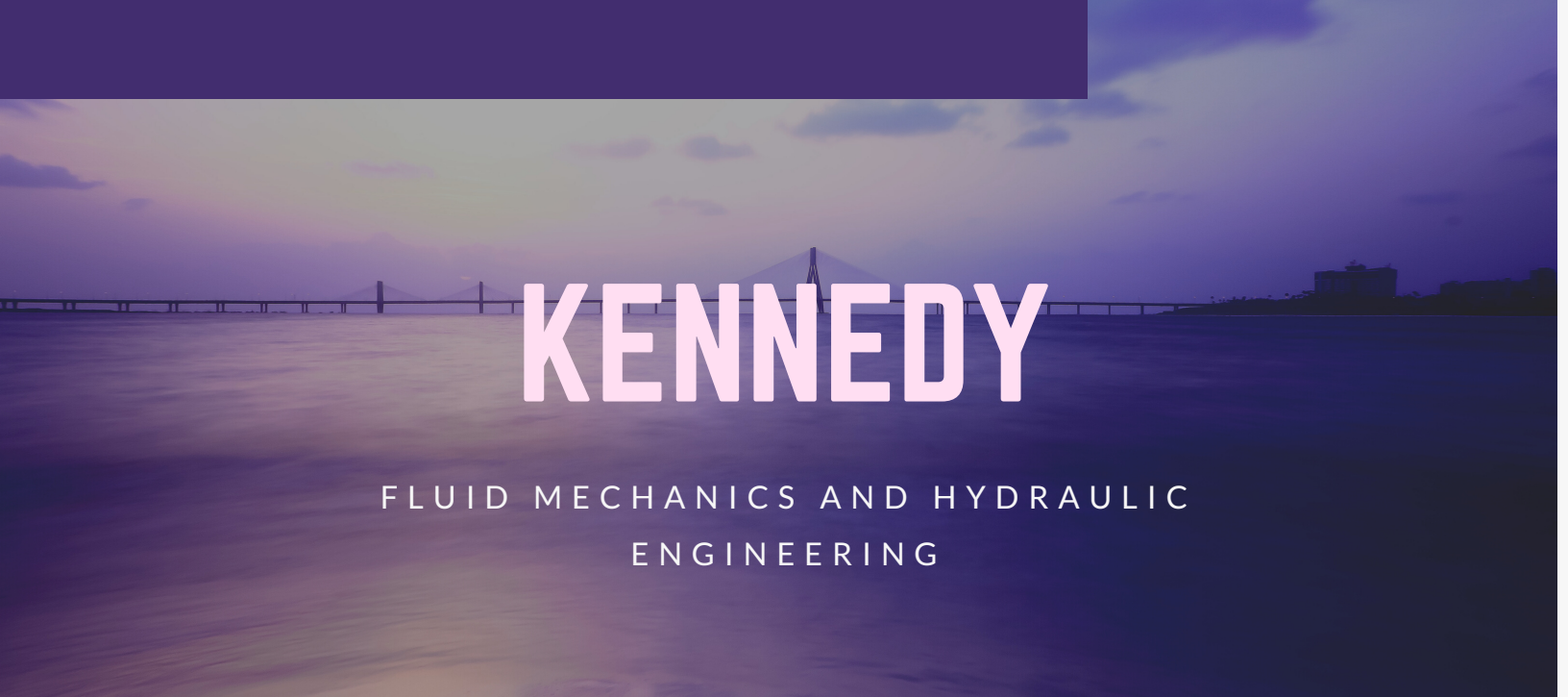




KENNEDY

FLUID MECHANICS AND HYDRAULIC ENGINEERING

LEADERSHIP IN WATER ENGINEERING

BY LINDA BIGGER

It's easy to talk about leaving a legacy, but much harder to do so. The legacy of John F. Kennedy (ND class of 1955, civil engineering) can be seen through the expansion of the field of hydraulic engineering.

More than 20 years after Kennedy's death, his colleagues, the graduate students he mentored, and others are still grateful for the way he shaped their lives and careers. He made a lasting impact on science, the body of knowledge, practical applications and the future of hydraulics engineering through his research, teaching, and leadership; in addition, his personality and character made the man and his teaching more memorable.

