for the award said: “For thirty-three years, Anneli Lax has stood at the center of the MAA’s publications program. She has been the driving force behind the New Mathematical Library (NML), one of the MAA’s most distinguished and financially successful series, since its founding in 1961. Over the years, Dr. Lax has handled virtually every aspect of the NML, including acquisition, copyediting, mathematical editing, layout, cover design, and typesetting. She has succeeded in recruiting a number of first-class authors to write for the NML, starting in 1961 with Ivan Niven, W. W. Sawyer, Edwin Beckenbach, Richard Bellman, and Nicholas Kazarinoff... The quality of her mathematical taste and sense of the NML readership is revealed in the sensational reception that NML volumes have enjoyed... No other person in the history of the Association’s book publishing effort has played a larger role in developing and nurturing a book series. Some of her admirers have suggested that the NML be retitled as ANML, Anneli’s New Mathematical Library.

“If Dr. Lax had done nothing other than care for and feed the NML, she would fully deserve

this award. But she has done much more. She has served on several committees of the MAA, including the ad hoc Committee on Mathematical World (1975), the Panel on Remediation (1983–1986), and the Committee on the Award for Distinguished Service to Mathematics (1985–1987, chair in 1987).

“Professor Lax’s interest in the interplay between language and mathematics resulted in her pioneering in 1980 with the writer Erika Duncan a combined course of expository writing and mathematical thinking. The success of their course at NYU and support of the Ford Foundation motivated them to expand the new course idea into several high schools and junior high schools in New York City.

“Although Professor Lax has been teaching since the early forties, she modestly claims that it was 1982 before she discovered how to teach. Many others believe that she knew quite a lot about teaching prior to 1982. The many advisory boards that she serves on are abundant testimony to that fact.”

In response to receiving the award, Professor Lax said, “I am overwhelmed by the unexpected honor of receiving the Yueh-Gin Gung and Dr. Charles Y. Hu Award for Distinguished Service to Mathematics and wish to thank the committee members who nominated me, the MAA who administers this award, and the Hus who sponsor it, for this official recognition. I have the privilege of having known all but four of the thirty-three previous winners of this award and am delighted to be in their company...

“Since my retirement from NYU and for a number of years before that, I have been involved with some aspects of reforming mathematics instruction at all levels. As in the case of the NML, my concern has been access to mathematics, and my efforts have been directed to making sure that our schools do not deprive students of learning how to think for themselves by developing, among other skills, one of their natural talents: looking at the world mathematically. We have been guilty of ‘turning people off’ before we could even determine who is talented and in what ways; our instruction has often obscured the difference between manmade conventions served up as ‘rules’ and ‘facts’ on the one hand and logical necessities which our students could easily deduce from assumptions that we must clearly label lest they be mistaken for teachers’ whims. The primary motivation for such efforts is not to turn our students into technology fodder—in fact, I would argue that the main effect of technological advances has been a greater need for correct button pushing, not for deeper understanding of mathematics—but to help people think in all ways available, including the powerful mathematical ways. There

have been many promising experiments of implementing this agenda: those I have been trying to promote are attention to use of language in all learning, particularly learning mathematics, and developing the art of listening (and reading) so that we can apply this art to looking at our students’ emerging ideas as these are voiced in our classes and written in writing assignments we give. Doing mathematics consists in large part of constructing connections between concepts, topics, experiences, and applications. To have students examine one another’s mathematical strategies and ideas does a great deal for furthering precise use of language, observations, and the habit of reasoning. I have enjoyed working with teachers on some practical nuts and bolts of mathematics classes, and I wish the instructional reformers would resist unnecessary polarizations and appreciate a diverse, balanced diet of teaching strategies.

“Let us practice what we preach, read and write carefully, avoid trendy slogans, and go beyond mathematical correctness, syntactic correctness, and political correctness in serving our discipline in our individual ways.”

Certificates of Meritorious Service

The Certificates of Meritorious Service are presented by the MAA for service at the national level or for service to a section of the Association. The first such awards were made in 1984. At each January meeting of the MAA, honorees from roughly six sections are recognized.

At the Joint Mathematics Meetings in San Francisco in January 1995, Certificates of Meritorious Service were presented to: BARBARA BEECHLER (retired) of Pitzer College, Southern California Section; ROBERT ESLINGER of Hendrix College, Oklahoma-Arkansas Section; BARBARA T. FAIRES of Westminster College, Allegheny Mountain Section; THERESA C. MICHNOWICZ of Jersey City State College, New Jersey Section; HOWARD LEWIS PENN of the United States Naval Academy, Maryland-District of Columbia-Virginia Section; and DONALD W. ROBINSON of Brigham Young University, Intermountain Section.