XIV: ‘Now’ Architecture

Digital Architecture

Recent Architecture which has a significant **digital** component in its design origins typically shows a focus towards:

--Surface patterning

--Folding form

--Biomorphic generation

Surface Patterning Architecture

NOX

Three Graces, Dubai, UAE

In Progress

Christian de Portzamparc

LVMH Tower, New York City 1996- 2000

Photo: (Jencks)

Gramazio & Kohler

Baustelle OhneGeruest, Germany 2010
Photo: archdaily

Toyo Ito

“Toyo Ito is known for creating extreme concept buildings, in which he seeks to fuse the physical and virtual worlds. He is a leading exponent of architecture that addresses issues of the contemporary 'simulated' city.”
DesignBoon Magazine

“…..creating new concepts for life in modern cities, searching for an architecture appropriate to our electronic, image-oriented consumer society. His Tower of Winds (1986) and Egg of Winds (1991) are interactive landmarks, whose design seeks to represent the invisible electronic world as a parallel to our physical environment.”
Artspace, Aukland

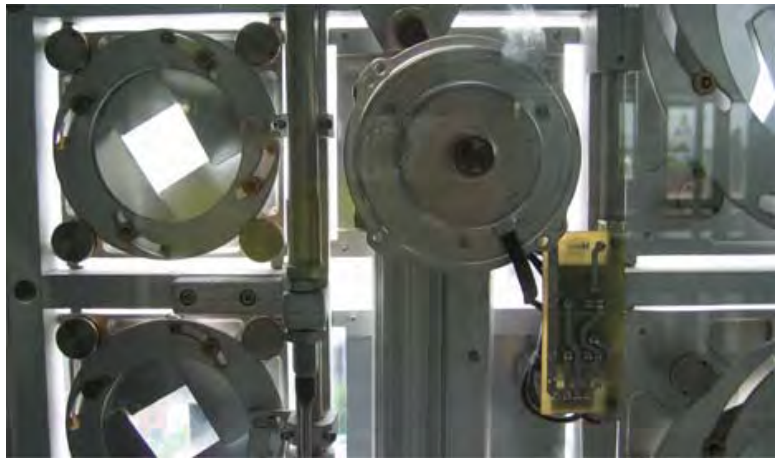
'tower of winds', yokohama-shi, kanagawa, 1986

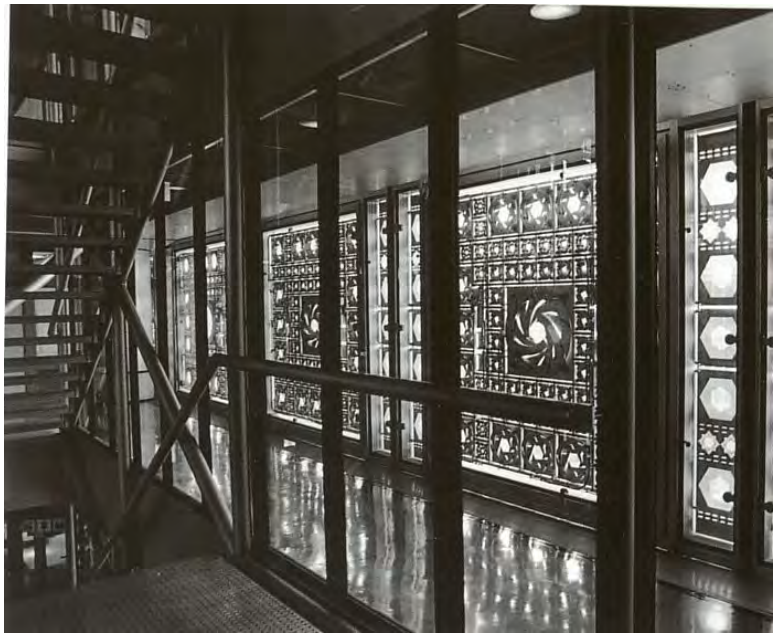
Jean Nouvel

Adaptive Facades

Although very “high tech” in appearance Jean Nouvel’s Arab Institute uses technology to promote energy conservation. The metal and glass exterior panels work like camera lenses in that they respond automatically to light meters built into each panel. As the sun moves along the façade of the building the “eyes” open and close, letting in light when it is needed, keeping out glare and heat during the summer.

(Unfortunately, the “lenses” no longer work, perhaps demonstrating that very hi-tech solutions to energy conservation is not the answer.)



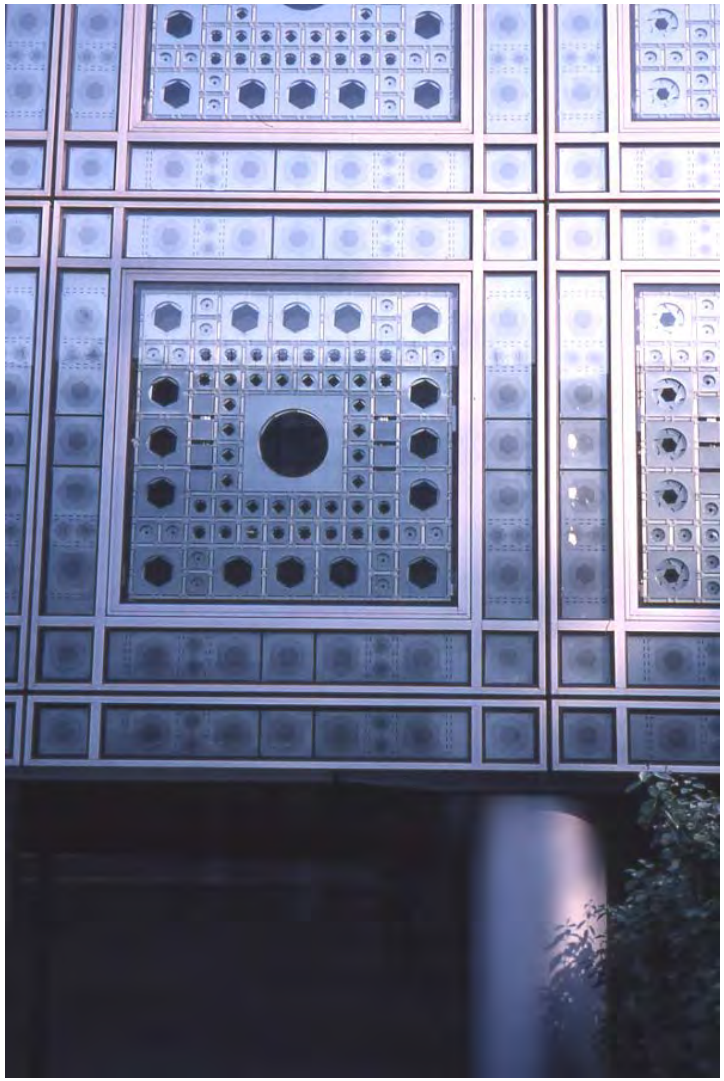


Arab World Institute, Paris, France 1991-87
Photo: Paul Warchol

Jean Nouvel

Arab World Institute, Paris, France 1991-87
Photo: internet and Paul Warchol

Jean Nouvel



Arab World Institute, Paris, France 1991-87
Photo: Paul Warchol

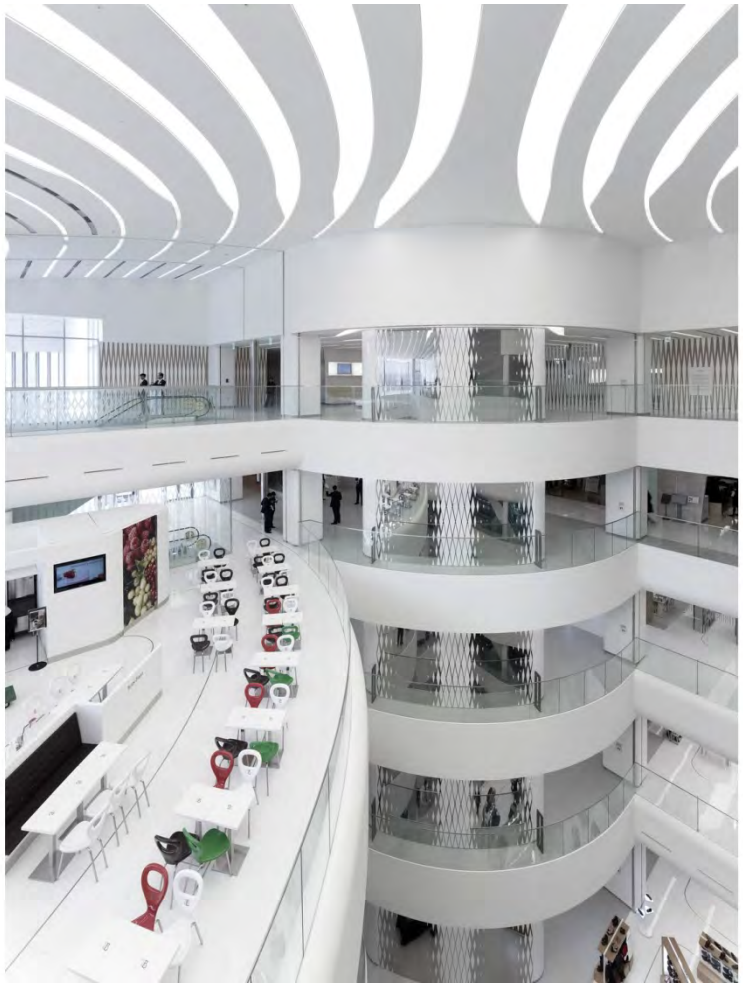
UN Studio

Ben Van Berkel + Caroline Bos

UN Studio

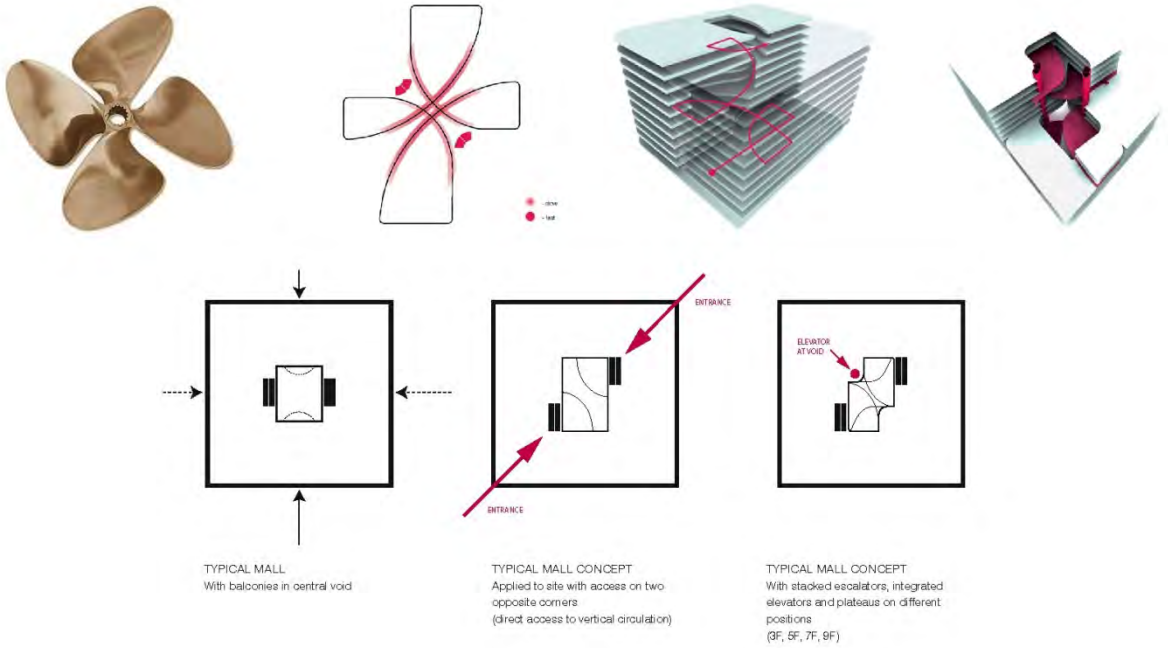
Galleria Department Store, Seoul, S. Korea, 2008-10

