STRUCTURAL ART
From Robert Maillart to Fazlur Khan

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WORKSHOP ON
ADVANCING THE DISSEMINATION OF THE CREATIVE ART OF STRUCTURAL/CIVIL ENGINEERING
PRINCETON UNIVERSITY – JUNE 3-5 2015
Thin Shell Concrete Structures 1st Ed., 1965
Christian Menn
New Bridges

Félix Candela
New Architecture

Fazlur Khan
New Buildings
Christian Menn
New Bridges

Félix Candela
New Architecture

Fazlur Khan
New Buildings
Stauffacher Bridge 1899
Stauffacher Bridge 1899
Zuoz Bridge 1901
First Major Innovation
Zuoz Bridge 1901
Zuoz Bridge 1901
Tavanasa Bridge
1905
Tavanasa Bridge 1905

Tavanasa Bridge destroyed 1927
Tavanasa Bridge destroyed
1927
The Salginatobel Bridge

The 1930 structural form evolved from the 1901 Zuoz imitative form to the 1905 Tavanasa innovative form and finally to the Salginatobel inspired form.

August 1991
Isler’s Notes from Lardy’s Lectures
Isler’s Notes from Lardy’s Lectures
Crestawald Bridge,
1958
Christian Menn’s
IMITATION:
ROBERT MAILLART

- 1958 Crestawald (*deck-stiff. arch*)
- 1959 Letziwald (*Salginatobel*)
- 1959 Cröt (*deck stiff. arch*)
Christian Menn’s 
IMITATION: 
ROBERT MAILLART

• 1958 Crestawald (deck-stiff. arch)
• 1959 Letziwald (Salginatobel)
• 1959 Cröt (deck stiff. arch)

Cröt Bridge, 1959
Reichenau Bridge, 1963

**INNOVATION: REICHENAU BRIDGE**

- polygonal arch *(string diagram)*
- hollow box deck *(stiffening the arch)*
- prestressed deck *(widely spaced cross walls)*
INSPIRATION:
NEW FORMS IN PRESTRESSED CONCRETE

• 1969 Salvenei Bridge *(Mesocco Valley)*
• 1974 Felsenau Bridge *(Aare River)*
• 1980 Ganter Bridge *(Simplon Pass)*

Felsenau Bridge, 1974
Felsenau Bridge, 1974
Sunniberg Bridge, 1999
Sunniberg Bridge,
1999
Candela: Engineer, Builder, Structural Artist
Cosmic Rays Lab,
Mexico City
Umbrella shape by Aimond (1936)
Textile Factory,
Monterey, Mexico
Pneumatic Form
Hanging membrane
Sicli Building

Tennis Center
Heimberg
Exhibition 1980
Catalogue

Tennis Center
Heimberg
Uniform of the Swiss Structural Artist
3 Premium for height is largely due to wind loads.
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