



MIT MUSEUM PRESS RELEASE

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ARTISTRY OF SWISS ENGINEERING REVEALED IN EXHIBITION ON MOST INNOVATIVE STRUCTURAL DESIGNERS OF THE 20TH CENTURY

The Art of Structural Design: A Swiss Legacy

September 17 - December 30 at MIT Museum's Compton Gallery

Cambridge, MA (August 2004) — From Boston's new Leonard P. Zakim Bunker Hill Bridge to New York's George Washington and Verrazano Narrows bridges, some of the most acclaimed bridges in the United States are products of Swiss design. The MIT Museum, in collaboration with the Princeton University Art Museum and Consulate of Switzerland/SHARE Boston (Swiss House for Advanced Research and Education), celebrates the work of a group of highly influential Swiss engineers who are widely recognized as the most innovative structural designers of the 20th century in *The Art of Structural Design: A Swiss Legacy*, September 17 - December 30, 2004.

Swiss Legacy is the first exhibition to focus on the work of Robert Maillart (1872-1940), Othmar Ammann (1879-1965), Heinz Isler (born 1926), and Christian Menn (born 1927), as well as on the teachings of Wilhelm Ritter (1847-1906) and Pierre Lardy (1903-1958), the exemplary professors who educated them at the Federal Institute of Technology (ETH) in Zurich. Acclaimed by structural engineers, artists, and architects around the world, these designers revolutionized the engineering field—creating new forms that elegantly integrated technology and aesthetics—and thus set in motion the modern relationship between form and function.

"Rarely does a new art form emerge to challenge old ideas about artistic boundaries. This has happened in our present age, with the birth of the art of structural engineering," states David P. Billington, Gordon Y.S. Wu Professor of Engineering, who for the past 25 years

has conducted research on the ETH and is the organizing force behind the exhibition and the accompanying publication. "*Swiss Legacy* illustrates how this new art form is a powerful expression of our culture, and demonstrates why aesthetics is an essential part of the education of engineers."

"The MIT Museum is excited about presenting a comprehensive view of the Swiss engineering tradition and its preeminent structural engineers," notes Gary Van Zante, MIT Museum curator of architecture and design. "By examining their achievements as artists and the educational approach behind their practice, the exhibition encourages visitors to see and experience bridges as works of art."

Lectures Survey Past and Future of Swiss Engineering

The exhibition is complemented by a five-part lecture series that reflects on the tradition and future of the Swiss engineering. On September 17, Professor Billington opens the series, which features, ETH professors Otto Künzle and Peter Marti, and ETH-trained engineers Jürg Conzett and Santiago Calatrava. (See [below](#) for details.)

"The Consulate of Switzerland/SHARE is extremely pleased to co-sponsor this unique exhibition and lecture series at MIT," says Christoph von Arb, Consul General and Director, "because it exemplifies the very nature of our own work here in the Greater Boston area: connect people and promote innovation with a Swiss touch. The results can be as beautiful and functional as Boston's latest icon, the Leonard P. Zakim Bunker Hill Bridge by Christian Menn."

Focus on Acclaimed Projects

Through drawings, photographs, archival material, paintings, models, and an interactive stereoscopic photography display, and CD-ROM presentation, *Swiss Legacy* surveys the critical role of aesthetics in structural design. The exhibition spotlights some of the designers' most widely recognized and acclaimed projects:

- New York City's George Washington, Bayonne, Bronx-Whitestone, and Verrazano Narrows bridges by Othmar Ammann—designer of many of America's greatest long-span steel bridges
- Boston's new Leonard P. Zakim Bunker Hill Bridge, named the 2004 outstanding civil engineering achievement by the American Society of Civil Engineers, as well as the Ganter and Sunniberg bridges in Switzerland by Christian Menn—renowned for his exploration of the technical and aesthetic possibilities of pre-stressed concrete
- the Schwandbach, Salginatobel, and Vessy bridges in Switzerland by Robert Maillart —recognized for his innovative use of reinforced concrete to create radical new forms
- the graceful concrete shells of Heinz Isler—over 1,000 designed in the last 45 years, including Switzerland's Heimberg Tennis Center and Grötzingen Open Air Theater

Linking Aesthetics to Engineering

Swiss Legacy explores the educational philosophy of the ETH, with its focus on aesthetics, and how the school can serve as a model for invigorating American engineering education and the practice of structural engineering in the United States. "Engineers and especially academics often argue that aesthetics are not part of their profession," observes Billington. "If you want beauty, hire an architect or, more radically, a sculptor. One major objective of education in engineering should be to encourage students to see, accept, and begin to use an elemental sense of aesthetics."

"The fact that the 20th century's greatest structural engineers came from one school and were guided by two professors says very strongly that education makes a difference," states John Ochsendorf, assistant professor in the Building Technology Program at MIT's Department of Architecture, who helped organize the lecture series. "This exhibition takes an exceptional look at the education of these noted engineers. We learn what shaped them and how they approached design problems. For the MIT audience as well as the general audience these are valuable lessons."