UN Studio



Galleria Department Store, Seoul, S. Korea, 2008-10

UN Studio

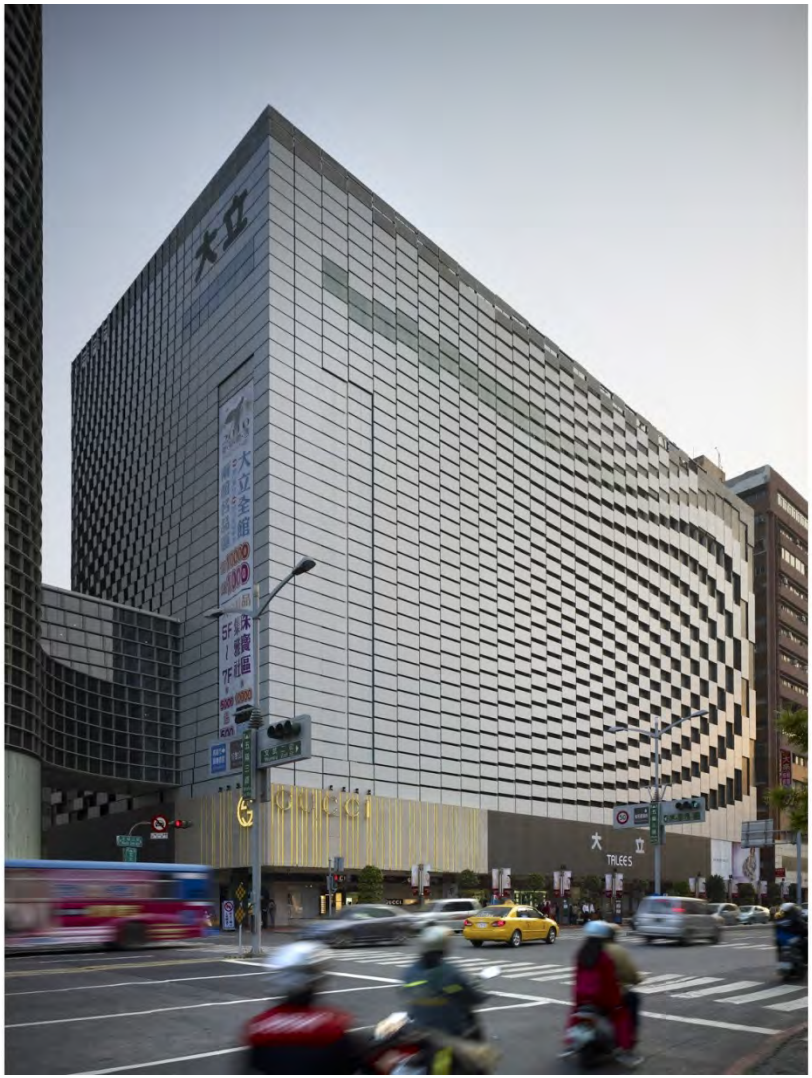


Galleria Department Store, Seoul, S. Korea, 2008-10

UN Studio

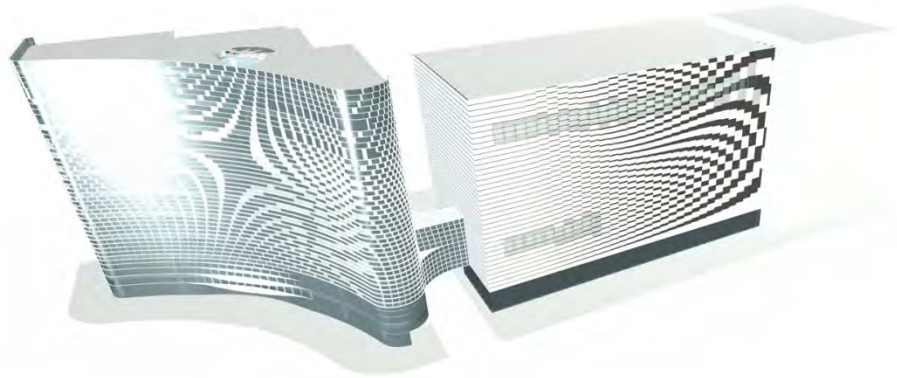
Talee Isetan, Taiwan, 2008-9

UN Studio



Talee Isetan, Taiwan, 2008-9

UN Studio



Talee Isetan, Taiwan, 2008-9 3D Model Showing Patterning

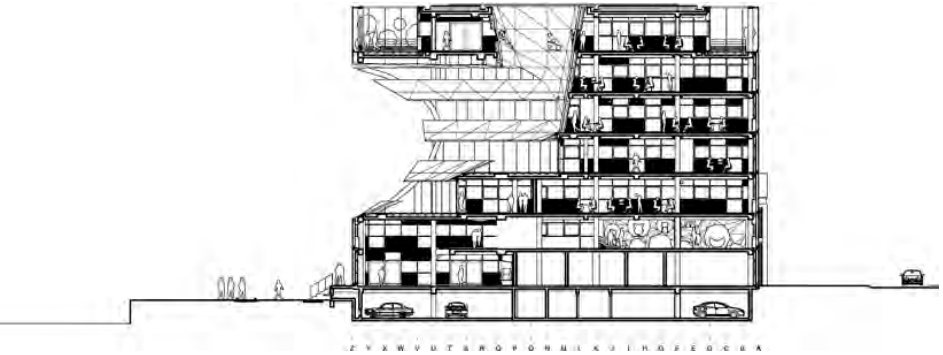
Jakob + MacFarlane

Orange Cube, Lyons, France, 2011

Jakob + MacFarlane

Orange Cube, Lyons, France, 2011

Jakob + MacFarlane

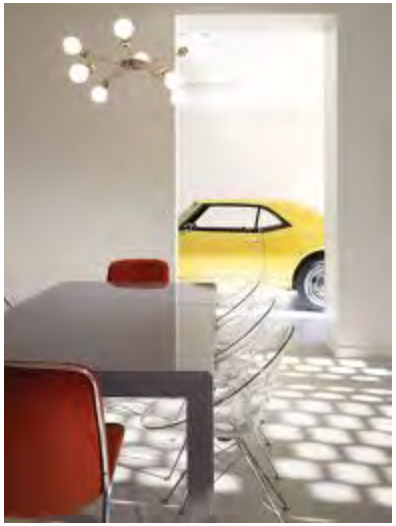


Orange Cube, Lyons, France, 2011

Studio Gang [Jeanne Gang]

Source: Internet

Studio Gang



Brick Weave House, Chicago, IL 2009

Studio Gang

Franklin Park Zoo Pavillion, Chicago, IL 2009

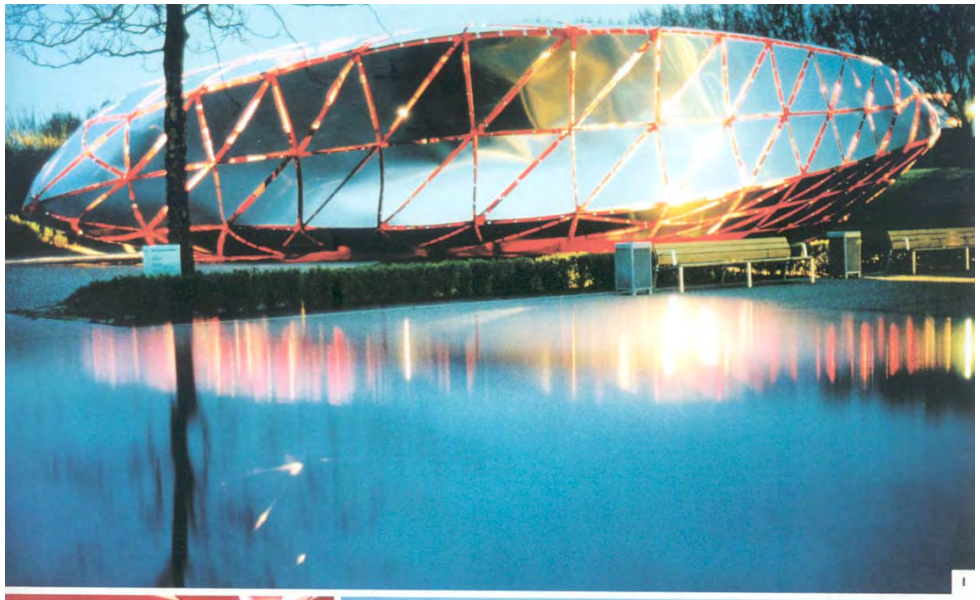
Exploring digital technology in architectural design…..

Perhaps the most exciting innovation in architecture in the last 15 years has been the employment of digital design and fabrication techniques (such as computer-numerically-controlled milling.) It appears that architects have not completed their exploration of this potential. The computer-as-a-design-tool is seen as a means to "a philosophical and cognitive shift… entirely requalifying the way architecture is thought about, practiced, formally created and built." (Mark Goulthorpe of dECOI)

We have seen many blob-like biomorphic buildings which appear to have been designed by computer. However, as Architectural Record magazine says the software no longer drives the design but is now subservient to the designer. When looking at current work it is sometimes hard to tell the difference.

Architects are testing (through computer simulations) and using new materials. The new design work appears more open-ended than finite, as if the design is still in transition.

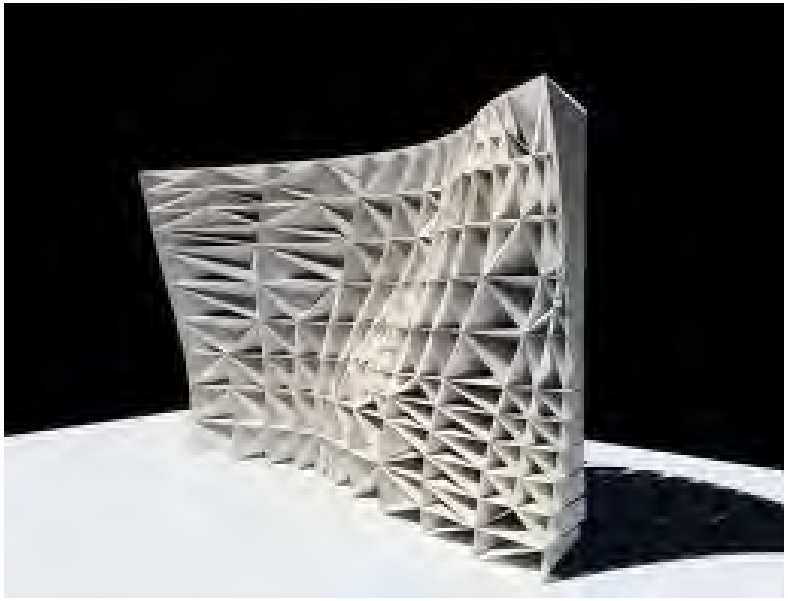
ONL



Web of North Holland

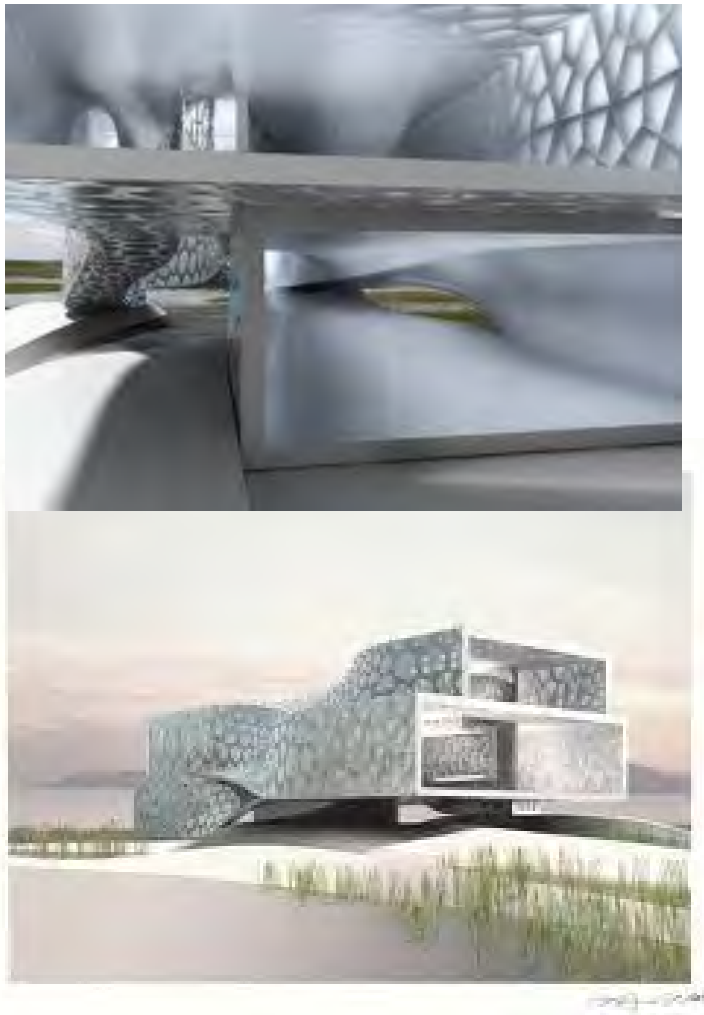
2001-2

Iwamoto Scott Architects



Digital Weave Panel 2005

Iwamoto Scott Architects

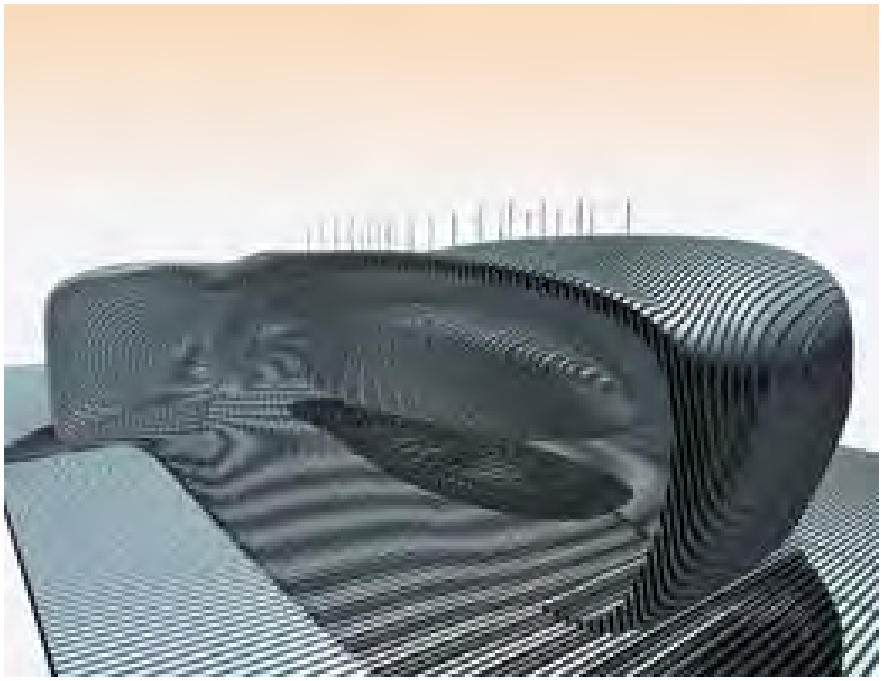


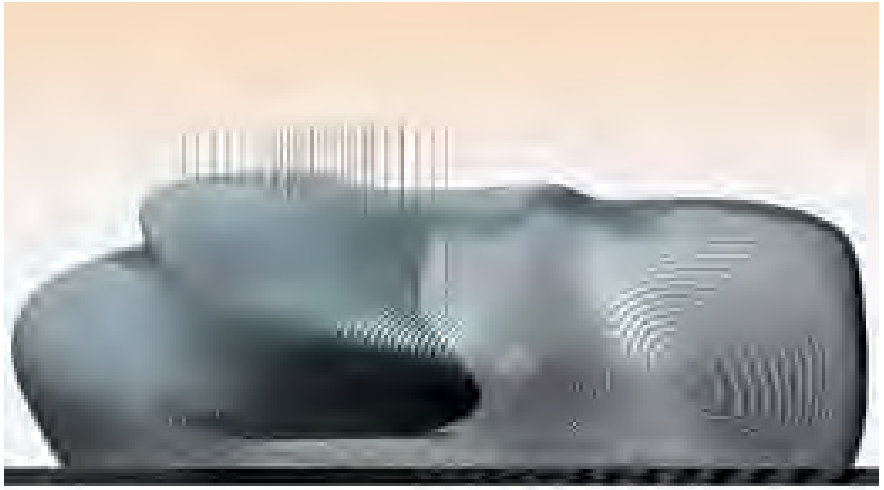
Jelly Fish House—Unbuilt Project
2007

Iwamoto Scott Architects

One Kearney Lobby, San Francisco, CA 2009

dECOi (Mark Goulthorpe)





Miran Galerie
Paris and Beijing

This fashion press showroom, with a suspended display system, offers an interior inserted within a larger space. Here, dECOi overcomes the prohibitive costs of 3D CNC-machine routing by using plywood as the primary material and intelligently devising a design that can be fabricated by alternating 3D milling with far less costly 2D planar cutting, as much as possible.

Miran Belerie, Paris/Beijing recent
Photo credit: AR 12/04

dECOi
(Mark Goulthorpe)

Bankside Paramorph
London

Paramorph literally describes a crystal whose form varies without change to its chemical composition. Here, the word refers to a faceted, spiral, crystalline penthouse extension, and also to the parametric modeling that allowed dECOi to efficiently and economically generate formal variations, factoring in energy efficiency, ease in fabrication, and so on.

