



Nate Newmark

NATHAN MORTIMORE NEWMARK

1910-1981

BY WILLIAM J. HALL

NATHAN M. NEWMARK, internationally known educator and engineer, died January 25, 1981, in Urbana, Illinois. Dr. Newmark was widely known for his research in structural engineering and structural dynamics at the University of Illinois at Urbana-Champaign and for his contributions to the design of earthquake-resistant structures, including the Latino Americana Tower in Mexico City, and most recently for his work on the design of the trans-Alaska pipeline.

Nathan M. Newmark was born in Plainfield, New Jersey, on September 22, 1910, to Abraham S. and Mollie (Nathanson) Newmark. After receiving his early education in North Carolina and New Jersey, he attended Rutgers University. There he accumulated a number of prizes as an undergraduate and graduated with High Honors and Special Honors in Civil Engineering in 1930, thereby giving evidence of his unusual skills and talents at a young age. He then enrolled as a graduate student at the University of Illinois in Urbana where he worked under the late Professors Hardy Cross, Harold M. Westergaard, and Frank E. Richart, and received his M.S. and Ph.D. degrees in 1932 and 1934, respectively.

Beginning in 1930 as a graduate research assistant, Nate Newmark held a succession of positions for over half a century at the University of Illinois. He was appointed Research Professor of Civil Engineering in 1943, skipping the intermediate rank of Associate Professor. Early in his career he contributed significantly to the fields of structural analysis and structural materials and received national

and international recognition for his work pertaining to highway bridges. His contributions in the area of structural dynamics, including consideration of impact, wave action, wind, blast, and earthquakes, influenced greatly structural and mechanical design throughout the world. In 1956 he was appointed Head of the Department of Civil Engineering, a position he held until 1973; he retired from his university position in 1976. Although the reputation of the department had been great almost since its founding, under Professor Newmark's leadership its stature rose to new heights.

From 1947 to 1957 he was Chairman of the Digital Computer Laboratory at the university; during this period he had a major hand in development of one of the first modern large-scale digital computers (ILLIAC II). This activity led to the university's eminent status in developing computer science in engineering. He served in many important leadership capacities in the university; he has the distinction of having held the longest appointment to date on the University Research Board, the organization that was in large part responsible for placing the university among the great research institutions of the world. Nate Newmark's vision and foresight played no small role in the success of this effort.

During World War II Dr. Newmark was a consultant to the National Defense Research Committee and to the Office of Scientific Research and Development. Part of his national service time was spent in the Pacific war zone. He was awarded the President's Certificate of Merit in 1948. In addition to serving on numerous Department of Defense boards and panels, he made major contributions to the development of the Minute Man missile system as well as the MX missile system currently under development.

Dr. Newmark played a major role in many of the most important technical activities of the American Society of Civil Engineers. He was one of the founding members of the Engineering Mechanics Division and was also a prime mover in the development of the computer application activities of the society. He has been granted almost every major award that can be bestowed by the American Society of Civil Engineers and the founder society groups. He was an honorary member of most of the many societies to which he belonged.

As a practicing engineer he was instrumental in developing the design criteria for many of the largest and most complex projects of the world. These include the earthquake design of the forty-three-story Latino Americana Tower in Mexico City, for which he was the earthquake consultant in the late 1940s and early 1950s. In 1957 the building was subjected to a strong earthquake and withstood it without damage. A plaque is mounted on that building attesting to his design accomplishment. He also was responsible for developing the seismic design criteria for many other large projects such as the Bay Area Rapid Transit System and the Trans-Alaska Oil Pipeline System, which is now the largest privately financed project in the history of the world. He held similar responsibility for the Alaska-Canada gas pipeline at the time of his death. He carried major responsibility over the seventeen years before his death for development of the earthquake design and review criteria for about seventy nuclear power plants as well as for proposed liquid natural gas facilities on the West Coast.

Dr. Newmark was elected a Fellow of the American Academy of Arts and Sciences in 1962, Founding Member of the National Academy of Engineering (NAE) in 1964, and member of the National Academy of Sciences (NAS) in 1966. Among his many NAE/NAS/NRC (National Research Council) activities were the following: NAE Council, 1964–1968; NAS/NAE Engineering Joint Board, 1966–1968; NAE Committee on Earthquake Engineering Research, 1965–1970; NAS/NAE Committee on Scientific and Technical Communication, 1966–1969; and NAE/NRC Committee on Natural Disasters, 1971–1977 (Member and Chairman).

In 1968 Dr. Newmark received the National Medal of Science from President Lyndon B. Johnson, and in 1969 he received the Washington Award—a joint award given annually by the major engineering societies of the United States. In 1979 Dr. Newmark was presented the John Fritz Medal, an all-engineering society award, and in 1980 he was awarded the sixteenth Gold Medal in the fifty-seven-year history of the Institution of Structural Engineers of Great Britain, the second American engineer to be so honored. Dr. Newmark received honorary degrees from his alma mater, Rutgers University, in 1955, from the University of Liege in 1957, from the

University of Notre Dame in 1969, and from the University of Illinois in 1978.

Dr. Newmark's publications include more than 200 papers, books, and chapters in books. He is the coauthor of the following books on earthquake engineering: *Design of Multi-Story Reinforced Concrete Buildings for Earthquake Motion*, with John A. Blume and Leo Corning (published by the Portland Cement Association, Chicago, 1961), and *Fundamentals of Earthquake Engineering*, with Emilio Rosenblueth (published by Prentice-Hall, Inc., Englewood Cliffs, New Jersey, 1971).

Nate Newmark carried his own university with him wherever he went, even into professional practice. Engineers, young and old, who came into contact with this man sensed the intellectual and educational challenge. His penetrating insight, his keen engineering judgment, and his genuine interest in people have been a constant source of inspiration to all who have had the privilege of working with him.

Dr. Newmark possessed an unusual ability to attract young people to the field of civil engineering, to inspire them with the confidence for undertaking new and varied tasks, and to guide but not direct their thinking. He insisted that as individuals they receive appropriate recognition for their accomplishments. His unceasing devotion to research, his noteworthy and continuing contributions to the betterment of structural design practice, and his leadership in engineering education, teaching, and professional activities have had a profound influence on civil engineering. It is no accident that there grew up around him one of the most active research centers in civil engineering in the country or that the alumni of this group have assumed broad leadership in education, industry, and government throughout the world.

On February 19, 1981, the Board of Trustees of the University of Illinois renamed the Civil Engineering Building as the Nathan M. Newmark Civil Engineering Laboratory in commemoration of Dr. Newmark's contributions to the university.

He is survived by his wife, Anne, and three children, Richard, Linda (Mrs. James Bylander), and Susan (Mrs. Paul Mayfield).