

# de Boor and Luce Receive National Medal of Science



**Carl R. de Boor**



**R. Duncan Luce**

On March 14, 2005, President George W. Bush presented the 2003 National Medals of Science in a White House ceremony. The medal is the nation's highest honor for researchers in science and engineering. The medals also recognize contributions to innovation, industry, or education.

Among those receiving the medals were two in the mathematical sciences. R. DUNCAN LUCE, the Distinguished Research Professor of Cognitive Science at the University of California, Irvine, was awarded the medal in behavioral and social sciences. CARL R. DE BOOR, professor emeritus, University of Wisconsin, Madison, received the medal in mathematics.

Duncan Luce has been world-renowned as a theoretical mathematician of behavior of the past fifty years. His theory of choice helped launch the field of behavioral economics and gave scientists a powerful tool for understanding how animal and human learning occurs. He sparked the development of gaming theory, which is now applied to diverse systems including improving the accuracy of predictions of stock market fluctuation. His mathematical tools also developed the scientific study of judgment and decision-making across disciplines. Luce's early work in demonstrating the laws governing behavior in humans and his development of measurement theory helped shape research in psychology, cognitive neuroscience, and sociology for more than three decades. It

formed part of the theoretical base on which computer modeling of behavior was developed.

Carl de Boor is a leading researcher in approximation theory and its practical numerical implementation. A master of approximations by splines, an essential tool in computer-aided design and manufacture, computer graphics, and image processing, de Boor was one of the pioneers in numerical computing, attacking the challenging problem of producing practical algorithms that can be applied to real software. More than anyone else, de Boor is credited with the phenomenal success of spline functions—mathematical expressions that describe free-form curves and surfaces. De Boor was the first to understand their scientific potential and to put forward the novel theory that developed their important properties. Subsequently, he developed algorithms for the fast computation and visualization of spline functions. Much of his work has been applied to fields relying on precise geometrics, such as film special effects and the aircraft and automotive industries.

The National Medal of Science was established in 1959 as a presidential award to be given to individuals for their outstanding contributions to knowledge in the physical, biological, mathematical, or engineering sciences. In 1980, Congress expanded this recognition to include the social and behavioral sciences. The president appoints a committee of twelve scientists and engineers to evaluate nominees for the award. The medal has been given to over 400 distinguished scientists and engineers whose careers span decades of research and development, as well as support and outreach to students and society.

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