Bankside Paramorph, London
Photo credit: AR 12/04

recent

Folding Form

- *Between the wars, Friedrich Kiesler called for the elimination of a separation between floors, walls, pilasters, and roof*
- *Various recent projects have emphasized a continuous folding, flowing surface. These are influenced by the concept of flow and continuous movement*
- *Recent research in nonotechnology has suggested the potential for surfaces to be anything but dull.*

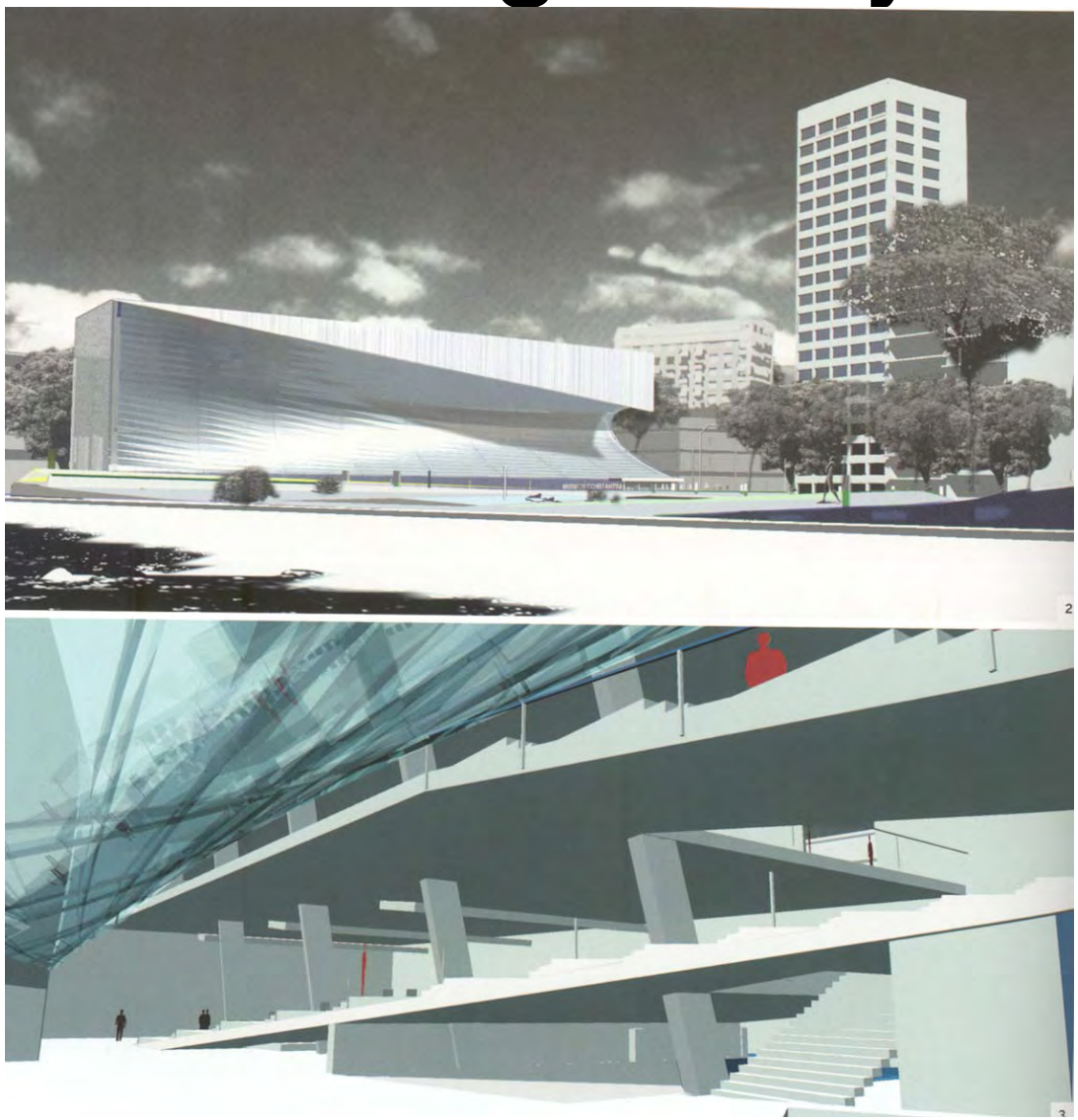
Rene Van Zuuk

ARCAM Architecture Center, Amsterdam, NL 2005
Photo:

Diller & Scofidio

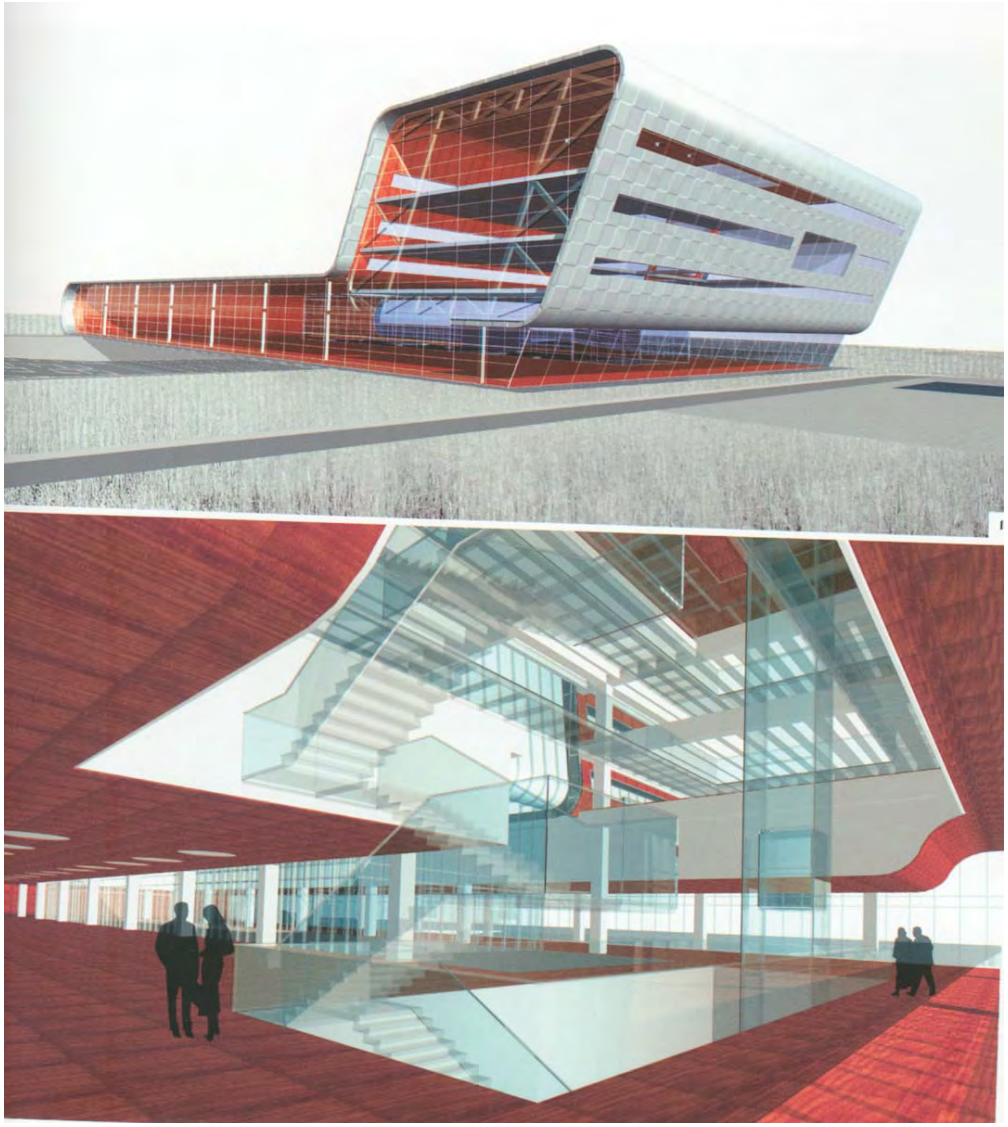
Eyebeam Museum of Art & Technology, Competition, New York, 2001

Axel Kilian & Jurgen Mayer



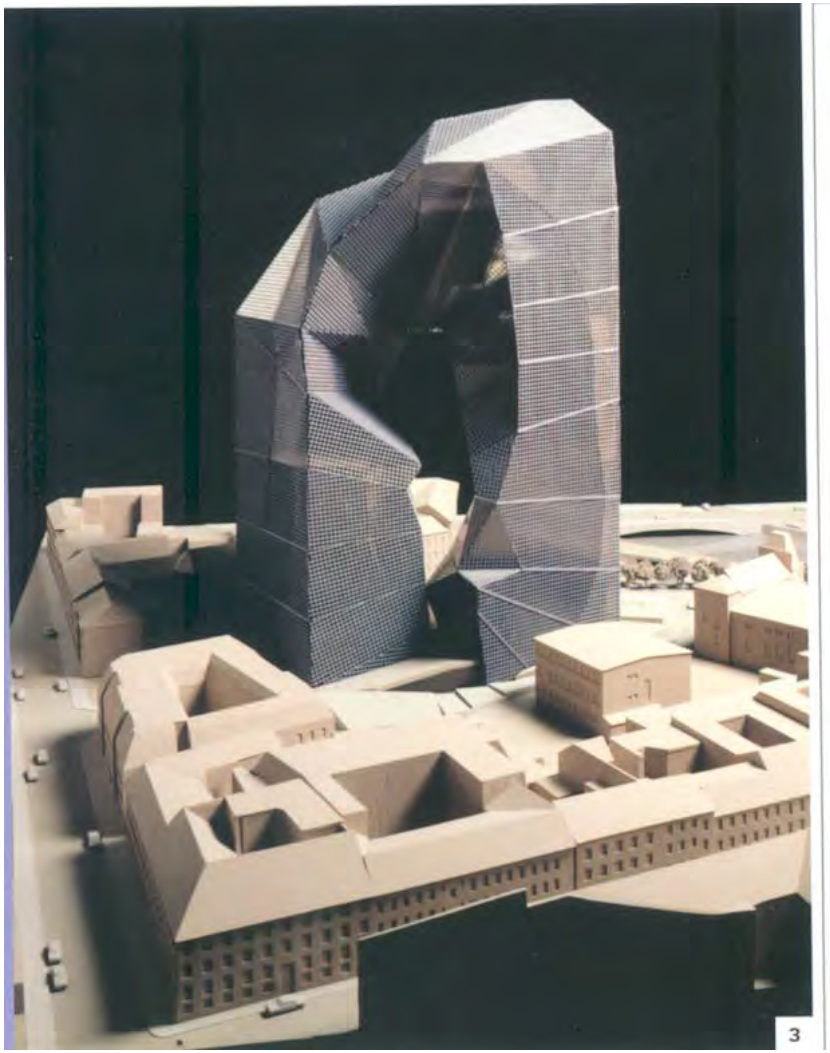
Museo Costantini, Competition Entry 1997

