

MILTON E. HARR

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MILTON E. HARR

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Elected in 1997

“For the development and dissemination of analyses of geotechnical engineering systems.”

BY PHILIPPE BOURDEAU AND
JEAN-LOU CHAMEAU

MILTON EDWARD HARR, our friend and former colleague at Purdue University, died in Sarasota, Florida, on Sept. 29, 2024. He was almost 99.

Born in Chelsea, Massachusetts, in 1925, Milton joined the U.S. military at age 17. He loved his country and maintained a patriotic fervor throughout his life. After D-Day in Normandy, he was home on leave and met Florence Salomon, with whom he fell in love. They became engaged within days, just before Milton was shipped overseas again.

He was severely wounded during the U.S. Marine divisions' landing on the island of Iwo Jima in February 1945. At 19, he woke up in a hospital in Hawaii, unable to see. He underwent multiple surgeries and a long recovery. After that ordeal, Milton and Florence married. The couple had three children and were together for 76 years, until Florence passed away in 2021.

After the war, Milton attended college and worked for the Massachusetts State Highway

Department and the U.S. Bureau of Reclamation. He earned a bachelor's degree in civil engineering from Northeastern University in 1949 and a master's degree from Rutgers University in 1955. He then worked with Jerry Leonards (NAE 1988) at Purdue University, receiving his Ph.D. in 1958. He was hired by Purdue and spent his entire academic career there, retiring as emeritus professor in 1999. While at Purdue, he and Leonards elevated the geotechnical program to national prominence.

Milton had a brilliant mind and insatiable curiosity, which led him to make important contributions across diverse areas of geotechnical engineering. He emphasized fundamental knowledge and its application to reliable mathematical and algorithmic tools. Though often viewed as a theoretician, he followed in the footsteps of his mentor, Leonards, and was highly active in consulting projects around the world. He participated in a wide variety of efforts, including airfield pavement design, copper mine stability, air raid shelters in Israel, pads for the Apollo lunar module, and stabilizing the foundation of the Tower of Pisa. He served as an advisor to major corporations, including Dow Chemical, Bougainville Copper, and Monsanto, as well as to federal agencies such as the U.S. Air Force, the National Aeronautics and Space Administration (NASA), Sandia National Laboratory, and the U.S. Army Corps of Engineers – for more than 40 years.

His theoretical work was guided by practical questions and needs he encountered through experience. He published and lectured extensively, but writing books was Milton's preferred mode of communication, as he believed it was the best way to have a lasting impact on the profession. His early books, *Groundwater and Seepage* (McGraw-Hill, 1962) and *Foundation of Theoretical Soil Mechanics* (McGraw-Hill, 1966), became classics in the

geotechnical literature. These works brought theoretical and mathematical depth to the field, building on the foundation Milton established in his Ph.D. thesis, “Warping Stresses and Deflections in Concrete Slabs.” Both books were highly successful and remain highlights of the early years of his career at Purdue.

Milton later became a pioneer in developing a framework for geotechnical and civil engineers to incorporate uncertainty and risk in the analyses, designs, and recommendations they provided to their clients. Probabilistic modeling of particulate media, reliability analysis, uncertainty modeling, and their application to engineering practice became a central passion. This work led to remarkable lectures, papers, and books—and sparked many long and lively discussions with colleagues over morning coffee at the Purdue Memorial Union. His two books, *Mechanics of Particulate Media: A Probabilistic Approach* (McGraw-Hill, 1977) and *Reliability-Based Design in Civil Engineering* (McGraw-Hill, 1987), reached a much broader audience within the civil engineering community and beyond.

While making his own contributions to groundwater flow, theoretical soil mechanics, probabilistic modeling of particulate media, and reliability analysis, Milton also introduced the geotechnical profession to important work by Eastern European scientists from the 1930s to 1960s. This included Pavlovsky’s studies on groundwater and Dubrova’s work on the redistribution of lateral earth pressure. He also popularized Rosenblueth’s point estimate method for representing probability distributions. In addition to his technical books, Milton also wrote short stories and a historical fiction novel, *The Great Affair*, in 2006.

Milton was elected to the U.S. National Academy of Engineering in 1997 for “the development and dissemination of analyses of geotechnical engineering systems.” He received many honors in the U.S. and abroad, including the Alexander von Humboldt U.S. Senior Scientist Award (1983), the Shaw Lecture (1984), the Bechtel Award (1983), and an honorary doctorate from the University of Brussels in 1987. Among the many distinguished lectures he delivered at universities and conferences around the world, the one most meaningful to him was likely the inaugural Gerald A. Leonards Lecturer at Purdue University. He and Leonards shared brilliant minds and often engaged in heated arguments and lengthy debates – discussions that were not only beneficial to their colleagues but to the profession as a whole.

He was a man of the world who loved to travel. France, especially Paris, was a beloved destination for him and Florence. In the 1960s, they spent a year living in Paris, where Florence attended the culinary school Le Cordon Bleu while Milton immersed himself in Parisian life. They were wonderful travel companions and warm, generous hosts at their home in West Lafayette. Florence’s cooking was exceptional, and while Milton’s taste in wine was not always perfect, his generosity, humor, and friendship more than made up for it.

Milton liked Yogi Berra – they were born the same year – and often quoted one of his sayings: “When you come to a fork in the road, take it.” With this facetious remark, Milton sought to convey that while we may not always know which path is best, we must embrace the one we take wholeheartedly. He did exactly that throughout his life – as a patriot, an engineer, an educator, a friend, and a family man.

He had a profound influence on colleagues, friends, the profession, and the many students who benefited not only from his teaching of science, but

also from his teaching of life. It has been a privilege to know such an extraordinary individual. Milton often said that after experiencing war, he viewed every moment as a bonus. A few years ago, he was awarded the Knighthood in the Legion of Honor – the highest French recognition for military service – alongside other U.S. veterans who took part in the liberation of France in 1944. We both believe this was among the most meaningful honors of his life.

To his family, friends, colleagues, and students – those fortunate enough to know him – Milton was a true luminary, a deep-hearted mentor, and a beloved human being. His memory will live on in the countless lives he touched, including ours, and in his lasting contributions to civil engineering.