



Ted V. Galambos

In step with the abounding vitality of the time, structural engineer **Fazlur Rahman Khan** (1929-1982) ushered in a renaissance in skyscraper construction during the second half of the 20th century. Fazlur Khan was a pragmatic visionary: the series of progressive ideas that he brought forth for efficient high-rise construction in the 1960s and '70s were validated in his own work, notably his efficient designs for Chicago's 100-story John Hancock Center and 110-story Sears Tower -- the tallest building in the United States since its completion in 1974. For more information on Fazlur R. Khan please visit: <http://www.fazlurkhan.com>



Fazlur Rahman Khan

Lehigh endowed a chair in structural engineering and architecture and has established this lecture series in Khan's honor. It is organized by **Professor Dan M. Frangopol**, the university's first holder of the Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture, and sponsored by the Departments of Civil & Environmental Engineering, and Art & Architecture.



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Spring 2012 Khan Distinguished Lecture Series

The Fazlur Rahman Khan Distinguished Lecture Series honors Dr. Fazlur Rahman Khan's legacy of excellence in structural engineering and architecture

Initiated and Organized by: DAN M. FRANGOPOL

Fazlur Rahman Khan Endowed Chair of Structural Engineering and Architecture
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Ted V. Galambos

Professor Emeritus, Structural Engineering, University of Minnesota, Minneapolis, MN

"The Safety of Bridges"

Friday, April 20th, 2012 – 4:10 pm

Location: Sinclair Lab Auditorium, Lehigh University, 7 Asa Drive, Bethlehem, PA
<http://www.lehigh.edu/frkseries>

Theodore (Ted) V. Galambos, Professor Emeritus, Structural Engineering, University of Minnesota, Minneapolis, MN: Theodore (Ted) V. Galambos is emeritus professor of structural engineering in the University of Minnesota in Minneapolis, MN. He received the BSCE and MSCE degrees from the University of North Dakota in Grand Forks in 1953 and 1954, respectively, and the Ph. D. in Civil Engineering from Lehigh University in Bethlehem, PA in 1959. He had an academic research and teaching career at Lehigh University (1959 – 1965), at Washington University in Saint Louis (1965 – 1981) and at the University of Minnesota. His research areas are: *the behavior and design of steel structures, the reliability of structures, structural design standards, and the stability of steel structures*. He is author of several technical books and of scores of published articles. He is an honorary member of the American Society of Civil Engineers, and a member of the National Academy of Engineering, the Structural Stability Research Council and the International Association of Bridge and Structural Engineering. He is a registered professional engineer in Minnesota, and Missouri. He holds honorary doctorates from the Technical University of Budapest, the University of North Dakota, and the University of Minnesota. He is one of the 2002 recipients of the ASCE OPAL Award.

The Safety of Bridges: The nation's interest in the safety of bridges was suddenly reignited by the catastrophic collapse of the I35W Bridge over the Mississippi River in Minneapolis on August 1, 2007. This presentation will focus on the general causes of bridge failures and on how they can be prevented. Most accidents happen during construction, but less frequently collapses also occurred after many years of service. The most terrible events are when a bridge after many years suddenly disintegrates. Examples of both construction and long service failures will be presented. Examples of construction failures to be considered are the Quebec Bridge in Canada and the Yarra River Crossing in Australia. The Firth of Tay Bridge in Scotland, the Point Pleasant Bridge over the Ohio River, and the Minneapolis Bridge disasters will illustrate events on bridges that were in service. Similarities and differences of these sudden failures will be discussed. Lessons learned and recommendations for preventive actions will then be presented. The main conclusion of the talk will be that the seeds of destruction were sowed already at the initial planning stages of design. Sudden and complete bridge failures are very rare events, fortunately, and the engineering profession has the means to make the probability of failure even smaller.

FAZLUR RAHMAN KHAN (1929 - 1982) One of the foremost structural engineers of the 20th century, Fazlur Khan epitomized both structural engineering achievement and creative collaborative effort between architect and engineer. Only when architectural design is grounded in structural realities, he believed — thus celebrating architecture's nature as a constructive art, rooted in the earth — can "the resulting aesthetics ... have a transcendental value and quality." His ideas for these sky-scraping towers offered more than economic construction and iconic architectural images; they gave people the opportunity to work and live "in the sky." Hancock Center residents thrive on the wide expanse of sky and lake before them, the stunning quiet in the heart of the city, and the intimacy with nature at such heights: the rising sun, the moon and stars, the migrating flocks of birds. Fazlur Khan was always clear about the purpose of architecture. His characteristic statement to an editor in 1971, having just been selected Construction's Man of the Year by *Engineering News-Record*, is commemorated in a plaque in Onterie Center (446 E. Ontario, Chicago): **"The technical man must not be lost in his own technology. He must be able to appreciate life; and life is art, drama, music, and most importantly, people."** For more information on Fazlur Rahman Khan please visit: <http://www.fazlurkhan.com>

Please contact the Khan Chair office at 610-758-6123 or Email: infrk@lehigh.edu with any questions.