The Art in Engineering

In the exhibition, Billington proposes that structural engineering at its best is a new art form, which has roots in the Industrial Revolution, when industrialized iron became a dominant building material for bridges and other structures. The era's new technologies required a radically re-conceptualized design approach that did not fit within the ancient canons of architecture. By the mid-19th century, many engineering schools had been founded and the modern engineering profession established.

The best 19th-century structural engineers came to see how industrialized iron, and then steel, could make possible unprecedented forms for bridges, towers, and vaults. In the 20th century, the Swiss adopted the design ideals of the 19th-century leaders and gave the world the century's greatest works of structural art.

Billington defines structural engineering as parallel to but independent of architecture in the same way that photography, the other new art form of the 19th century, is parallel to but independent of painting. "Structural engineers, as one specialty for a complex building," Billington notes, "are also like the soloists who perform a complex work on their own without other instruments or even a conductor. (The exhibit) focuses on the engineer as soloist who conceives a new form, visualizes its final appearance, defines it by calculations, and develops a means for building it."

Exhibition Catalog

A landmark contribution to structural engineering scholarship, the accompanying publication, *The Art of Structural Design: A Swiss Legacy* (2003) by Professor Billington, is the first comprehensive publication to review the work of the six featured engineers and the educational tradition from which they emerged. Billington has written extensively about each of the engineers featured in the exhibition. His books include *Robert Maillart:*

Builder, Designer, and Artist (1997) and *Robert Maillart's Bridges* (1979), which received the Dexter Prize from the Society of History and Technology. Featuring more than 200 illustrations, the book, hardcover at \$55 and softcover at \$35, may be purchased at the MIT Museum.

The Art of Structural Design: A Swiss Legacy and the accompanying lecture series are made possible by the Consulate of Switzerland/SHARE Boston (Swiss House for Advanced Research and Education); MIT Museum; Council for the Arts at MIT; Department of Civil, Environmental, and Geomatics Engineering ETH Zurich; Department of Architecture, MIT; Department of Civil and Environmental Engineering, MIT; and Princeton University Art Museum. The exhibition was organized by the Princeton University Art Museum and the Princeton University Department of Civil and Environmental Engineering.

The Art of Structural Design: A Swiss Legacy

September 17 - December 30

- MIT Museum's Compton Gallery
- 77 Massachusetts Avenue, Building 10, Room 150
- Gallery hours: Monday - Friday 9:00 - 5:00pm
- Gallery admission: Free
- Wheelchair accessible
- **Information: 617-253-4444; <http://mit.edu/museum/exhibitions/swisslegacy/>**

Suggested Listing

The Art of Structural Design: A Swiss Legacy celebrates the 20th century's most innovative structural designers, a group of Swiss engineers whose many acclaimed works include Boston's new Leonard P. Zakim Bunker Hill Bridge and New York's George Washington and Verrazano Narrows bridges. Through drawings, photographs, archival material, paintings, models, and an interactive stereoscopic photography display, the exhibition explores the critical role of aesthetics in structural design.

Exhibition Opening Programs and Events

Exhibition Opening

Friday, September 17, 2004, 6:00pm

- MIT, 77 Massachusetts Avenue

6:00pm: Opening Lecture

Introduction: President Charles M. Vest

Speaker: Prof. David P. Billington

Gordon Y.S. Wu Professor of Engineering, Princeton University

- Building 10, Room 250

7:15pm: Opening Reception - following the lecture

Hosted by Consul General of Switzerland, Christoph von Arb

- Bush Room, Building 10, Room 105, adjacent to the Compton Gallery

Related Programs

Lecture Series: The Art of Structural Design: A Swiss Legacy

September 17, 2004 - March 8, 2005

Location: MIT - Building 10, Room 250
77 Massachusetts Avenue - Cambridge, MA 02139

Lectures: September 17, 2004, 6:00pm - Opening Lecture
David P. Billington
"The Art of Structural Design: A Swiss Legacy"
Gordon Y.S. Wu Professor of Engineering,
Princeton University

October 14, 2004, 6:00pm
"Education in Building Structures for Architects"
Otto Künzle
Professor of Building Structures, ETH Zürich

October 28, 2004, 6:00pm
"Swiss Structural Engineering - Research and Practice"
Peter Marti
Professor of Structural Engineering, ETH Zürich

November 16, 2004, 6:30pm
"A Personal View on the Swiss Legacy"
Jürg Conzett
Conzett, Bonzini, Gartmann AG, Chur

March 8, 2005, 6:30pm
Title to be announced
Santiago Calatrava
Santiago Calatrava AG, Zürich

All lectures are presented at MIT

- **77 Massachusetts Avenue, Building 10, Room 250**
- **Admission: Free**
- **Wheelchair accessible**

Exhibition Catalog

David P. Billington, *The Art of Structural Design: A Swiss Legacy*, Princeton, NJ
(Princeton University Art Museum) 2003

Available in hardcover (\$55) and paperback (\$35) from the MIT Museum.