

Ezra S. Krendel, Wharton

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Ezra Krendel

Ezra Simon Krendel, professor emeritus of statistics and operations research at the Wharton School, died February 1. He was 92.

Mr. Krendel attended Townsend Harris High School and earned a BA in physics from Brooklyn College in 1945. He went on to earn multiple masters degrees—one in physics from MIT in 1947, and one in social relations from Harvard University in 1949.

He became an active participant in the development of the fields of human factors, ergonomics, engineering psychology and human engineering. His first job in 1949 was at the Franklin Institute Research Laboratories. These laboratories emerged in early 1942 in response to pressing requirements for military research and development facilities. Mr. Krendel's combination of graduate work in both physics and social relations provided the combination of skills needed for an Army project with both human engineering and systems engineering components underway at the laboratories.

He became heavily involved in a major Air Force study that had a purpose to develop useful engineering models to describe the way pilots flew aircraft. This project grew and became the basis for many of his major career contributions to the emerging discipline which was then called engineering psychology.

In 1959, he and Duane T. McRuer, president of Systems Technology, Inc., published an extensive joint research on pilot models in the *Journal of The Franklin Institute* and were recipients of the Louis E. Levy Gold Medal awarded when merited in a given year for the best contribution to the journal.

While working on or directing a large number of research projects for the Departments of Defense and of Transportation, Mr. Krendel made contributions to many other aspects of this emerging discipline, including visual search, electroencephalograms, communications, vehicle design and safety, human capability for physical work, training techniques and visual display design and evaluation.

Mr. Krendel began teaching at Wharton in 1966. He remained a professor until he retired in 1989. He was shortly given a secondary appointment in the Moore School of Electrical Engineering, soon to be incorporated into the School of Engineering and Applied Science (SEAS), and he taught both undergraduate and graduate courses in Human Factors Engineering.

While a professor at The Wharton School, he was the director of the Management Science Center, where he both contributed to and directed a variety of projects relating to productivity in a variety of industries. He also maintained a consulting practice in which he contributed to post office procedures, the measurement of the effects of alcohol on driving skills and behavior, criminal justice procedures, aviation safety, air traffic control procedures, the sources of human error and other human factors related problems.

In 1975 he became interested in Labor Management policies and was engaged by the National Office of Naval Research to examine the implications of the evolving unions in the uniformed services of Sweden, Norway, Austria, Holland and Germany and in the U.S. Armed Forces. This resulted in a book published by The University of Pennsylvania Press and in Mr. Krendel becoming an occasional arbitrator in labor management disputes on the panels of both the American Arbitration Association and the Federal Mediation and Conciliation Service.

He became professor emeritus in 1990, but for many years continued to teach systems engineering one semester a year in SEAS.

He received the rank of Fellow in The Institute of Electrical and Electronic Engineers; The Association for Psychological Science; The American Psychological Society; the Human Factors and Ergonomics Society; and the American Association for the Advancement of Science.

He is survived by his wife, Janet; children, Tamara, Jennifer and David; and grandchildren and great-grandchildren.

A memorial is planned for later this spring at the Swarthmore Friends Meeting, on the Swarthmore College campus.