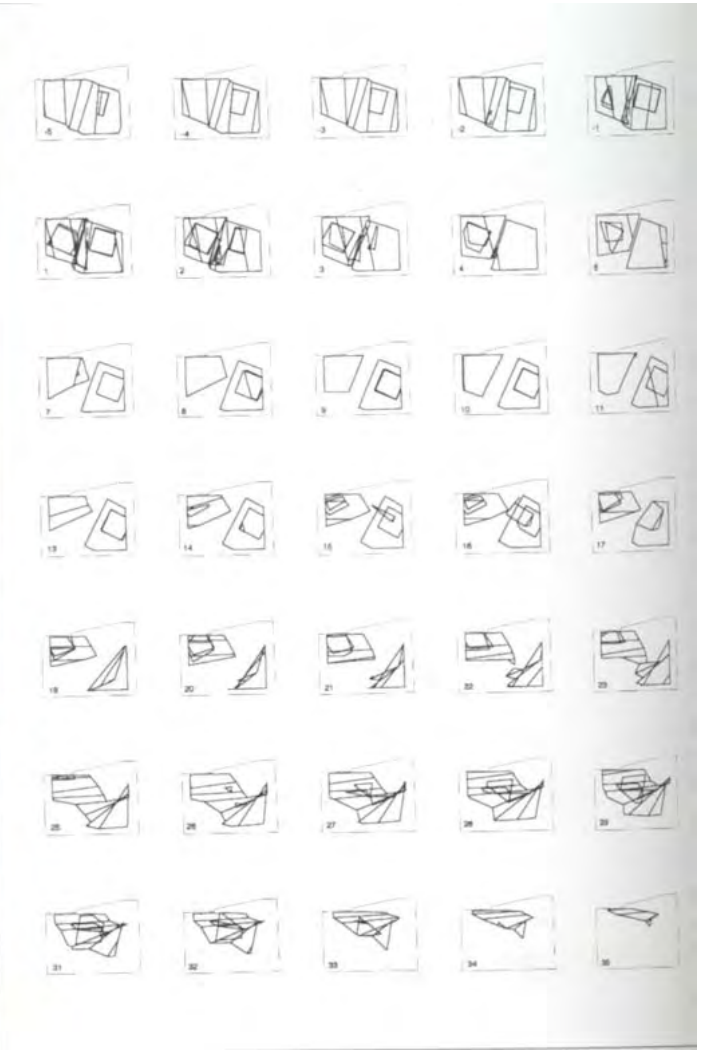
Bernard Tschumi Architects



Vacheron Constantin Headquarters and Factory, Geneva, SW 2004

Eisenman Architects





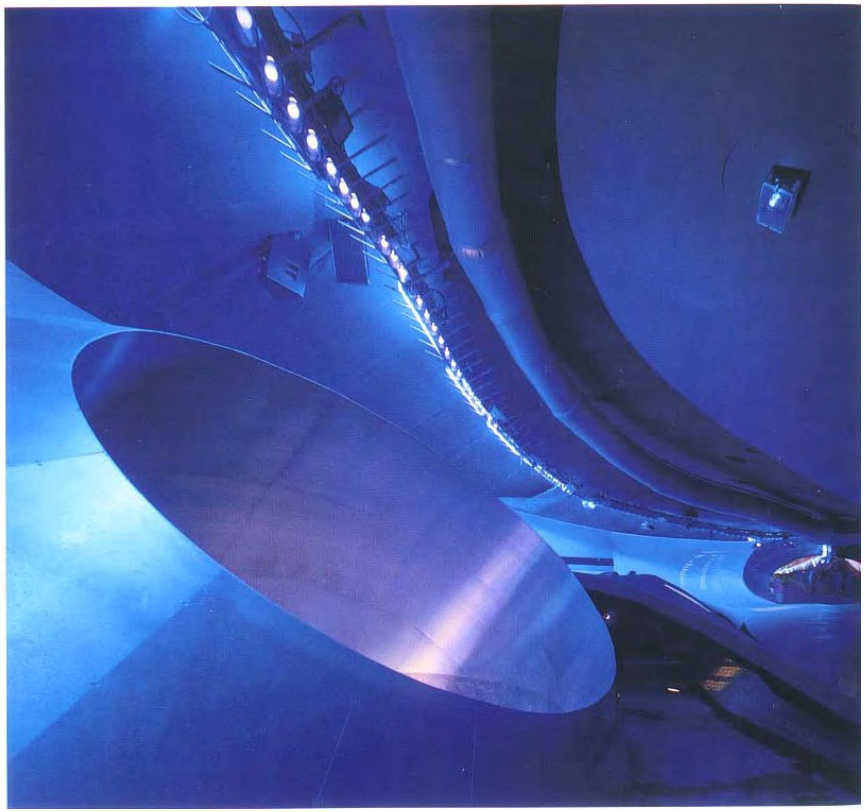
Max Reinhardt Haus

1996

OfficeDA

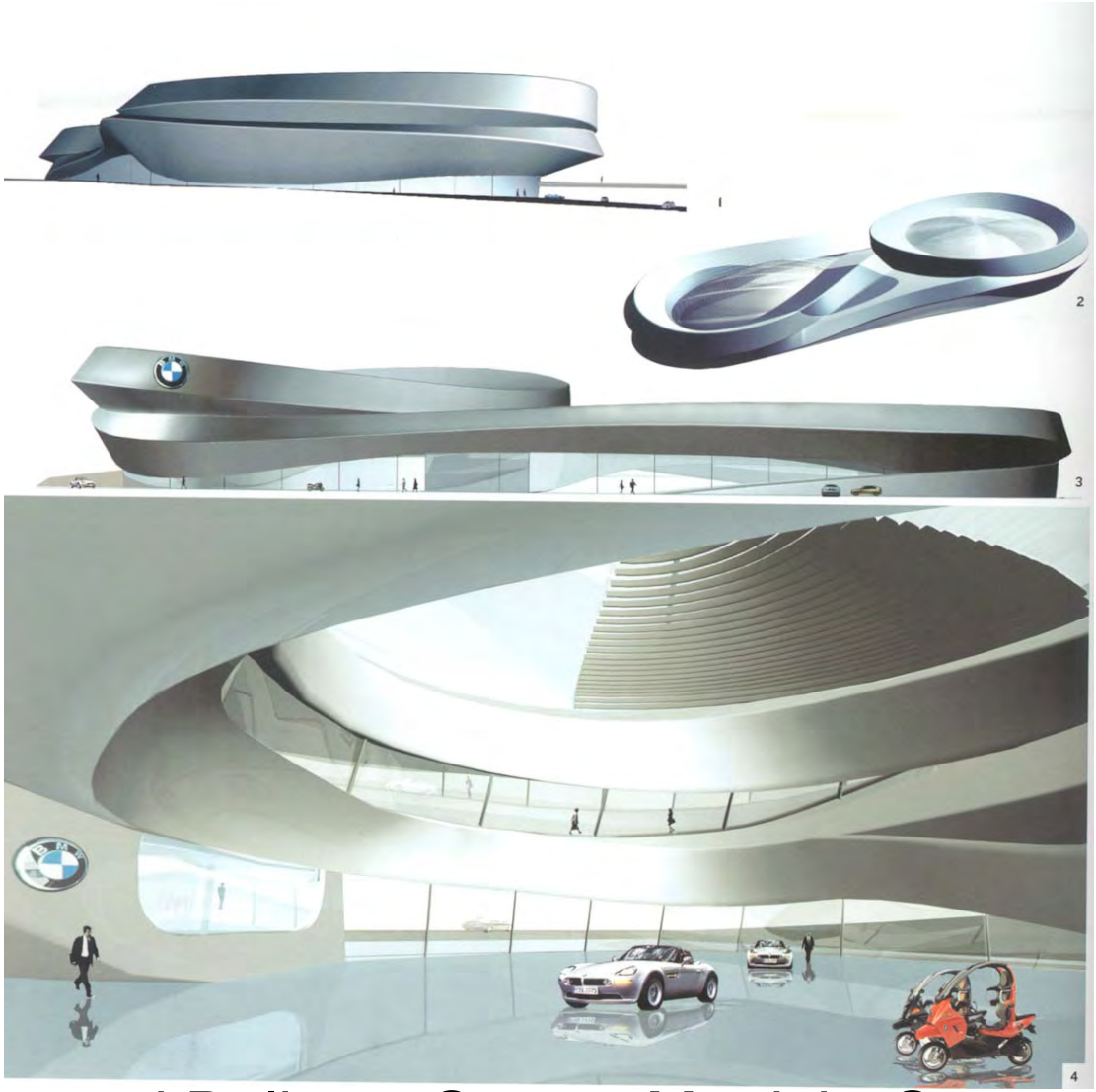
Helios House | Office 2006

NOX



Water Pavillion, Neeltje Jans, Holland 1997

Asymptote



BMW Event and Delivery Center, Munich, Germany
Competition 2001

Makoto Sei Watanabe

Shin Minamata Station, Kyushu, Japan 2002-4

Jakob + MacFarlane

Maison H., Southern Corsica 2003-present

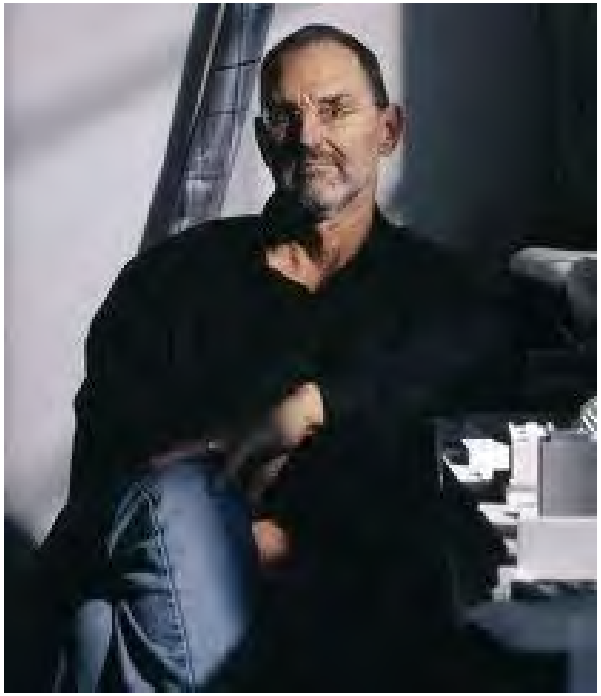
Jakob + MacFarlane

Georges Restaurant, Centre Georges Pompidou, Paris, France, 2006

Acconci Studio

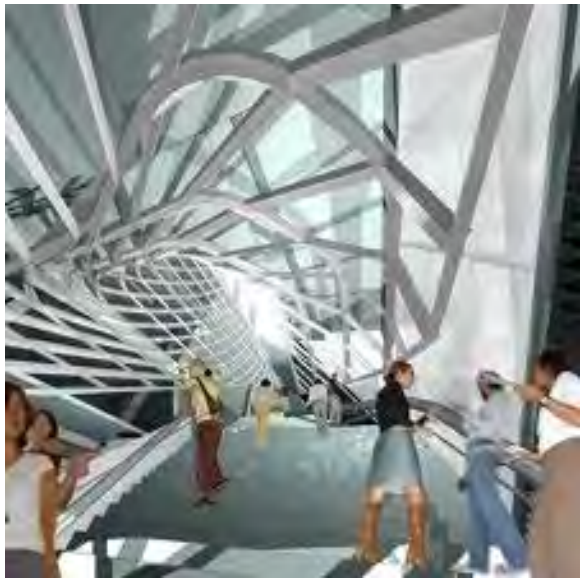
Car Park, Visitors Center, Novartis Corp., Basel, SW 2003
Photo:

Morphosis [Thom Mayne]



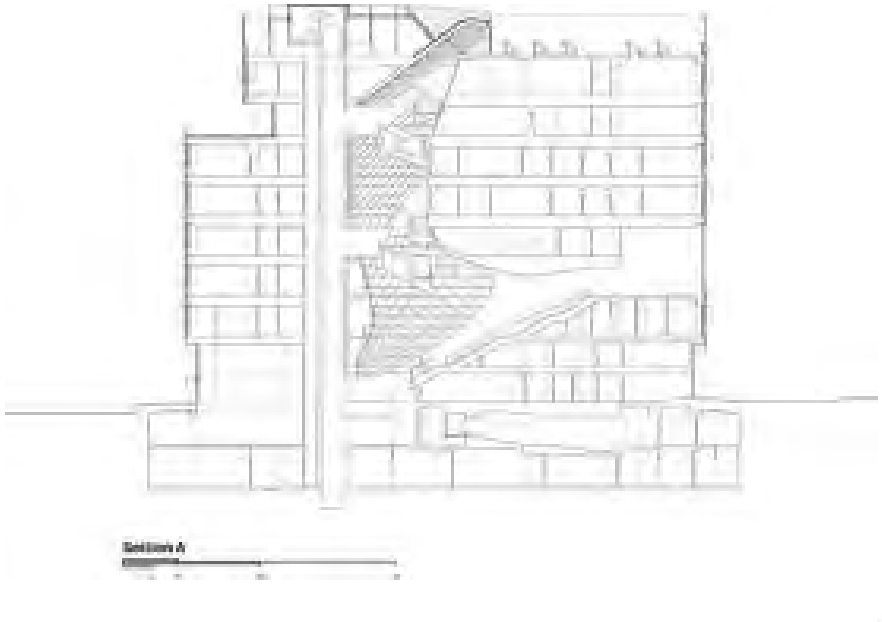
Photograph

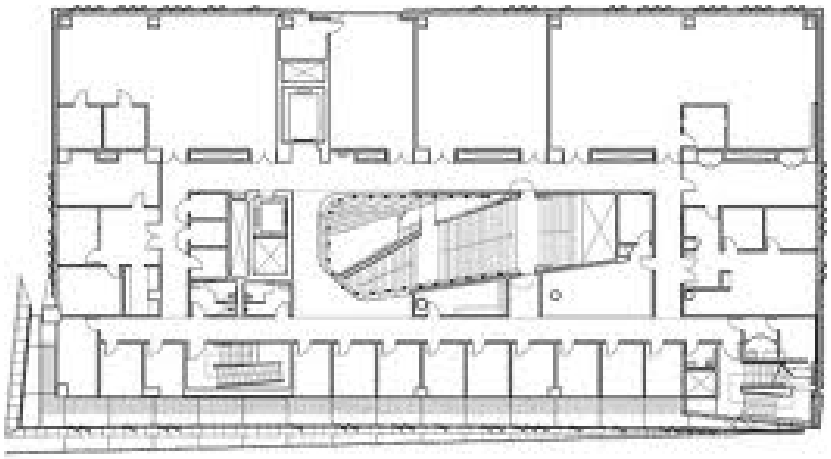
Morphosis



Cooper Union Building, New York, NY 2009

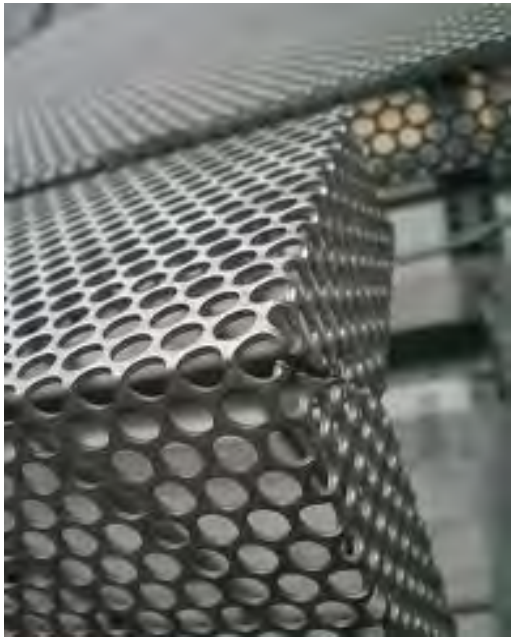
Morphosis





Cooper Union Building, New York, NY 2009

Morphosis



San Francisco Federal Office Building, CA 2009

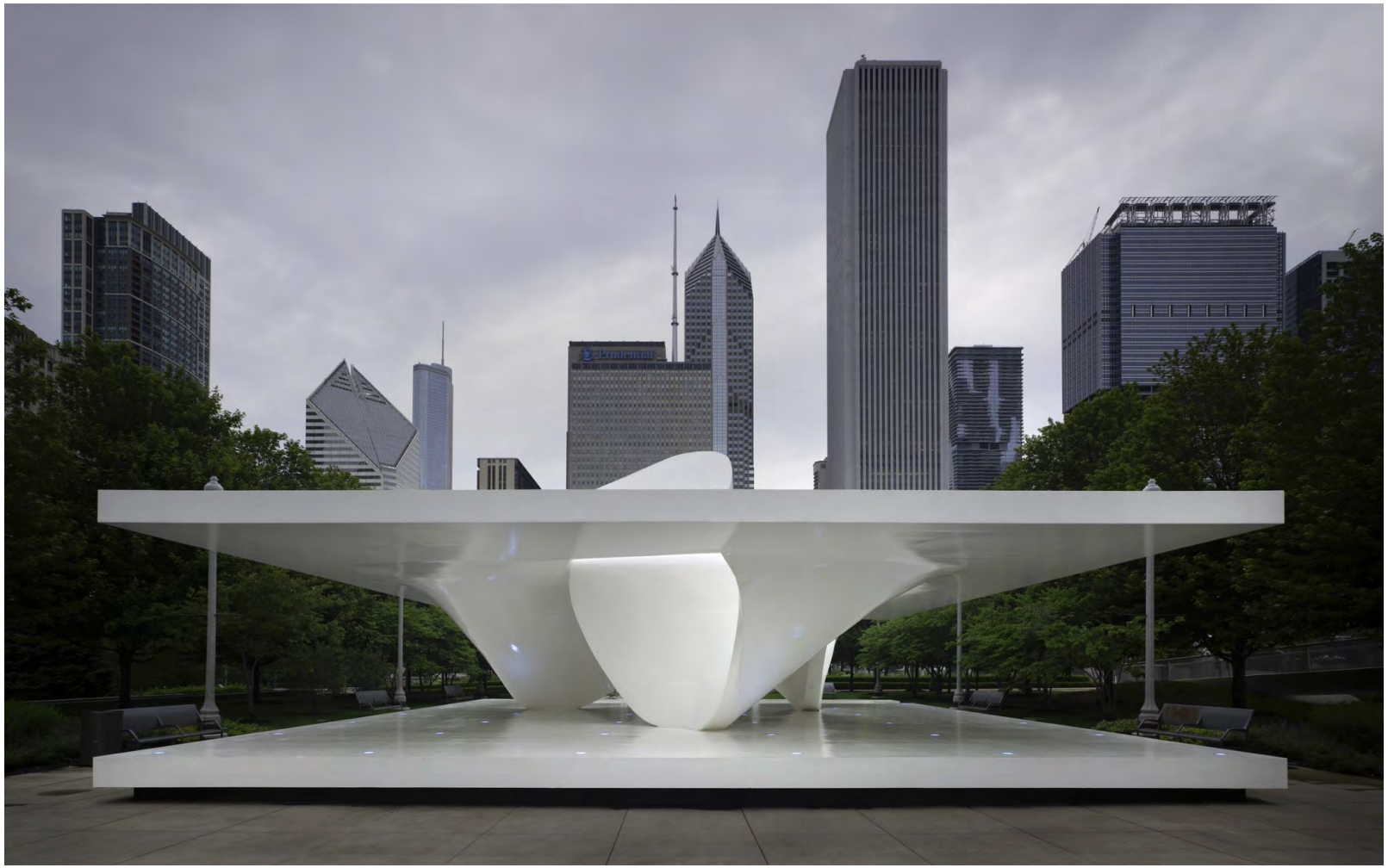
Morphosis

Phare Tower, La Defence, Paris, France 2003
Photo:

UN Studio

Mercedes Benz Museum, Stuttgart, Germany 2005

UN Studio

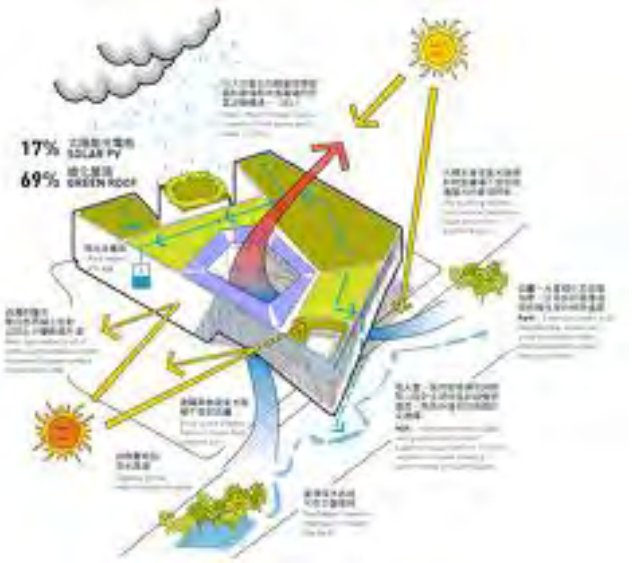


Burnheim Pavillion, Millenium Park, Chicago, IL 2007

UN Studio

Agora Theater, XXXXXX, 2008-9

Studio Gang



Taipei Pop Music Center, Taiwan 2010

Studio Gang

Aqua Tower, Chicago, IL 2009

Studio Gang

Aqua Tower, Chicago, IL

2009

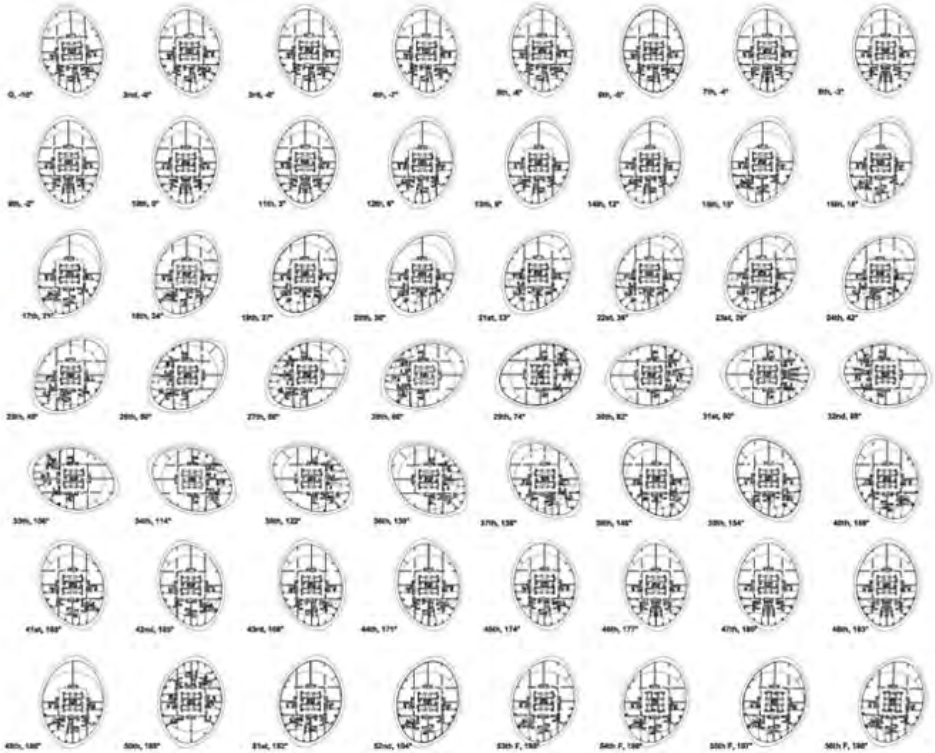
MAD Architects

Absolute Towers, Toronto, Canada In Progress
Photo:

