Biography of C. Allin Cornell (1938-2007)

C. Allin Cornell was born in 1938 in Mobridge, South Dakota. He received his three academic degrees at Stanford; an A.B. degree (1960) in architecture, and an M.S. degree (1961) and Ph.D. degree (1964) in civil/structural engineering. His 1964 PhD dissertation, *Stochastic Process Models in Structural Engineering*, and his 1971 book, *Probability, Statistics, and Decision for Civil Engineers* (co-authored with Stanford Professor Jack Benjamin), laid the foundation for his pioneering work in modeling random environmental loads on structures and determining the structural response to those loads. His book remains a standard reference for students and researchers to this day.

After graduating, Allin served on the faculty at MIT from 1964 to 1983 before returning to Stanford as a research professor. At Stanford, he held a half-time research appointment while doing consulting work on a half-time basis. This arrangement allowed him to more easily facilitate the transfer of his research into practice, where it has seen widespread adoption due to his efforts.

Allin’s work was instrumental in bringing probabilistic methods into widespread use in structural engineering, seismology, and geophysics. His seminal paper, "Engineering Seismic Risk Analysis," published in 1968 in the Bulletin of the Seismological Society of America, is the foundation for modern Probabilistic Seismic Hazard Analysis. This work was the basis for the first seismic hazard map based on probability theory, published by the US Geological Survey in 1976. Today, his ideas form the basis by which regulatory documents and building codes quantify structural loads due to earthquake shaking.

Allin was also instrumental in promoting the use of probabilistic methods for developing and calibrating building codes, and a notable early contribution is his paper “A Probability-Based Structural Code,” published in 1969 in the ACI Journal. His continued work in this area was instrumental in the development and implementation of probabilistic Load and Resistance Factor Design. He also made important fundamental advances in the reliability assessment of offshore structures and nuclear facilities.

Allin also had an important but less quantifiable impact through his advocacy of probability as a decision-making tool. At the beginning of his career, engineers and especially earth scientists resisted quantifying their lack of knowledge, preferring to continue studying a problem until their knowledge and models improved. Allin instead advocated the use of Bayesian decision theory to quantify epistemic uncertainty and make optimal decisions in the face of this uncertainty. Thanks to Allin’s dedication, clarity of communication, and continued demonstration of this approach’s benefits (beginning with a section in his 1971 book), this perspective has become widely adopted in the fields of building code calibration, seismic hazard mapping, and recent performance-based engineering guidelines.

Allin’s pioneering work has been recognized through many awards and honors. In 1981 he was elected to the National Academy of Engineering at the age of 43. The Earthquake
Engineering Research Institute has honored him as the 1999 EERI Distinguished Lecturer and has awarded him the Institute’s highest honor, the Housner Medal, in 2003. The Seismological Society of America has given him its most prestigious award, the Harry Fielding Reid Medal, in 2001, and the American Society of Civil Engineers has awarded him the Huber Research Prize in 1971, the Moisseiff Award in 1977, the Norman Medal in 1983, and the Freudenthal Medal in 1988. He was the inaugural recipient of the International Civil Engineering Risk and Reliability Association’s CERRA Award in 1987. He is one of only a few engineers to be elected as a Fellow of the American Geophysical Union in 2002.

These many honors from the diverse fields of engineering, earth science, and structural reliability indicate the depth and breadth of his contributions. Despite this long list of awards, it might be argued that his contributions to the development and application of structural reliability methods are in fact immeasurable.