Sir Isaac Newton's comment that "if I have seen further it is by standing on the shoulders of giants" characterizes Kennedy's life and work. Kennedy was himself one of those giants and he was one who fully appreciated the work of those who preceded him.

John F. Kennedy began his academic career at Notre Dame in the fall of 1951 with assistance from a family friend. She recognized that he had intellectual abilities that could best be honed at ND's academically challenging environment, and wrote a letter that created the opportunity for him to attend

Having grown up on an Indian reservation in rural New Mexico, where his father supervised drilling of water wells for the Bureau of Indian Affairs, Kennedy had a deep and practical understanding of water's importance. At that time the department had about eight faculty members, only one of whom was distinctly focused on hydrology; nonetheless, under the influence of an inspirational mentor at ND, Kennedy's interest in water developed into a life-long career in hydrology.

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Notre Dame opened a world of opportunity for Kennedy, as he gained a rigorous educational foundation and leadership skills that he credited with helping to launch his career. Kennedy graduated at the top of his class but one of his ND professors, Steponas Kolupaila, did not want him to stop there. He believed that the field of hydraulic engineering would benefit from Kennedy's pursuit of an advanced degree and was instrumental in getting Kennedy into the graduate program at CalTech, one of the leading hydrological programs at the time.

At CalTech he worked with giants like Brooks and Vanoni, thanks to a wise mentor at ND who recognized Kennedy's potential and took action. Without the active support Kennedy received from ND faculty, he would not have pursued a career in academia and innumerable others then would not have had the benefit of his high standards and caring commitment to shape their careers.

The pattern was repeated through his master's and PhD work at CalTech and later as a young faculty member at MIT, as Kennedy's brilliance was noticed and fostered by some of the top hydraulics researchers in the world, including Arthur Ippen and Hunter Rouse.

His doctoral thesis, still considered to be a milestone, centered on alluvial bedforms and his theory of antidunes. Kennedy's section on bedforms in ASCE Manual 54 Sedimentation Engineering is still in use today. By the age of 39 he had been elected to the National Academy of Engineering, one of the youngest members ever, and he was the director of the renowned Iowa Institute of Hydraulic Research (IIHR). Kennedy's international stature grew through his leadership of IIHR, research in areas such as river sedimentation, alluvial channel research, river ice hydraulics, to name a few, and international consulting.

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Deeply committed to water engineering research, Kennedy served two terms as president of the International Association for Hydraulic Research (IAHR) where he fostered the participation of younger members. Today an annual IAHR Student Paper Competition honors his memory and his significant contributions to the field.

Kennedy's practical, entrepreneurial approach shaped his leadership as IIHR took on many high-profile projects that blended fundamental and applied research. Kennedy skillfully used these projects to develop his younger colleagues and graduate students, providing them with unparalleled opportunities for growth. Forrest Holly, a colleague of Kennedy's considers his most lasting influence to be "his love of bringing a high level of fluid mechanics and hydraulics knowledge, and the associated mathematics, to bear on real, practical problems."

Kennedy's wide ranging interests were not limited to the sciences and technology—he had a deep appreciation for history, music, literature and musicals. An unusually gifted, witty communicator, his conversations, lectures and papers were interwoven with quotes from or riffs on Cole Porter lyrics or Shakespeare, engaging the listener or reader as he blended his love of the humanities with his passion for engineering.

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Kennedy remained staunchly loyal to Notre Dame, and his career-long choice to invest in the lives of others reflects his development as a strong Catholic servant leader that began during his undergraduate years under the dome. The discipline is richer because Kennedy chose to pour into the lives and careers of those around him, passing along to others the blessings of opportunity that he received at ND.

As CEEES Department Chair, Joannes Westerink notes, Kennedy would be pleased to see the breadth and depth of the dynamic, world-class group of hydraulics and fluids faculty at ND today. Toward the end of his life, Kennedy focused on writing about some of the key individuals whose accomplishments had formed the basis of his work, such as Hunter Rouse, Hans Albert Einstein, and others, acknowledging the giants on whose shoulders he stood. Kennedy had a deep appreciation for the history of the discipline and wanted to share that with future generations, even as he joined the ranks of hydraulics pioneers. Through the insatiable curiosity and love of learning, recognized and nurtured at Notre Dame, that led him into teaching and research, innumerable others now benefit from the opportunity to build upon the foundations that Kennedy prepared.

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