MAD Architects

Absolute Towers, Toronto, Canada In Progress
Photo:

MAD Architects

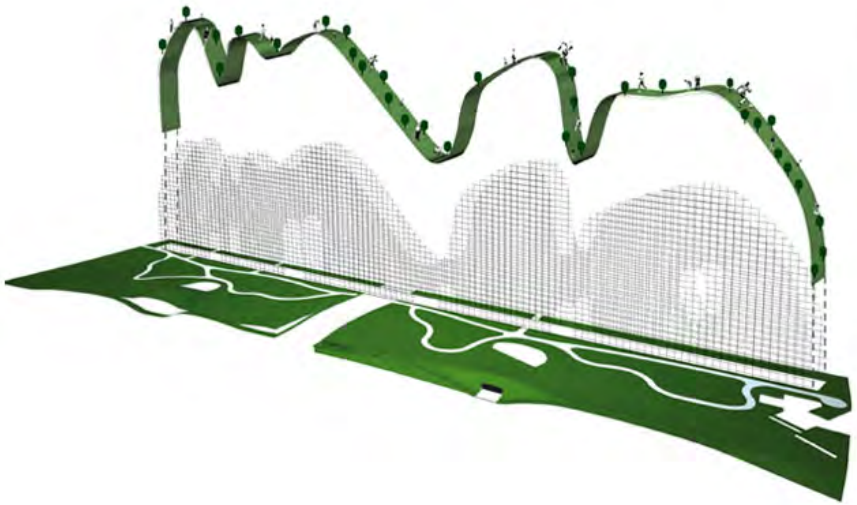


Absolute Towers, Toronto, Canada

In Progress

Photo:

MAD Architects



Fake Hills Development, South China

In Progress

Internet Source: MadArchitects website

MAD Architects

Fake Hills Development, South China

In Progress

Internet Source: MadArchitects website

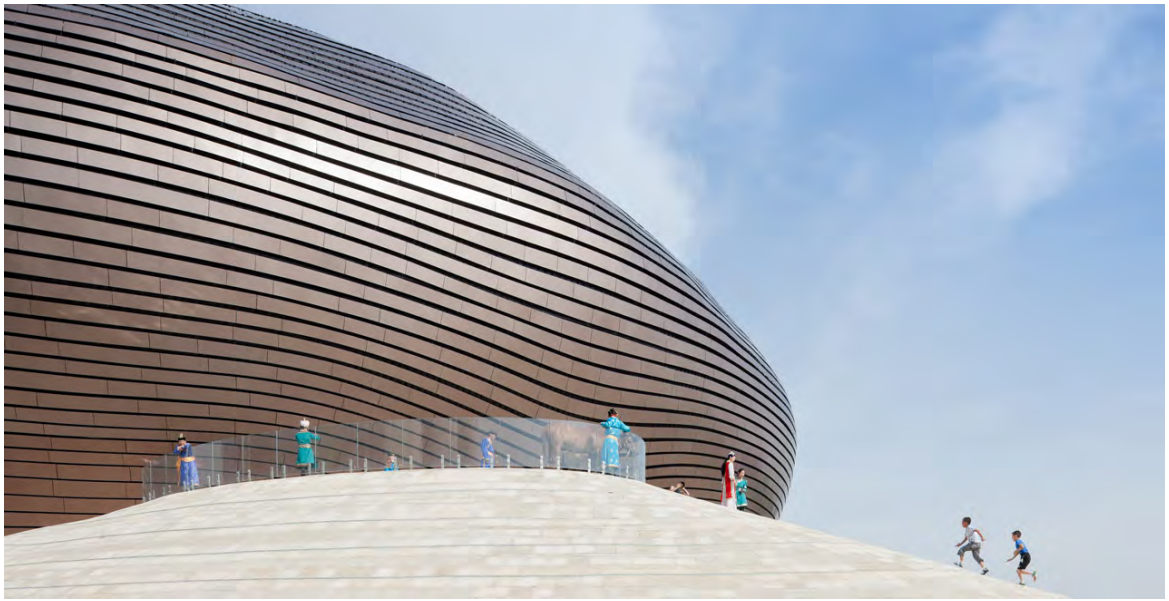
MAD Architects

Fake Hills Development, South China

In Progress

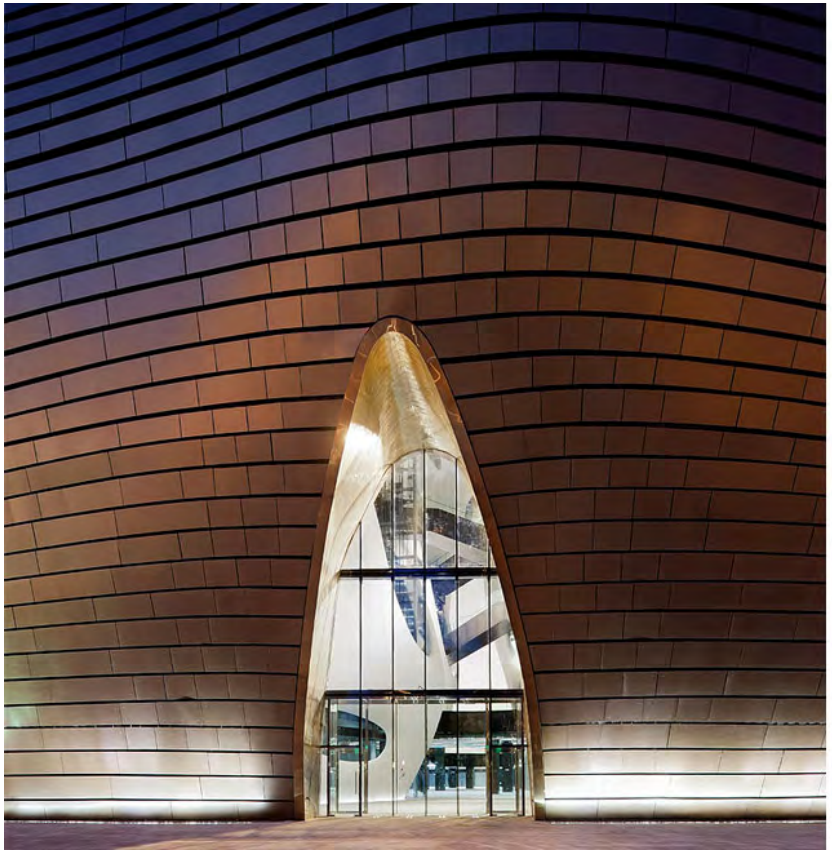
Internet Source: MadArchitects website

MAD Architects



Ordos Museum, South China 2010
Internet Source: MadArchitects website

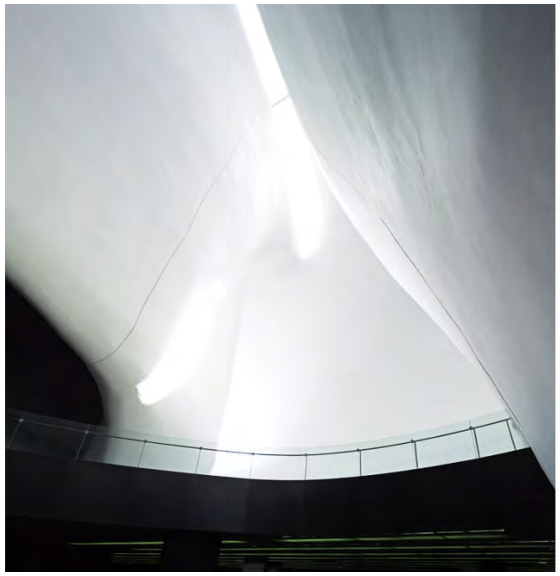
MAD Architects

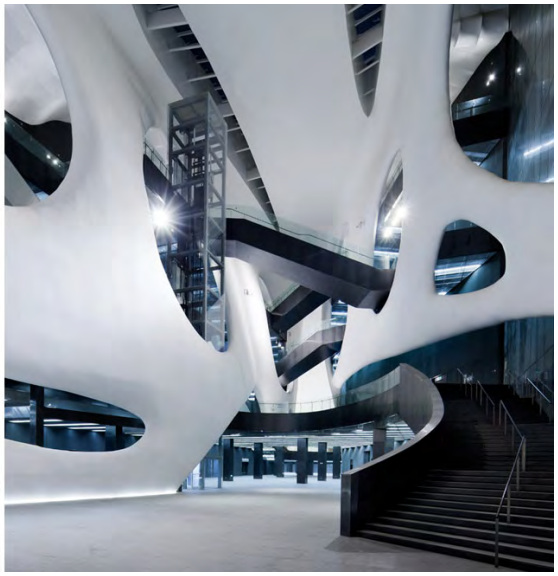


Ordos Museum, South China
Internet Source: MadArchitects website

2010

MAD Architects





Ordos Museum, South China 2010

Internet Source: MadArchitects website

MAD Architects

Ordos Museum, South China
Internet Source: MadArchitects website

2010

MAD Architects

Honglou Clubhouse, South China 2010
Internet Source: MadArchitects website

MAD Architects

Honglou Clubhouse, South China 2010
Internet Source: MadArchitects website

MAD Architects

Honglou Clubhouse, South China 2010

Internet Source: MadArchitects website

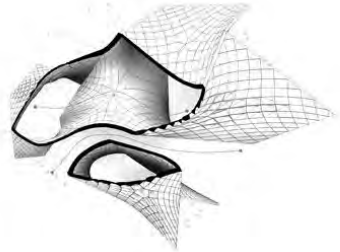
Marcelo Spina

FYF Residence
Rosario, Argentina

A basic box (9) is deformed according to topographical features of the site for a house to be built on the outskirts of Rosario, Argentina. The 1,507-square-foot concrete-shell structure folds and bends to provide a greenhouse, solarium, and swimming pool (10) for an agricultural engineer and landscape designer. The lattice illustrates the flowing geometry.

FYF Residence, Rosario, Argentina recent
Photo credit: AR 12/04

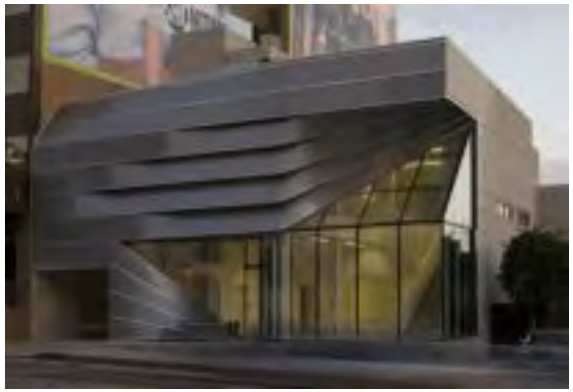
Marcelo Spina

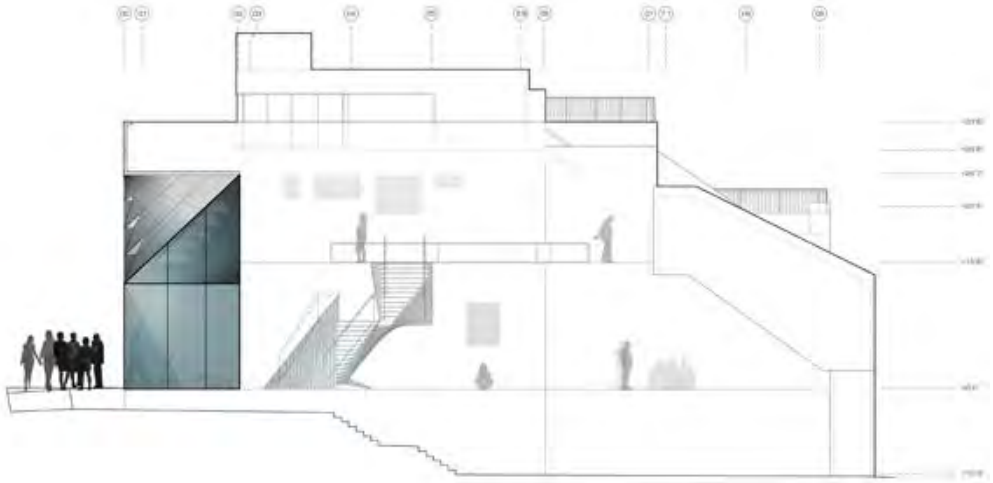


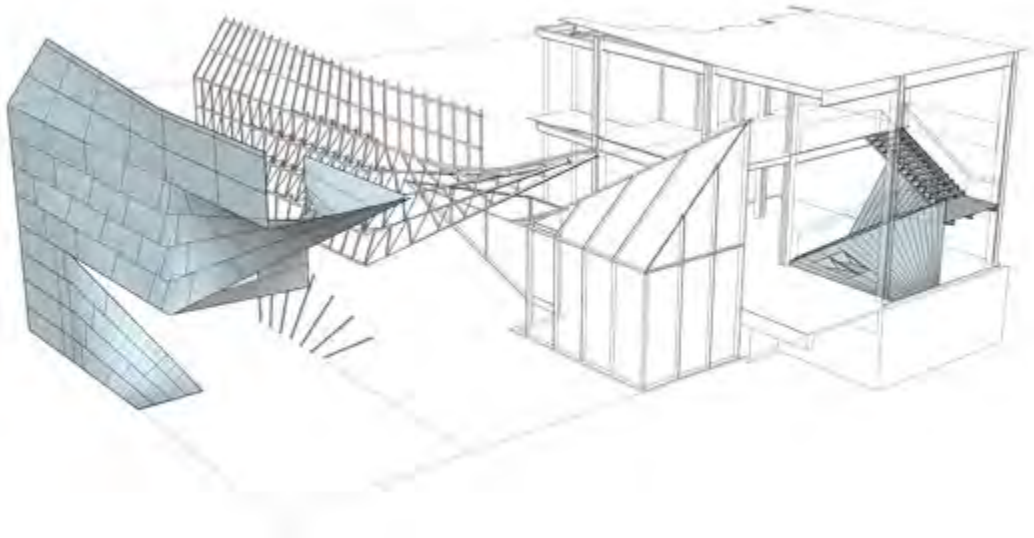
Barilette Cosmica, Rosario, Argentina
Photo credit: Internet

