



## **Arthur H. Nilson**

August 27, 1926 – February 26, 2014

Arthur H. Nilson joined the Faculty of the School of Civil Engineering at Cornell in 1956, after six years of professional practice in Oregon, California, and Connecticut. He was a member of that faculty, in charge of undergraduate and graduate courses in the design of reinforced and prestressed concrete structures, until his retirement in 1991. He served as Chairman of the Department of Structural Engineering from 1978 to 1985.

Art came to Cornell as an enlistee in the naval officer-training program in the late stages of World War II. After completing two years of undergraduate work in an accelerated engineering program, he was discharged to continue in the NROTC program here, and later at Stanford University. After receiving his bachelor's degree from Stanford and commission in the Navy, he continued as a reserve officer, and served briefly on active duty. His early work in Oregon and California was of a general civil engineering nature, during which he was to sample several of the many aspects of that profession. Focusing then on structural engineering, he returned east and took employment with an architectural engineering firm in New Haven, Connecticut. After three years, in his own words, he decided to go back to school “to learn more about what he was supposed to know everything about,” and came to Cornell to study with George Winter, the distinguished head of the structural engineering group. He supported himself and his family teaching undergraduate practice-oriented courses, and discovered to his great surprise that he enjoyed teaching as well as the research associated with his master's degree program.

Art was offered an assistant professorship after completing his Cornell master's degree in 1956, a direct hire without a Ph.D., unusual even at that time. He became a key member of a department that George Winter (1907-1982) built into one of the nation's most distinguished structural engineering groups. Among other notable members were Richard Gallagher, Peter

Gergely, William McGuire, Floyd Slate and Richard White (all of whom predeceased Art). In a memorial tribute to Bill McGuire, Art wrote in 2013:

I recall that early on, Bill and I were called in and sat down with George Winter. This was probably an intimidating event for both of us, because George was, to say the least, a dominant figure. After a brief discussion we agreed that Bill would do steel and I would do concrete, and our professional directions were set from that point on.

This group produced several influential textbooks, among which was *Design of Concrete Structures*, that was inherited from an earlier generation of Cornell civil engineering faculty – the first four editions (1923 to 1940) were authored by CE alumni and professors Leonard C. Urquhart '09 (1886-1960) and Charles E. O'Rourke '17 (1896-1947). Winter collaborated with Urquhart and O'Rourke on the 5<sup>th</sup> and 6<sup>th</sup> editions. Art co-authored the next three editions of the textbook with Professor Winter, and after George's passing carried on the work singly through two more editions, greatly increasing the coverage and rigor of the book. He then joined with two of his former Cornell students, David Darwin and Charles Dolan, as co-authors for subsequent editions (the 15<sup>th</sup> edition is scheduled for release in 2015). Nilson also authored the textbook *Design of Prestressed Concrete*. Both books became standard works, widely adopted in the U.S. and abroad and translated into several foreign languages, and still in print.

Art's clear and precise teaching style attracted and influenced students from his earliest days on the Cornell faculty. He was famous for his meticulous chalkboard work. Several graduates have reported that their entry into a career of structural engineering was significantly motivated by their exposure to his teaching and advising, and the course notes of his lectures served as a resource for a number of young faculty members as they began their own teaching careers.

After six years, with sabbatical support from Cornell and with generous fellowships from the Ford Foundation and the Danforth Foundation, Art was accepted at the University of California at Berkeley as a Ph.D. candidate. In one of his later years at Berkeley, he audited an advanced course in reinforced concrete structures, and it turned out that the book he had already co-authored was one of the required textbooks for the course. Art's doctoral thesis included one of the very first applications of the then-emerging finite element method to reinforced concrete members and structures. He completed his degree in 1967 when he was 40 years of age.

Art was the first in his family to attend college, and was always proud of "making it all the way on his own" as he did. His father, who was obliged for financial reasons to drop out of high school before completing 9th grade, and who worked his way up to a responsible position in the construction industry, never failed to address his letters to his son by "Dr. Nilson."

Art served on many professional committees of the American Concrete Institute (ACI) including the committees on building code, concrete slab construction, and structural deflections. He was a founding member and first chairman of the American Society of Civil Engineers (ASCE) Committee on Finite Element Analysis of Reinforced Concrete Structures. His pioneering research on highperformance concrete has been widely recognized. He was awarded the ACI Wason Medal for materials research in 1974, the ACI Wason Medal for best technical paper in 1986 and 1987, and the ACI Structural Research Award in 1993. He was elected to the grade of

Fellow in ACI as well as ASCE, and was made Honorary Member of ACI, the Institute's highest award, in 2005.

Art held research appointments or lectureships at the University of Manchester and Salford University in England, and Technical University of Milan in Italy. He held registration as a professional engineer in several states.

Art for many years had a strong interest in residential architecture. He designed and had built four residences in NY State, Maine, and Massachusetts, the first of which was selected for publication in a national home magazine. His architectural tastes ran toward what he described as "conservative contemporary" and all featured studio ceilings, extensive use of glass, exposed beams and wide balconies.

After his retirement from Cornell in 1991 Art and his wife Linda moved to Maine, where they built a home on the coast. After 8 years and a few notably severe winters, they decided to relocate to Massachusetts and moved to Cape Cod, where they were able to settle in a uniquely attractive community, again near the water. Art reconstructed and expanded a house built ten years earlier. Drawing on skills acquired over the years with his previous houses, he did all the interior finish carpentry, including cabinetwork, as well as clearing and landscaping.

For his entire lifetime, Art was an enthusiastic sailor. He spent his early years on Long Island, New York while owning a number of small sailboats. In Ithaca, he was a member of the Yacht Club and was successful in racing, but his real love was coastal cruising. He and his wife Linda met on the beach in Massachusetts, and before long were sailing the New England coast together. They visited most of the best ports of call from Long Island Sound to Schoodic, Maine, sometimes living on board for a month or more at a time. He continued his interest in boating in his later years.

Art was deeply committed to music. In his teen years he played the saxophone and clarinet, and played professionally in a "swing" band in the 1940s. His interest in music continued in later life, but his listening trended more toward Beethoven than Benny Goodman, although he had a large collection of music of the 30s and 40s. With Linda's encouragement, for a brief period, he resumed play with his clarinet, and enjoyed playing Bach duets with a faculty friend. When very young he became interested in photography, working first with a simple box camera, then through a succession of 35 mm film cameras and digital cameras to photograph subjects of interest as he travelled in the US and abroad.

Art is survived by his wife, Linda, four children by his previous wife, Lee, including a son Russell and three daughters: Sheryl Sedgwick, Carol Hansen, and Kim Kabbes, as well as four grandchildren: Chris and Caroline Sedgwick, Storm Nilson, and Eve D'Vincent.

*This memorial is largely based on a draft that Art, in his characteristically methodical fashion, produced himself in the months before his death.*

*John F. Abel, Chair; David Darwin; Kenneth C. Hover; Arnim H. Meyburg*