



*Arthur G. Hansen*

## ARTHUR G. HANSEN

1925–2010

Elected 1976

*“For pioneering work in flow phenomena in turbomachine blade row and ducts and contributions to engineering education.”*

BY WARD O. WINER

**A**RTHUR GENE HANSEN, university administrator, professor, and applied mathematician, died July 5, 2010, in Fort Myers, Florida, of complications from surgery at the age of 85.

Arthur Hansen was born in Sturgeon Bay, Wisconsin, on February 28, 1925. Both his parents were also born in Door County, Wisconsin. His maternal grandparents came from Norway and his paternal grandparents from Alsace-Lorraine. He had an older brother by six years. His mother died when Art was about 8. He was raised by his father who had an eighth-grade education and was a clerk in a hardware store in Sturgeon Bay. When the Depression hit in 1929, the family moved to Green Bay, Wisconsin, where Art’s father first worked in a paper mill and then owned a small grocery store, where as a young boy Art stocked shelves and delivered groceries. Art attributed his love of learning to his father who read to him every night. He attributed his lifelong interest in mathematics to a high school teacher, Ernestine Ruble, whose name he could still remember the month before he died. She challenged him with interesting mathematical problems. Growing up in Green Bay, Art loved fishing and the Green Bay Packers.

Art attended public schools, where he was on the track team and graduated as valedictorian of his high school class

in 1943. At that time he realized that he faced being drafted into the Army for World War II unless he found an alternative way to serve. One day while walking around Green Bay not sure what he was going to do, he came upon a Marine Corps recruiting office. He looked at the uniform in the picture and thought it was “neat” so he went in. The recruiting officer quickly signed him up to get an engineering degree and become a commissioned officer in the Marines. Art was sent off to a V12 program at a place he had never heard of—Purdue University—to study electrical engineering. The V12 program was an accelerated college degree program introduced by the U.S. Navy in 1943 to meet the need for college-educated commissioned officers in World War II. Participants took 17 credit hours per semester plus nine hours of physical training per week for three semesters every 12 months and finished the degree in two and a half years. One hundred thirty-one colleges and universities in the U.S. participated in the program. Approximately 60,000 young men completed the program and became commissioned officers in the Navy and Marine Corps.

Art received his bachelor’s degree in electrical engineering in 1946. By that time the war was over. He was assigned to the reserves and set free. Not knowing what to do, he decided to stay at Purdue, where he received a master’s degree in mathematics in 1948. He claimed he then “wandered into the Purdue Placement Office,” where he met a recruiter from the National Advisory Committee for Aeronautics who hired him to go to NACA’s Lewis Research Laboratory in Cleveland where Art launched his research career.

There, Hansen worked on the fluid dynamics of flow over wings and compressor blades by applying the math skills he had learned at Purdue. His work mostly centered on using similarity methods to reduce the order of differential equations, making them easier to solve. Art also used curvilinear coordinate frames along with similarity methods to solve for unusual flow patterns in three-dimensional fluid dynamics. Most of his work was analytical, but he was also involved in experimental studies of compressor flow to validate his analytical solutions. Midway in his 10 years at NACA he

decided to enroll in a Ph.D. program part time at Case Western Reserve University, where he studied under Gustav Kuerti and received his Ph.D. in applied mathematics in 1958. His thesis was on the use of similarity solution methods to solve the Navier-Stokes equations in curvilinear coordinates. Art's colleagues at NACA later described him as a typical closet researcher, sitting at his desk in the corner with a pad and pencil cranking out papers. He showed little interest in being a people person, which is ironic given the rest of Art's career. His colleagues were surprised when he finished his Ph.D. and decided to move to Cornell Aero Labs in Buffalo, New York, to manage a small new group in nucleonics.

Art stayed at Cornell Aero Labs for only about a year. In 1959 he moved to the University of Michigan to become a professor of mechanical engineering. There he was assigned to teach an undergraduate course and a graduate course in fluid dynamics, which was somewhat of a challenge since he was not a mechanical engineer and had never taken a fluid dynamics course at any level. Hansen was an excellent teacher—enthusiastic and open, and he knew the material well. He got to know his students individually and involved them in his classes. He was not happy with the textbook that was in use, so he decided to write one—*Fluid Mechanics* (Wiley and Son, 1967). It was a companion volume to Gordon Van Wylen's successful thermodynamics book in the Wiley Thermal Science Series. While at the University of Michigan he was chair of the mechanical engineering department from 1964 to 1966.

