2006 Award for Distinguished Public Service

The 2006 Award for Distinguished Public Service was presented at the 112th Annual Meeting of the AMS in San Antonio in January 2006.

The Award for Distinguished Public Service is presented every two years to a research mathematician who has made a distinguished contribution to the mathematics profession during the preceding five years. The purpose of the award is to encourage and recognize those individuals who contribute their time to public service activities in support of mathematics. The award carries a cash prize of US$4,000.

The Award for Distinguished Public Service is made by the AMS Council, acting on the recommendation of a selection committee. For the 2006 award, the members of the selection committee were: William J. Lewis, Carolyn R. Mahoney, Paul J. Sally Jr., William Y. Vélez (chair), and Margaret H. Wright.

Previous recipients of the award are: Kenneth M. Hoffman (1990), Harvey B. Keynes (1992), I. M. Singer (1993), D. J. Lewis (1995), Kenneth C. Millett (1998), Paul J. Sally Jr. (2000), Margaret H. Wright (2002), and Richard Tapia (2004).

The 2006 Award for Distinguished Public Service was presented to ROGER HOWE. The text that follows presents the selection committee's citation, a brief biographical sketch, and the recipient's response upon receiving the award.

Citation

The 2006 Award for Distinguished Public Service is presented to Professor Roger Howe. Dr. Howe, a member of the National Academy of Sciences, is the William R. Kenan Jr. Professor of Mathematics at

Roger Howe

Yale University. This award recognizes Dr. Howe for his multi-faceted contributions to mathematics and to mathematics education. Not only is Dr. Howe recognized for his mathematical research but he has also taken a leadership role in national initiatives focused on the teaching of mathematics and in the education of teachers. For several years he served as Chair of the American Mathematical Society's Committee on Education, and he was a member of the National Research Council's Mathematical Sciences Education Board. He served as chair of the American Mathematical Society's Consultative Committee involved in a revision of national mathematics standards in 1998. For many years he was on the board of directors of the Connecticut Academy for Education in Mathematics, Science and Technology. Moreover, he has served on several national panels and study committees that have resulted in influential publications, including the National Research Council's Mathematics Learning Study Committee (*Adding It Up*), the RAND Mathematics Study Panel (*Mathematical Proficiency for All Students: Toward a Strategic Research and Development Program in Mathematics Education*), and the Conference Board of the Mathematical Sciences steering committee (*The Mathematical Education of Teachers*). Dr. Howe is currently chair of the Mathematics Standards Study Group, a group of mathematicians who are analyzing the mathematics standards in each state.

Dr. Howe has worked diligently over the years to broaden and professionalize the involvement of a research mathematician in educational reform, to lead us towards the goal where involvement of mathematicians in education is viewed as a well-informed professional activity by mathematicians and educators alike.

Biographical Sketch

Roger Howe earned his Ph.D. in 1969 from the University of California at Berkeley, under the direction of Calvin C. Moore. He spent 1969 to 1974 at SUNY Stony Brook, and has been at Yale since 1974. His research has been mainly in the representation theory of groups and harmonic analysis, and its applications to the theory of automorphic forms, invariant theory, geometry, ergodic theory, partial differential equations, and mathematical physics. He is a member of the National Academy of Sciences, the American Academy of Arts and Sciences, and the Connecticut Academy of Science and Engineering. He has served as the editor of Research Announcements for the *Bulletin of the American Mathematical Society*, and as chair and member of the Committee on Education. He has also served on many non-AMS committees devoted to issues of mathematics education. He currently is visiting Stony Brook University in hopes of initiating a long-term project for improvement of K–12 mathematics teaching and curriculum in the United States.

Response

I thank the Society for this distinction. I am grateful in many ways and for many reasons.

I have been working on issues in mathematics education for ten to fifteen years. As the citation says, I have been on lots of committees! Mathematics education is an area with few proofs and even fewer theorems. Therefore, it is immensely encouraging to have one's efforts applauded in this official and striking way. At the same time, I am mindful that awards like this can never recognize all who may merit them. I know several colleagues whose work in education deserves commendation as much or more than mine, but I have been the lucky one this time.

I have become convinced that it is vital for the health of U.S. mathematics education that in the future more mathematicians contribute their time, knowledge, and insights to improve it. This cannot happen to the extent it needs to unless work on education no longer makes one a candidate for the Public Service Award! It must become a somewhat normal thing to do and consistent with maintaining a research program. My current projects aim at making this possible.

With Alan Tucker, I am working to design a project intended to inspect critical issues and topics in the mathematics curriculum from a high-level mathematical viewpoint. This project would involve mathematicians and mathematics educators working together to improve understanding of how these topics do and should play out in a productive curriculum. The results of this project would be a series of essays distilling our best current knowledge of these topics.

It took me several years of working on mathematics education before I began to feel I had a perspective which to some extent integrated educational and mathematical concerns in a sensible way. If all mathematicians who are to work in education require a comparable initiation period, the barriers to entry into educational work will always remain too high. I have been discussing how to construct a workshop which would enable interested mathematicians to learn, in a few weeks, much of which it took me and others of my generation of mathematicians-in-education years to absorb.

Finally, one of the most important publications in mathematics education in the last ten years was the book *Knowing and Teaching Elementary Mathematics*, by Liping Ma. I wrote a review of this book for the *Notices* in 1999, and I have continued to think about it since. This book presents responses of Chinese teachers of elementary mathematics to several questions about teaching important mathematics topics. I have become convinced that the level of understanding of teaching and curriculum revealed by their answers is something that is very much needed, but very rare, in the United States. I am currently working with the Mathematics for America foundation and Stony Brook University to initiate a project to develop and disseminate this kind of understanding. The thrust of the project would be to produce and work with teams of mathematics specialist teachers who know mathematics very well, and who teach all grades one to six. I feel that there should be many projects of this sort, and each such project would need a dedicated research mathematician at its core.