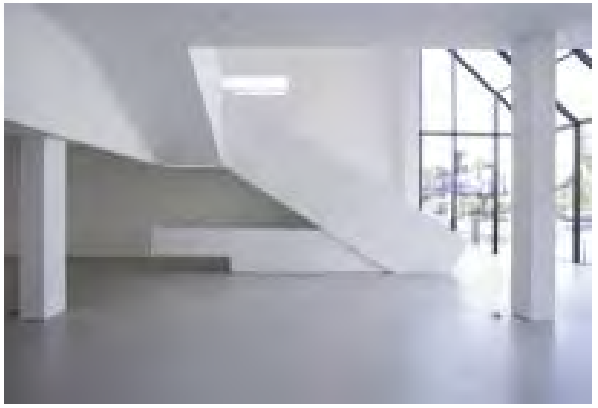
recent

Marcelo Spina



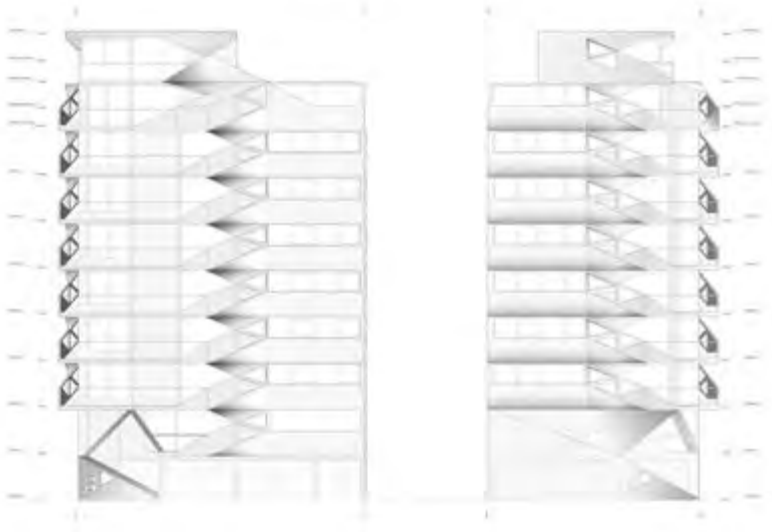






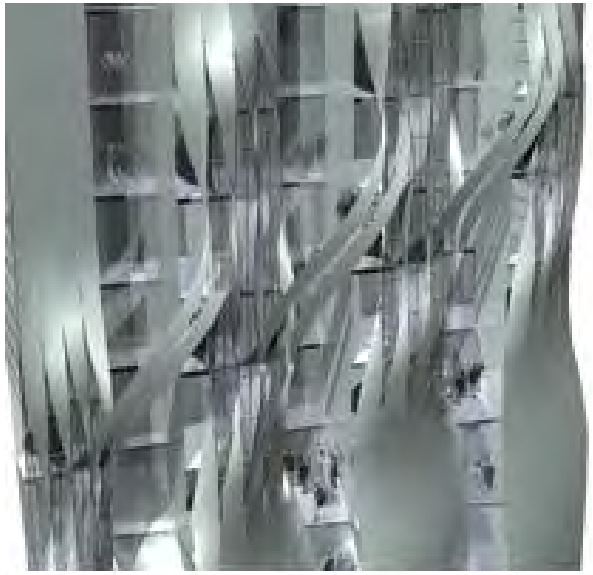
Prism Gallery, W. Hollywood, CA recent
Photo credit: Internet

Marcelo Spina



Jujiya Apartments, Rosario, Argentina 2009
Photo credit: Internet

Marcelo Spina



New Busan Observation Tower
Busan, Korea

The aerodynamically inspired shaft of the tower (5) includes a lower portion for community facilities (6), a middle one for business activities, and an observatory at the top. The attenuated form is held together by cantilevered floor plates, spiraling stairs, structural ribs, tendons bonded together and to the slabs, plus hydraulic jacks anchored to the ground.

Busan Observation Tower, Korea recent
Photo credit: AR 12/04

Marcelo Spina

New SCI_Arc Café and Boardroom
Los Angeles

Patterns won a competition to design these spaces in the existing SCI_Arc building, a long linear concrete former depot near downtown L.A. On the second floor, Spina hopes to bring the café and library together through new aluminum library shelves that are sloped and inflected toward the café space. The café tables (12), which are aluminum single-shell structures, seem extruded from the shelves. The boardroom (11), slightly above grade, is given views to the outdoors through a new faceted-glass wall.

SCI Arc Café & Boardroom, Los Angeles, CA 2007
Photo credit: AR 12/04

Biomorphic Architecture

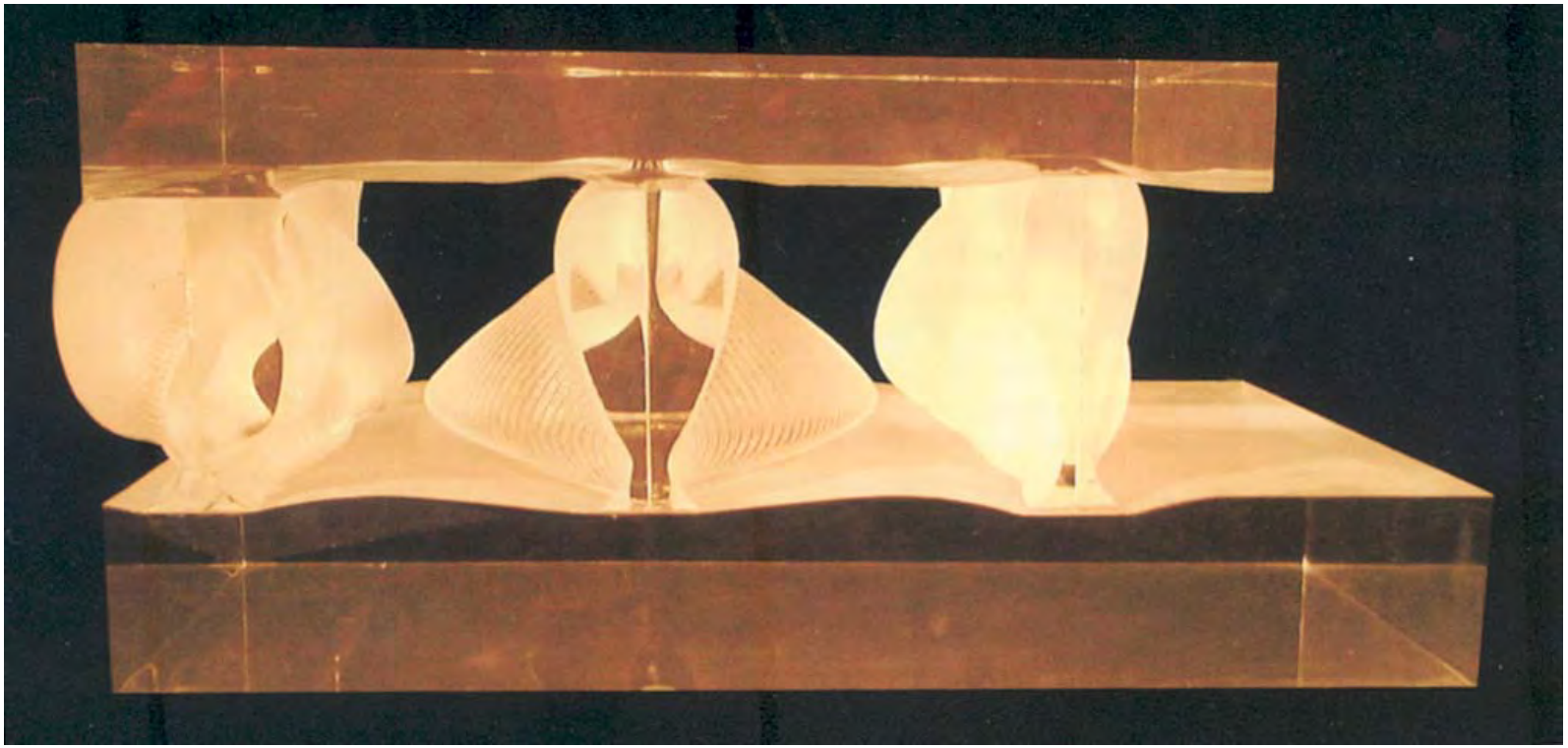
Biomorphic forms are sympathetic to the forms of nature and the human body. Although biomorphic shapes have been around for most of the last century, the computer has allowed a new generation to explore how far it could it could take the imagery.

“Architecture gives form to the invisible pulses and rhythms of life. It gives pattern to structure and structure to pattern. It is an elemental mystic power that is innate to all things. The physical manifestation of this power is a consequence of the desire for the invisible to be made visible. This desire, this great motivating force is essential to the life of a thing. It is a process which organizes and composes various interrelated forces into a unified whole. Architecture is the comprehensive expression of all science and art--the wellspring of interconnectedness and functional art.”

Eugene Tsui

Greg Lynn Form

Greg Lynn Form

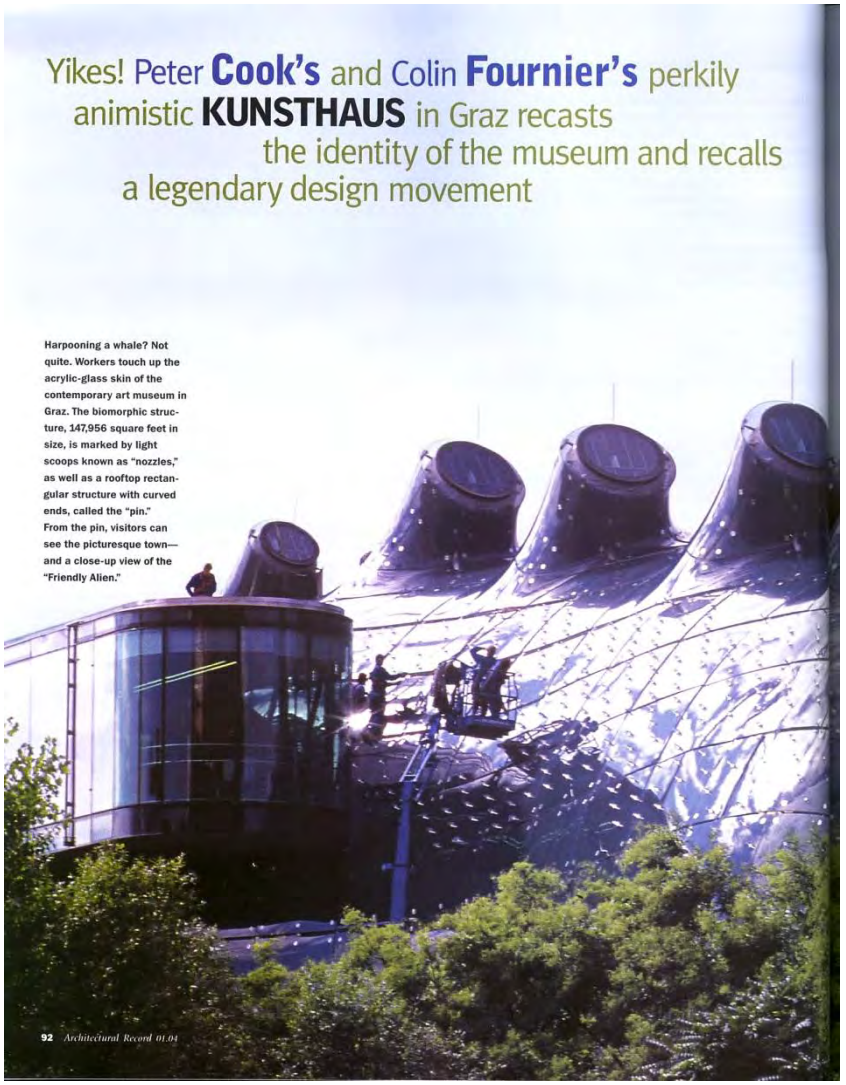


St. Gallen Kunstmuseum, Competition 2001

Greg Lynn Form, w/ Doug Garafolo

Korean Church, Sunnyside, Queens 1999

Peter Cook and Colin Fornier



Yikes! Peter **Cook's** and Colin **Fournier's** perkily animistic **KUNSTHAUS** in Graz recasts the identity of the museum and recalls a legendary design movement

Harpooning a whale? Not quite. Workers touch up the acrylic-glass skin of the contemporary art museum in Graz. The biomorphic structure, 147,956 square feet in size, is marked by light scoops known as "nozzles," as well as a rooftop rectangular structure with curved ends, called the "pin." From the pin, visitors can see the picturesque town—and a close-up view of the "Friendly Alien."

By Liane Lefaivre

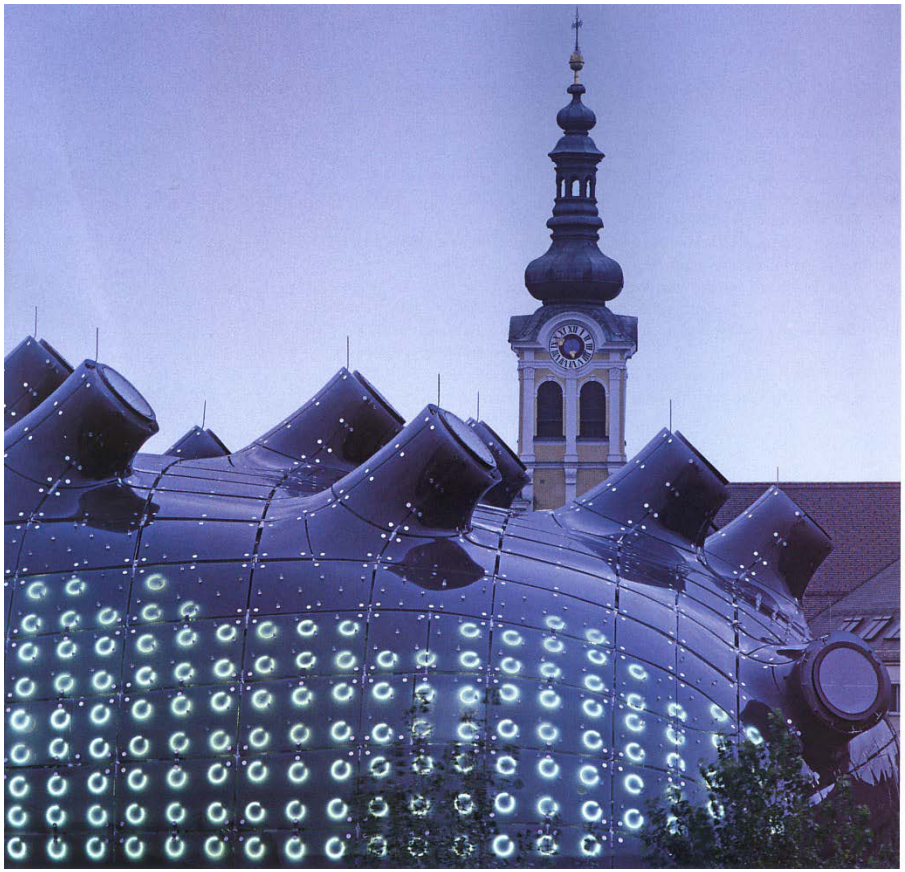
Archigram is back, judging by the Kunsthaus, the museum in Graz that one of its founders, Peter Cook, has designed with Colin Fournier. If ever there was a movement that everyone dismissed as hopelessly utopian and absolutely unbuildable, it's the one initiated by Archigram in 1961. This is when Cook, with Warren Chalk, Ron Herron, Dennis Crompton, David Greene, and Michael Webb, got together at the Architectural Association in London. The group seemed about as close to the lunatic fringe of the pop phenomenon as one could get. As the Beatles of architecture, Archigram broke down the dreary conformity of the 1950s, sweeping aside sclerotic convention with their antics, and served up a madcap architectural cock-

Liane Lefaivre is the chair of History and Theory of Architecture at the University of Applied Arts in Vienna. She is the coauthor, with Alexander Tzonis, of Critical Regionalism *(Prestel, 2003).*

Project: *Kunsthaus Graz, Graz, Austria*
Owner: *City of Graz*
Architects and engineers: *ARGE Kunsthaus, a joint venture: Spacelab Cook-Fournier—Peter Cook and Colin Fournier, principals; Niels Jonkhans, design architect. Architektur Consult/Domenig, Eisenkock, Peyker—Herfried Peyker, partner in charge; Dietmar Ott, project manager. Bollinger+Grohmann (structural engineers)—Klaus Bollinger, partner in charge*
Digital designers: *Realities United*