Most of Art's technical publications were from the period when he was with NACA. He had a few at Michigan that he coauthored with his doctoral students. In addition to the textbook mentioned above, he wrote *Similarity Analyses of Boundary Value Problems in Engineering* (Prentice-Hall, 1964), which is a very nice contribution. Art would occasionally joke about one publication he had as a result of a summer he spent at Whirlpool Research while on the faculty at the University of Michigan. Whirlpool was fostering relations with the mechanical engineering department and invited faculty members to come for the summer to work on any problem they

wished. Art decided to analyze and design a washing machine pump that could ingest small objects such as safety pins and paper clips. He presented the work at an American Society of Mechanical Engineers conference. It was published not as an archival publication but as a conference reprint. Much to his chagrin, Art had more requests for reprints of that paper than he did for all his more advanced papers put together.

Hansen left the University of Michigan to become dean of engineering at Georgia Tech in 1966. This assignment launched his successful career as a university administrator. With his open and positive personality, he was the right person in university administration for the difficult times on college campuses during the late 1960s and the decade of the 1970s. He shared with many of the student leaders a concern for contemporary social problems. In 1969 he became president of Georgia Tech, a position he held for only two years. He then accepted the call to be the first alumnus and eighth president of Purdue University.

His 11 years (1971–1982) as president of Purdue were highly successful for both Art Hansen and the university. Under his leadership, Purdue grew in size, stature, and breadth of academic offerings. He led the way to greater external fundraising and broadened the extracurricular activities available to the community. The Arthur G. Hansen Life Sciences Research Building on the Purdue University campus was an important tribute to his influence. In 1982, Art left Purdue to become chancellor of the Texas A&M System, a position he held for four years before retiring to become director of research for the Hudson Institute for two years. In September 2002, he returned to Purdue to donate \$1.8 million for the construction of a performing arts theater named after his wife, Nancy Tucker Hansen, who died the following year. At Purdue again, Art was considered the students' president and helped them advance numerous social and academic causes on campus.

A continuous thread throughout Hansen's career was his abiding interest in people and their desire to advance themselves. He made numerous decisions as an academic

administrator, and took personal actions, to help others. Early in his career he picketed a barber shop in suburban Cleveland because it would not integrate its customers. He spent six months on the faculty of the Tuskegee Institute in Alabama, during which time he took his family to witness the civil rights march from Selma to Montgomery, Alabama, as it crossed the Edmund Pettus Bridge in March 1965. Art helped establish the 3-2 programs (3 years liberal arts and 2 years engineering) between Georgia Tech and several historically black colleges. He supported establishment of the Black Cultural Center at Purdue and helped establish the National Society of Black Engineers. He chaired the National Research Council's Committee on Minorities in Engineering. Hansen also approved establishment of the Gay Rights Club at Purdue despite considerable opposition. While at Texas A&M he succeeded in increasing financial support for Prairie View A&M, a historically black college in the Texas A&M System, by threatening the governing board with a lawsuit if the board did not agree. Art Hansen was the right person at the right time to be a university leader.

Art served on several corporate boards—International Paper Company, Ball Corporation, Navistar International, and Cutler Hammer Corporation. He was a member of the board of directors of both the Corporation for Educational Technology and the Indiana Commission for Higher Education. In retirement he served as an educational consultant internationally. He also served as a councillor for the National Academy of Engineering (1978–1984).

Arthur Hansen's first wife, Margaret Kuehl Hansen, passed away in 1974, His second wife, Nancy Tucker Hansen, passed away in 2003. He is survived by his third wife, Marilyn White Hansen, of Fort Meyers, Florida; five children—sons Geoffrey (wife Angela) of San Francisco, James of Houston, and Paul (wife Dee Ann) of Saratoga, California; daughters Ruth Rachel (husband Michael) of Carmel, California, and Chris Glancy (husband Michael) of Fort Myers, Florida; as well as five grandchildren.