Kuo King “KK” Wang

October 8, 1923 – October 7, 2022

Kuo King ‘KK’ Wang, Sibley College Professor Emeritus in the Sibley School of Mechanical and Aerospace Engineering, died October 7, 2022, in Ithaca, New York.

KK was born in Jiangsu Province, China on October 8, 1923. In the Chinese tradition, the age is counted at the beginning of the year rather than the end of the year. KK was born in Asia, and died on the evening of October 7, which was already October 8 in Asia, so we remember him as having reached his goal of starting his 100th year.

As his province was occupied by the Japanese when he graduated from high school, KK embarked on a month-long journey to travel to Chongqing, the wartime capital of China, to study at the National Central University (NCU). KK received his bachelor's degree from NCU in 1947, after the university returned to Nanjing by the end of World War II. After obtaining his degree, he went to work for what became the Taiwan Shipbuilding Company from 1948 to 1960, where he was managing the construction of supertanker projects in his late 20s and early 30s. Unhappy with the management of the shipbuilding company, KK emigrated to the U.S. together with his wife, Cindy. He came to the U.S. and pursued his M.S. and Ph.D. at the University of Wisconsin KK receiving the latter in 1968, but between the two degree programs worked in the industry and was heavily involved in developing the first generation of numerically controlled pipe-bending machines. This was a harbinger of the cutting-edge manufacturing research KK would conduct in the years that followed.

In 1970, KK joined Cornell as an associate professor without tenure to teach courses and conduct research related to manufacturing. He received tenure in 1974 and was promoted to full professor in 1977. KK devoted the remaining span of his career to Cornell as well, being named the Sibley College Professor in 1985 and Sibley College Professor Emeritus in 1993.

KK's early research at Cornell focused on manufacturing techniques for metals, including making seminal contributions to the development of friction welding. A fortuitous interaction with the CEO of Eastman Kodak provided KK with an appreciation of the challenges that Kodak faced in manufacturing high-throughput/high-quality plastic parts for their new cameras. KK envisioned the potential for science-based research in an area that had high commercial importance, and he quickly pivoted to the area for which he would become most well-known: injection molding of polymers. His goal was to place injection molding - then an empirical "rule of thumb" technique - on a firm scientific foundation. His efforts and impact in this area were wide-ranging, but generally were aimed at the development of an integrated, computer-aided system for mold design, mold making, and process control, starting from a basic knowledge of fluid mechanics, materials engineering, and computer technology. KK secured funding to launch a major research initiative devoted to science-based methods for manufacturing from the National Science Foundation.

A very successful outgrowth of his efforts was the establishment of the Cornell Injection Molding Program (CIMP) in 1974, which he continued to lead in his retirement. The CIMP Industrial Consortium, formed in 1979, was comprised of more than fifty major corporations worldwide and provided both financial support and a direct conduit of CIMP research to industrial application. CIMP was quoted as "one of the most successful of the pioneering research projects supported by the National Science Foundation to foster university–government–industry collaboration". In addition to many scientific, engineering, and industrial advancements, a spin-off from CIMP, C-MOLD, formally known as Advanced CAE Technology Inc., was one of Cornell's first start-up companies. Beyond the university-industry collaboration, CIMP was a model for conducting interdisciplinary research within a university to bring the combined expertise of fields like materials science, mechanical engineering and computer science to bear on technologically challenging topics. A new generation of manufacturing engineers were educated and trained through CIMP.

KK received numerous awards and accolades over his long career, most prominently perhaps being elected a member of the National Academy of Engineering (NAE) in 1989. His NAE election citation states, "For outstanding interdisciplinary research, teaching, and writing, contributing to a broad spectrum of processing technologies, benefiting the manufacturing industry worldwide". Beyond that he had received the Blackall Machine Tool and Gage Award from the American Society of Mechanical Engineers in 1968, the Adams Memorial Membership Award of the American Welding Society in 1976, and the first TRW Fellowship in manufacturing engineering in 1977. He was also a fellow of the American Society of Mechanical Engineers, the Society of Manufacturing Engineers, and the International Institution for Production Engineering Research.

As an educator, KK provided strong leadership in his home department of Mechanical and Aerospace Engineering (MAE). In the 1970's he was tasked with revising the department's curricular offering in manufacturing-related topics, and consequently introduced new courses devoted to the then-emerging area of integrating computational methods with manufacturing methods - an area that became known as 'computer-aided manufacturing'. He led efforts to grow

the MAE faculty, supporting staff and graduate student enrollments. He played a central role in the establishment of the Cornell Manufacturing and Productivity Program (COMEPP). His recognized successes in establishing educational and research programs that were valuable to industry provided guidance to his colleagues in their own efforts.

In recent years, KK was also a significant financial supporter of Cornell, having endowed the annual KK Wang Industry Day event in the College of Engineering, named one of the Upson Hall classrooms (Upson 222), and several other impactful contributions. KK also endowed the Kuo K. and Cindy F. Wang Professorship at the University of Wisconsin.

His longevity was attributed to his healthy lifestyle. He kept the habit of walking for at least one mile a day until only a few months before he passed. Kendal at Ithaca, where KK spent his last ten years, named a breakfast omelet after him.

KK is survived by his three children Gigi and husband Ray McGovern of Boston, Massachusetts, Victor and wife Amani of Austin, Texas, and Lillian and husband Joel Kornreich of Kuala Lumpur, Malaysia. He also leaves two grandchildren. KK's wife of 60 years, Cindy, passed away in 2016.

Written by Paul Richard Dawson and K. Max Zhang