SHAPING STRUCTURES
ELEGANCE AND EFFICIENCY IN LONG-SPAN STRUCTURES
Ed Allen and Stephen Duff

In this hands-on workshop, you will learn the simple and powerful techniques that Maillart, Eiffel, Nervi, Calatrava, and others have employed to find the sleek, elegant, and statically correct forms of their expressive bridges and buildings. During the process of form-generation, you will simultaneously find the internal forces in each structure so that you can proportion its members. You will do all this without using numerical calculations, through graphical constructions that are easily learned and more fun than you can imagine. In the first hour, you will design your first structure, a concrete arch road bridge that spans more than 300 feet. You will then move on to find form and forces for a suspended roof structure, including determination of the optimum inclinations of the masts and backstays. You will also learn the graphical techniques to layout and analyze trusses, and to find the form of elegant constant-force trusses that are extremely efficient in their use of material. Additional structures will be considered in class as time permits. During the second day of the workshop, you will present a design for a long-span roof, using a structural type of your choosing: arches, cables, cable stays, fanlike compression structures, or trusses.

Instructors: Edward Allen & Stephen Duff
Times: Two Saturdays: April 5 & April 12, from 9:00 am to 4:00 pm. Room: LA 278
ARCH 408 CRN: 36262  ARCH 508 CRN: 36263  Credits: 1  Prerequisites: none
Materials: Bring a sharp pencil, drafting tape, a civil engineering scale (the kind used for drawing site maps, in decimal inches) and either a rolling ruler or two drafting triangles.