Memorial Resolution of the Faculty of the University of Wisconsin-Madison
On the Death of Professor Emeritus Richard Allen Askey

Richard Allen (Dick) Askey, who devoted his life's work to mathematics and math education, died on October 9, 2019 at the age of 86.

Dick was born on June 4, 1933 in St. Louis, Missouri. In 1955 he got a B.A. degree from Washington University in St. Louis, and in 1956 an M.A. from Harvard. He then pursued a doctorate at Princeton, and finished his course work in 1958. During 1958-1961 Dick was an Instructor back at Washington University, while completing his thesis. In 1961 he got a Ph.D. from Princeton; his advisor was Solomon Bochner. After a two year Instructorship at the University of Chicago, in 1963 Dick became an Assistant Professor in the Mathematics Department at the University of Wisconsin. In that department Dick spent the rest of his career, becoming Associate Professor (1965-1968), Professor (1968-1986), Gábor Szegő Professor (1986-1995), John Bascom Professor (1995-2003), and Professor Emeritus (2003-2019). Dick had 13 Ph.D. students.

Dick was a preeminent mathematician of his generation, as the following awards and distinctions suggest. Dick was a Guggenheim Fellow (1969-1970); invited speaker at the International Congress of Mathematicians (1983); Vice President of the American Mathematical Society or AMS (1986-1987); Honorary Fellow of the Indian Academy of Sciences (1988); Fellow of the American Academy of Arts and Sciences (1993); Member of the National Academy of Sciences (1999); Fellow of the Society for Industrial and Applied Mathematics (2009); and Fellow of the AMS (2012). Dick received an honorary doctorate from SASTRA University in Kumbakonam, India (2012), and a Distinguished Mathematics Educator Award from the Wisconsin Mathematics Council (2013). Dick won a Lifetime Achievement Award at the International Symposium on Orthogonal Polynomials, Special Functions and Applications in Hagenberg, Austria on July 24, 2019.

Dick's research interest was Special Functions; many of these are extensions of the functions on your scientific calculator. When asked “Why do research on special functions?” Dick noted that one studies special functions not for their own sake, but because they are useful. Roughly speaking, the special functions are the functions that have acquired a name after repeated use.

It took some courage for Dick to start his research career on the topic of special functions. During the period 1950-1970 it was widely believed that the existence of large, fast computing machines spelled the end for the use of special functions. The belief was wrong. Taking a broad view of the relations between special functions and the rest of mathematics and physics, Dick and a small group of like-minded researchers resurrected the field and attracted many young, talented, and ambitious mathematicians to the area.

Dick was an author or co-author for over 180 research articles; we mention two that had a profound influence. An inequality in his 1976 paper co-authored with George Gasper, was used by Louis de Branges to prove the Bieberbach conjecture in 1985. In a 1985 AMS Memoir, Dick and his former Ph.D. student James Wilson introduced the Askey-Wilson polynomials; these have become indispensable in Combinatorics, Probability, Representation Theory, and Mathematical Physics. The importance of these polynomials is suggested by the fact that the previously known families of hypergeometric or basic hypergeometric orthogonal polynomials,
some 43 families in total, are all special or limiting cases of the Askey-Wilson polynomials. The Askey-Wilson polynomials are viewed by many mathematicians as a sublime gift to their community.

Dick wrote two books, and he edited four more. His 1975 book *Orthogonal Polynomials and Special Functions* focused on the classical orthogonal polynomials, related positivity questions, and inequalities. His 1999 book *Special Functions*, co-authored with George Andrews and Ranjan Roy, has become the standard text on the subject.

The elegance of Dick's mathematical writing brings to mind the following quotation: “The supreme art of war is to subdue the enemy without fighting.”--Sun Tzu, *The Art of War*. Many of Dick's proofs have this quality.

Dick was passionate about the history of mathematics, and he emphasized this topic in his lecturing and writing. Dick helped to edit *A Century of Mathematics in America* (1989).

Dick never tired of bringing to the world's attention the genius of the mathematician Srinivasa Ramanujan (1887-1920). As part of this effort, in 1983 Dick commissioned the sculptor Paul Granlund to create a bronze bust of Ramanujan. Four copies were originally made, one of which is now in London at the headquarters of the Royal Society.

Dick was known for his generosity and kindness. He mentored several dozen younger researchers, offering career advice and posing open problems to work on.

Early in his career, Dick made a commitment to improving K-12 math education. He wrote several dozen articles on this subject; for instance “Good Intentions are Not Enough” (2005). Dick was an advocate for the Singapore Primary Math textbooks, and helped to create some of their Teacher Guides. Dick served on the AMS Education Committee (1998-2001) and the NRC sponsored U.S. National Committee on Mathematics (1999-2004). At the state level Dick consistently engaged in reviews and discussions concerning Wisconsin state standards, assessment documents, and professional resources. Dick's mathematical credentials and common sense made him an effective critic of various fads in school math education. Concerning his position, we will give him the last word:

Like a stool which needs three legs to be stable, mathematics education needs three components: good problems, with many of them being multi-step ones, a lot of technical skill, and then a broader view which contains the abstract nature of mathematics and proofs. One does not get all of these at once, but a good mathematics program has them as goals and makes incremental steps towards them at all levels.

Dick is survived by his wife of 61 years, Elizabeth Hill Askey; his son, James R. Zurlo (Kathryn Zurlo); daughter, Suzanne E. Askey (David Foss); his siblings, Ruth Gilmore, Carol Wisler, and Phil Askey; grandchildren Rebecca Zurlo, Ben Hinkel and Sarah Askey-Foss, and great-granddaughter Aisa Hinkel.

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