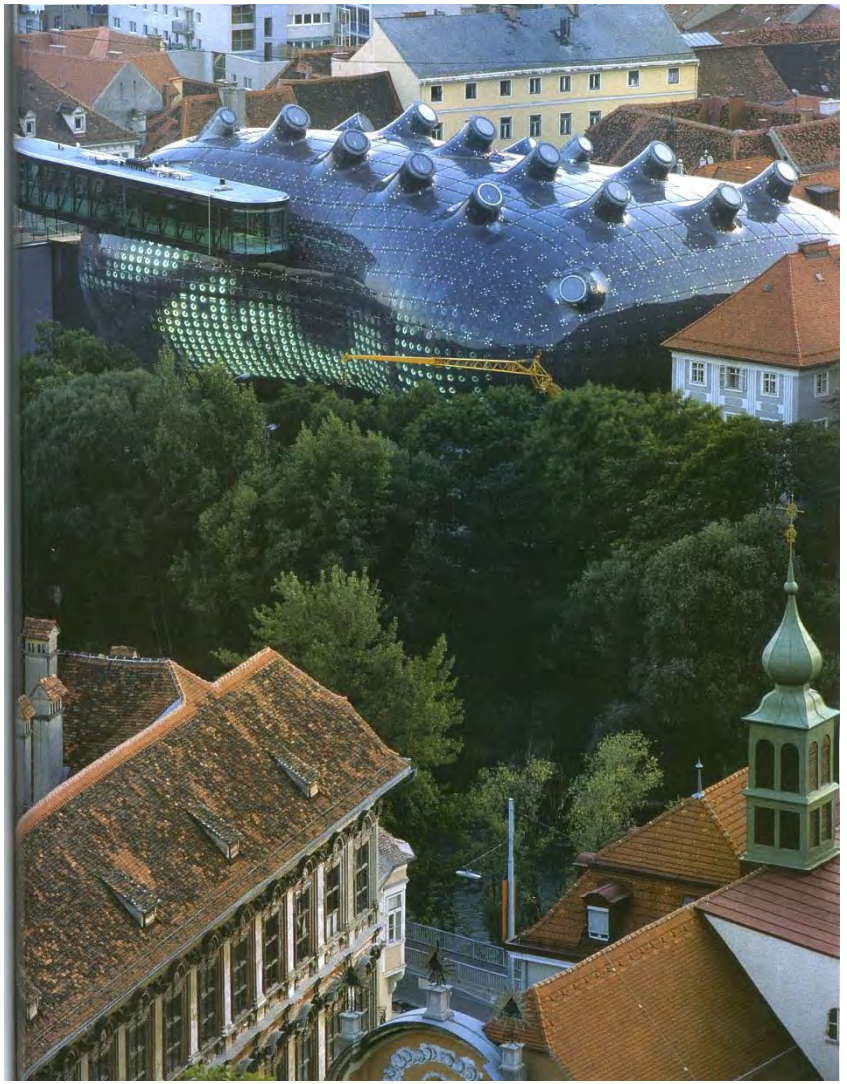
Kunsthaus Graz (Museum), Graz, Austria 2003
Photo credit: AR 1/04

Peter Cook and Colin Fornier



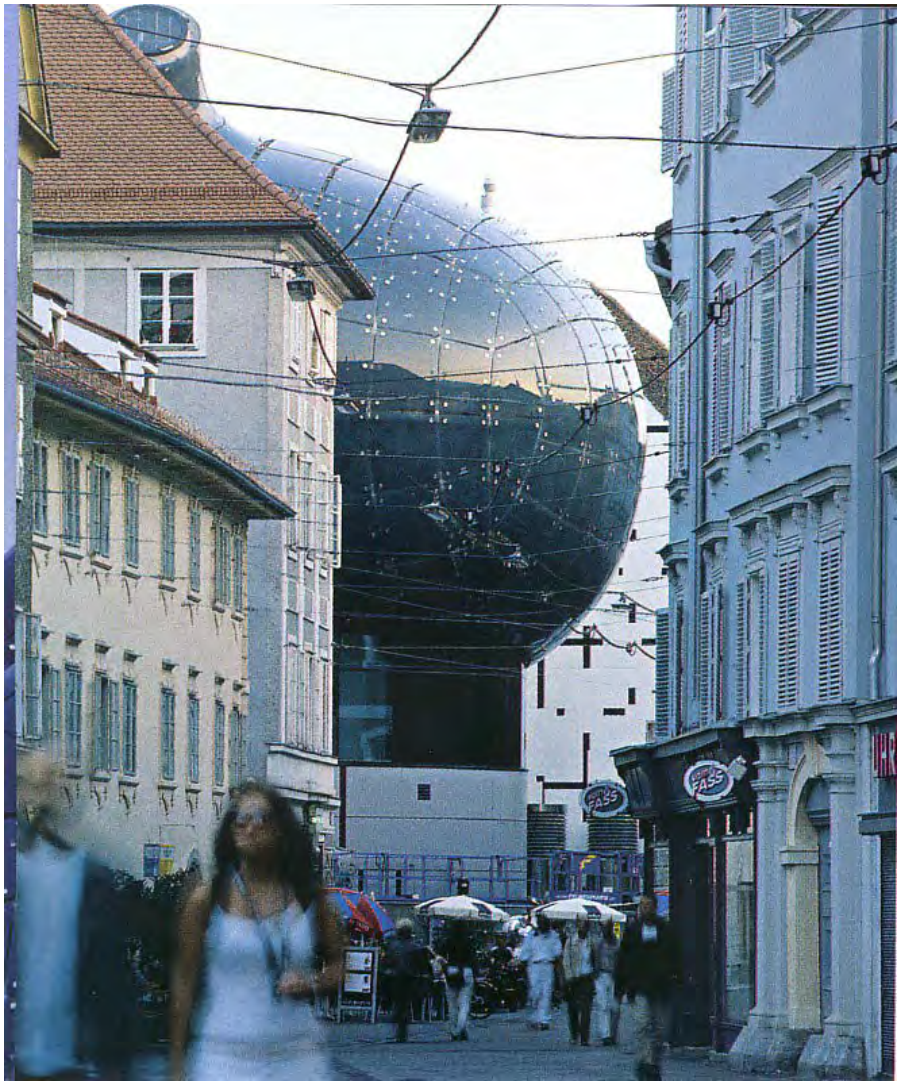
Kunsthaus Graz (Museum), Graz, Austria 2003
Photo credit: AR 1/04

Peter Cook and Colin Fornier



Kunsthaus Graz (Museum), Graz, Austria 2003
Photo credit: AR 1/04

Peter Cook and Colin Fornier



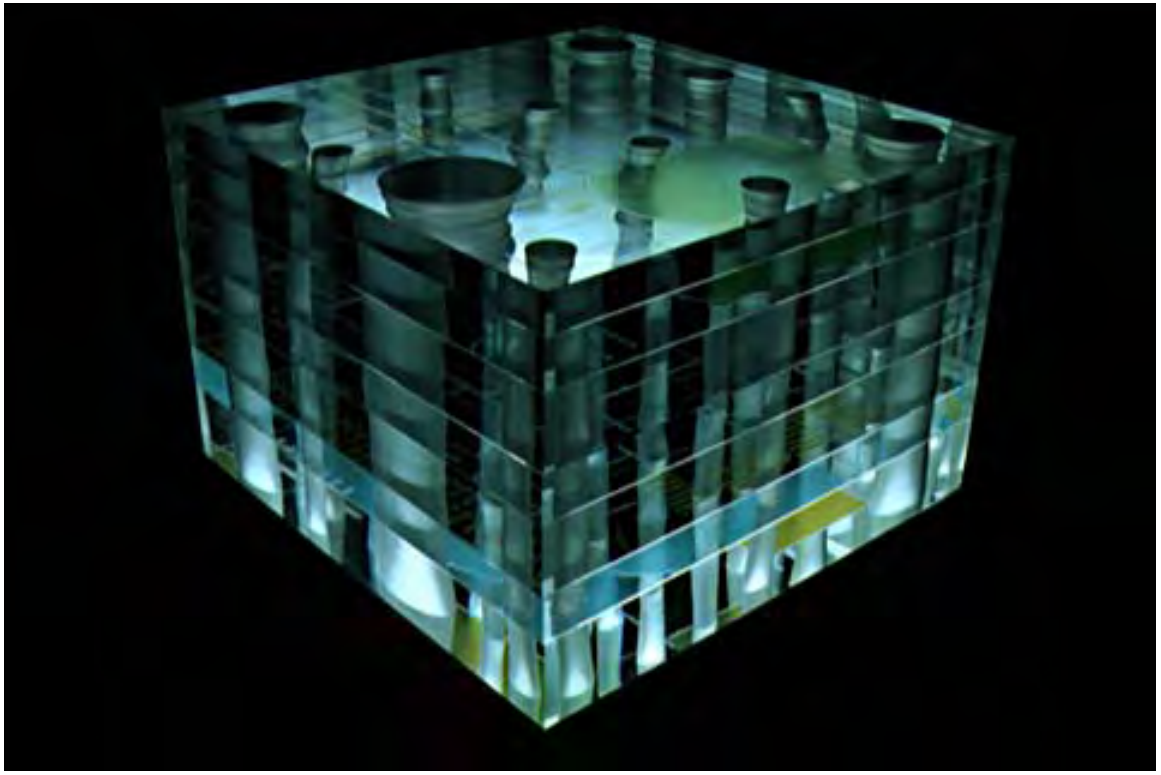
Kunsthaus Graz (Museum), Graz, Austria 2003

Photo credit: AR 1/04

Toyo Ito

Mediatheque, Japan 2001
Photo: Internet

Toyo Ito



Mediatheque, Japan 2001
Photo: Internet

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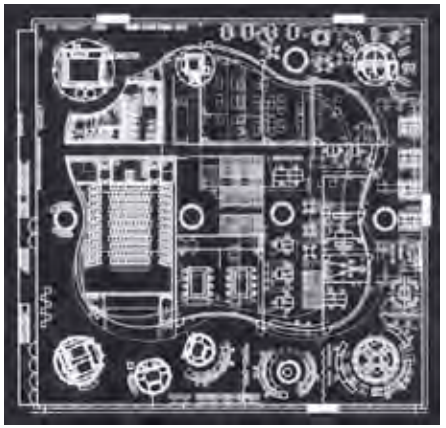
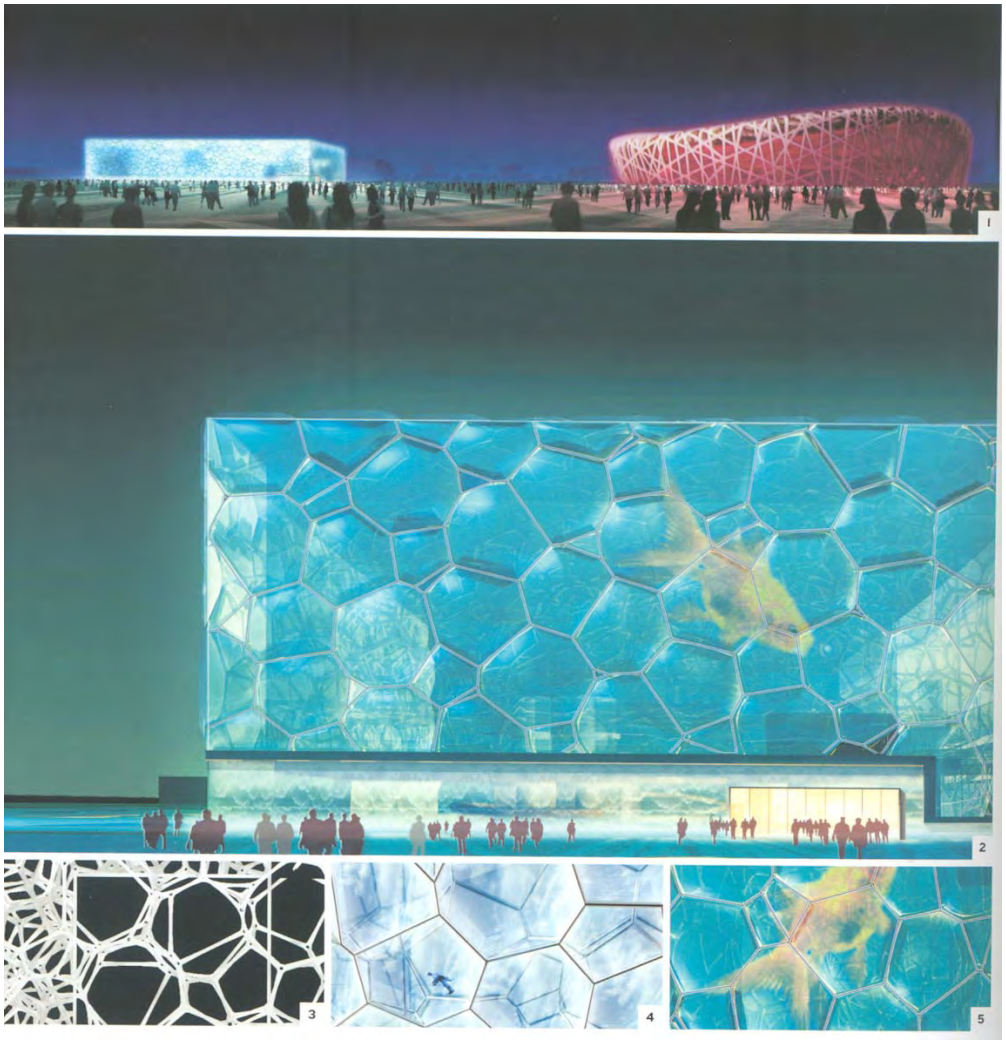


Mediatheque, Japan 2001
Photo: Internet

PTW Architects with Arup Engineers



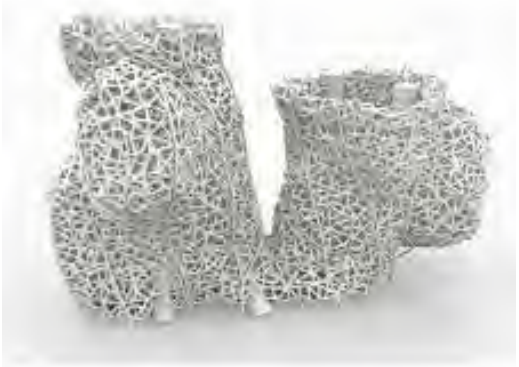
National Swimming Center, Beijing, China 2010

NIO Architecten

The bus station was carved out of polystyrene foam in a factory and given a sprayed-on polyester skin. The five elements were brought to the site and then glued together, after which the whole was given a further coat of polyester. The big but very light form is firmly bolted down to concrete foundations. It is the world's largest structure made of synthetic materials, for building the form in a conventional way would have been completely impossible within the budget. Before starting manufacture, the architects tested the proposed materials extensively against damage from impact and vandalism with knives, cigarettes, mallets and other vicious devices. The substances triumphantly survived all such attentions.

Bus station, Hoofddorp, The Netherlands 2003
Photo credit: http://www.arplusd.com/ar+d2003/nio.htm

R & Sie.



