

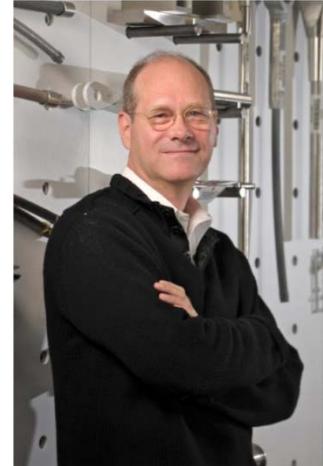
NORTHEASTERN UNIVERSITY
Department of Civil and Environmental Engineering
is pleased to host the
2013 AISC T. R. Higgins Lecture



**STRUCTURAL INNOVATION:
COMBINING CLASSIC THEORIES WITH NEW
TECHNOLOGIES**

Thursday, February 13, 2014
108 Snell Engineering Center
6:45 p.m.

William F. Baker, PE, SE, FASCE, FISTRUCTE, NAE
Structural Engineering Partner
Skidmore, Owings & Merrill LLP



Abstract: The deflection of a truss can actually be decreased by removing material! This amazing result can be achieved if one creates a geometry that has a shorter total load path. In the early stages of the design process, an engineer sets the geometry of the structure. The decisions made about the layout of the structure will determine the overall efficiency that can be achieved and the magnitude of the forces that must be accommodated. This paper presents concepts and methodologies for creating and understanding efficient geometries. It starts with a review of the 19th and 20th century load path theories of Rankine, Maxwell, Cremona and Michell. It then combines their insights with current topology optimization and shape-finding tools, as a means of exploring how engineers can create structural geometries that improve the behavior and reduce the tonnage of their designs. Several examples of classical theoretical solutions are explored along with their application to new designs.

Bio: William F. Baker is a Structural Engineering Partner at Skidmore, Owings & Merrill LLP (SOM). While known for his work on supertall buildings, such as the Burj Khalifa, his expertise extends to a wide variety of structures, including the long-span Virginia Beach Convention Center and lightweight structures such as the GM Entry Pavilion. Bill is a Fellow of both the American Society of Civil Engineers (ASCE) and the Institution of Structural Engineers (IStructE), and a member of the National Academy of Engineering (NAE). He has received the OPAL lifetime achievement award from the ASCE, the Gold Medal from the IStructE in the UK, and the Fritz Leonhardt Prize in Germany.

Co-Sponsors: Boston Association of Structural Engineers



Structural Engineers Association of Massachusetts



Thursday, February 13, 2014
6:45 p.m. – 7:45 p.m.
108 Snell Engineering Center
Northeastern University
360 Huntington Ave., Boston, MA

Reception preceding
6:00 p.m. – 6:45 p.m.
1st Floor Lobby
Snell Engineering Center



Event is free and open to the public. Parking: Renaissance Parking Garage, 835 Columbus Avenue