3D Print Models, Venice Bienial, Venice Italy, 2008

Hernan Diaz Alonso

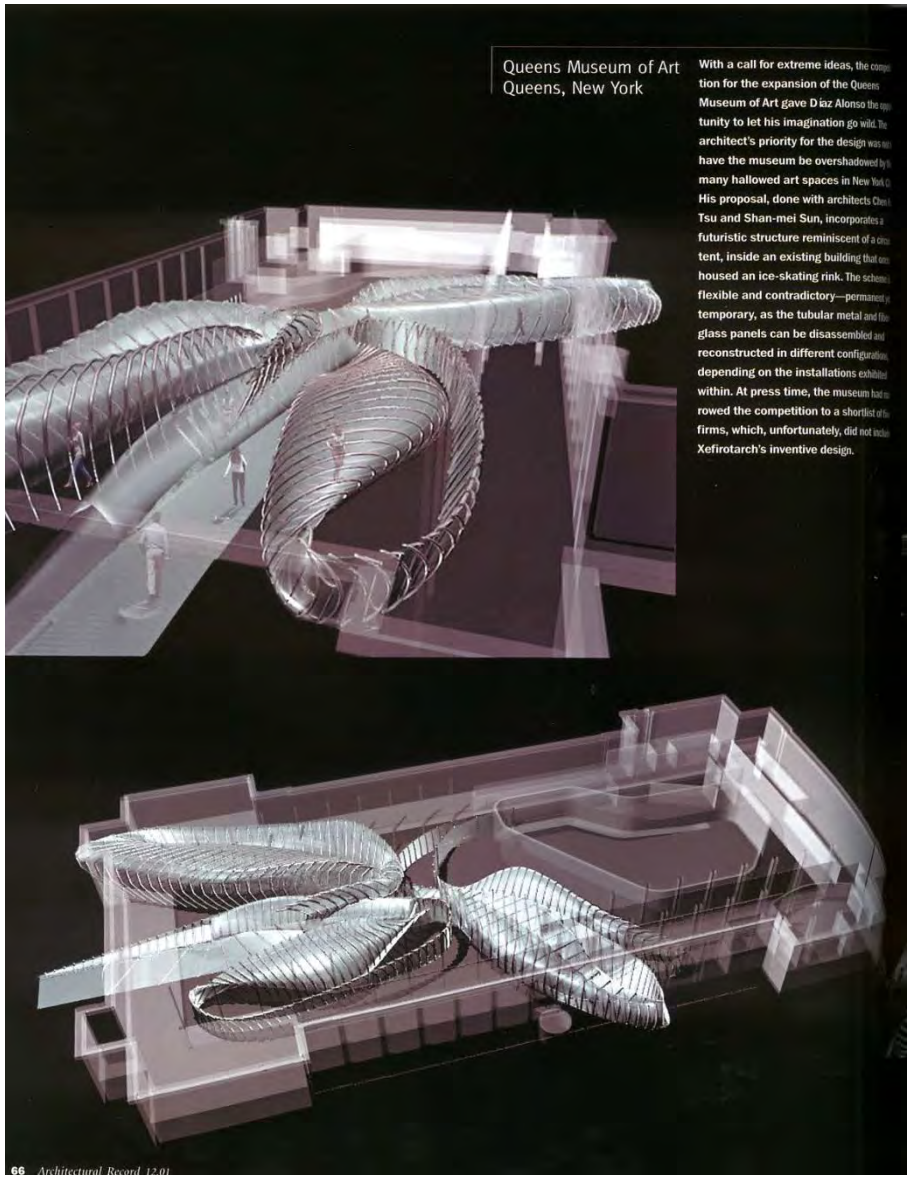
"It is impossible to think of design and mathematics as separate terms after the advent of digital design into architecture… The tool does not represent, it engenders; it is a technical apparatus that inserts a generative mechanism; it is a technique. This approach to design through technique has transcended the problem of representation and proved to be an effective design tool."

Herman Diaz Alonso

Aqua Center, Aalborg, Denmark Projected
Photo: Guillermo Banchini (AR 12 2001)

Hernan Diaz Alonso

"Given that the software is in fact a tool that pertains to a large degree the highest control of the manipulations of formal strategies, we can assert that we are in fact within a terrain of form and proportion. Thus ***what digital design has brought into the fore is a model of form in continuous change****, a mindset of variation where we no longer think of a unique idea or design but rather particular strategies for design.* ***The new technology brought up a new vocabulary of forms and tools along with a new aesthetic."***



Aqua Center, Aalborg, Denmark Projected
Photo: Guillermo Banchini (AR 12 2001)

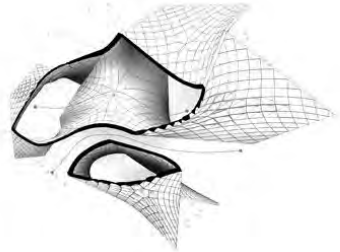
Marcelo Spina

FYF Residence
Rosario, Argentina

A basic box (9) is deformed according to topographical features of the site for a house to be built on the outskirts of Rosario, Argentina. The 1,507-square-foot concrete-shell structure folds and bends to provide a greenhouse, solarium, and swimming pool (10) for an agricultural engineer and landscape designer. The lattice illustrates the flowing geometry.

FYF Residence, Rosario, Argentina recent
Photo credit: AR 12/04

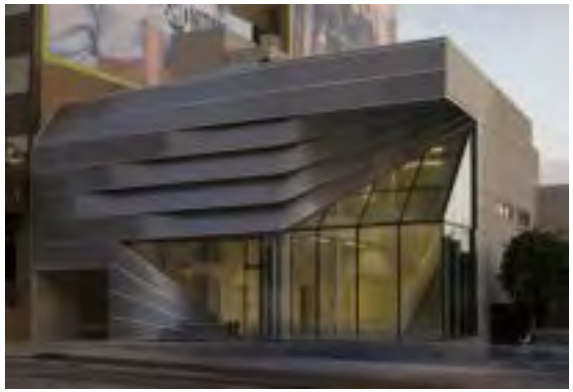
Marcelo Spina

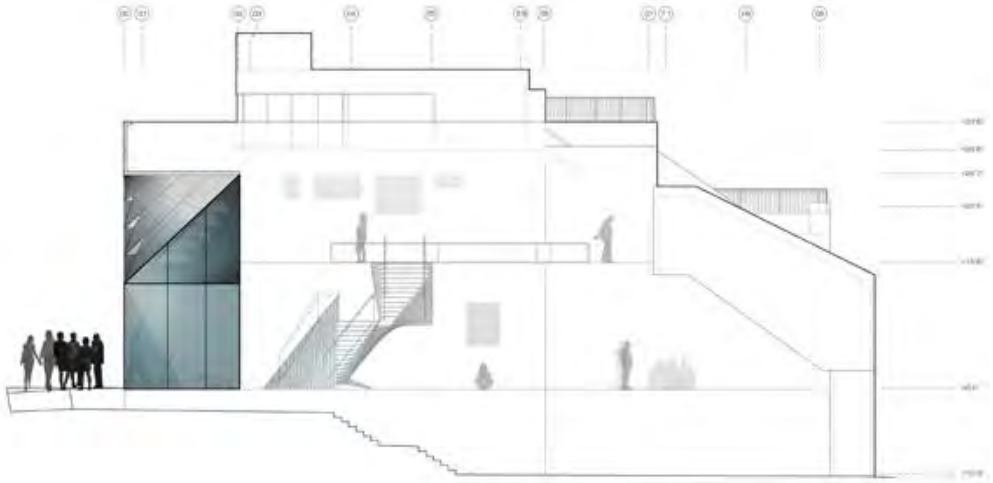


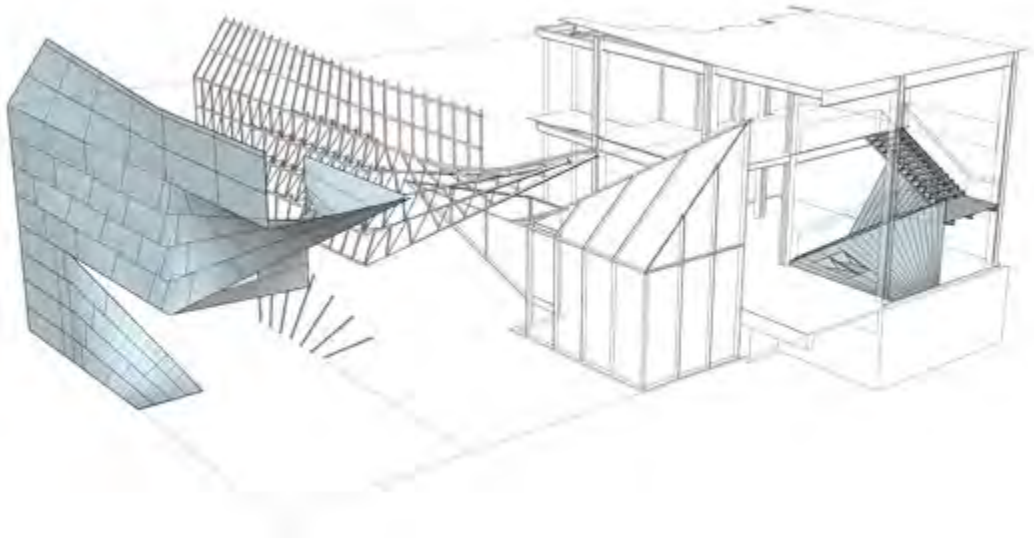
Barilette Cosmica, Rosario, Argentina
Photo credit: Internet

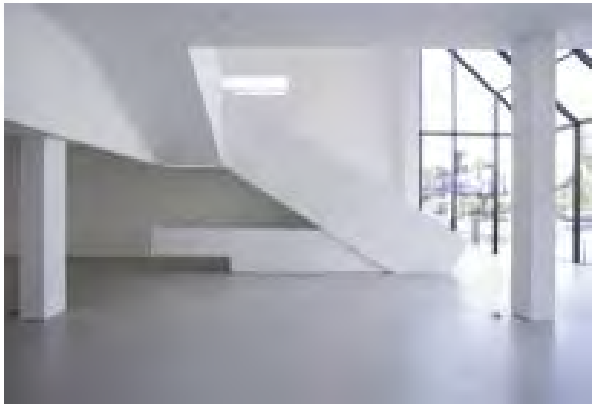
recent

Marcelo Spina



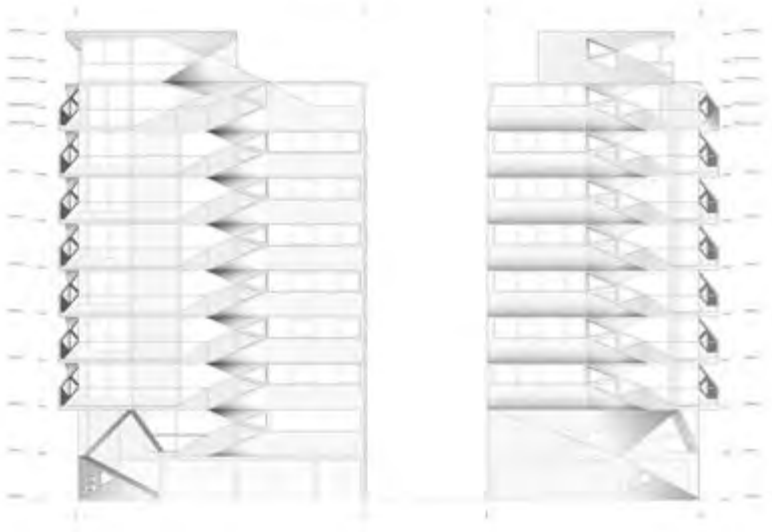






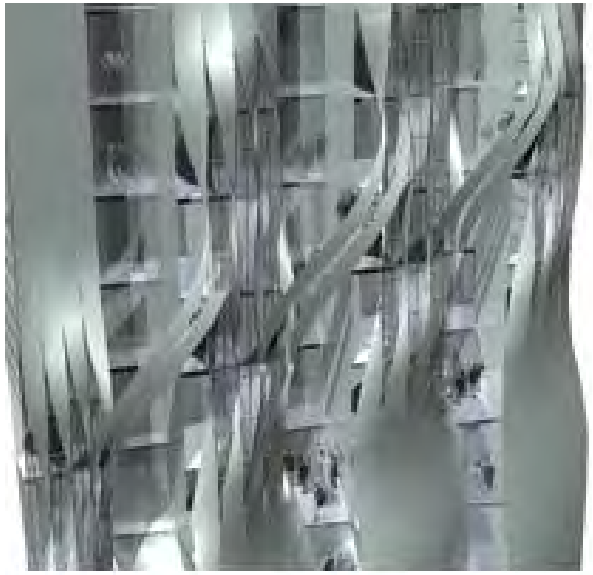
Prism Gallery, W. Hollywood, CA recent
Photo credit: Internet

Marcelo Spina



Jujiya Apartments, Rosario, Argentina 2009
Photo credit: Internet

Marcelo Spina



New Busan Observation Tower
Busan, Korea

The aerodynamically inspired shaft of the tower (5) includes a lower portion for community facilities (6), a middle one for business activities, and an observatory at the top. The attenuated form is held together by cantilevered floor plates, spiraling stairs, structural ribs, tendons bonded together and to the slabs, plus hydraulic jacks anchored to the ground.

Busan Observation Tower, Korea recent
Photo credit: AR 12/04

Marcelo Spina

New SCI_Arc Café and Boardroom
Los Angeles

Patterns won a competition to design these spaces in the existing SCI_Arc building, a long linear concrete former depot near downtown L.A. On the second floor, Spina hopes to bring the café and library together through new aluminum library shelves that are sloped and inflected toward the café space. The café tables (12), which are aluminum single-shell structures, seem extruded from the shelves. The boardroom (11), slightly above grade, is given views to the outdoors through a new faceted-glass wall.

SCI Arc Café & Boardroom, Los Angeles, CA 2007
Photo credit: AR 12/04

Atmosphere

SANAA

Extension to the Valencia Institute of Modern Art In Progress

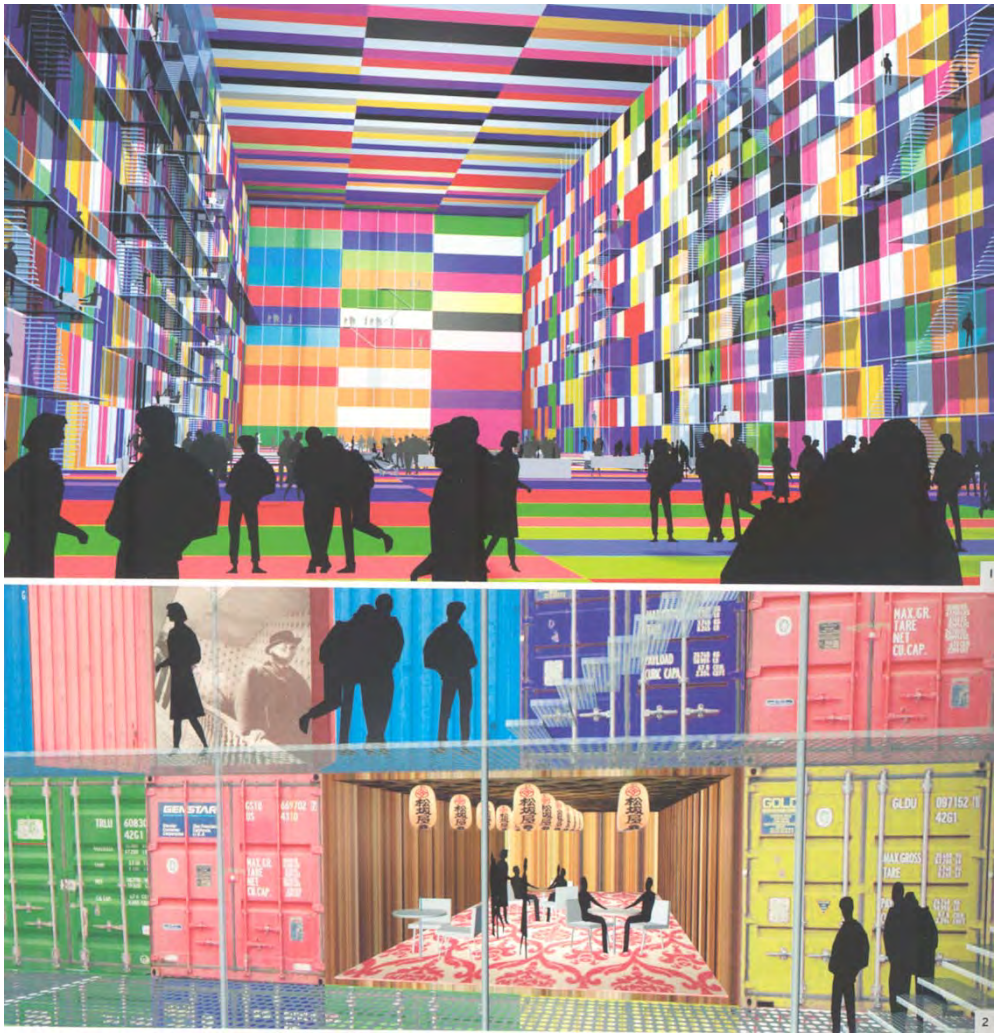
Cero 9

The Magic Mountain: Mask for Thermal Power Station, Ames, ICompetition 2002

Jakob + MacFarlane

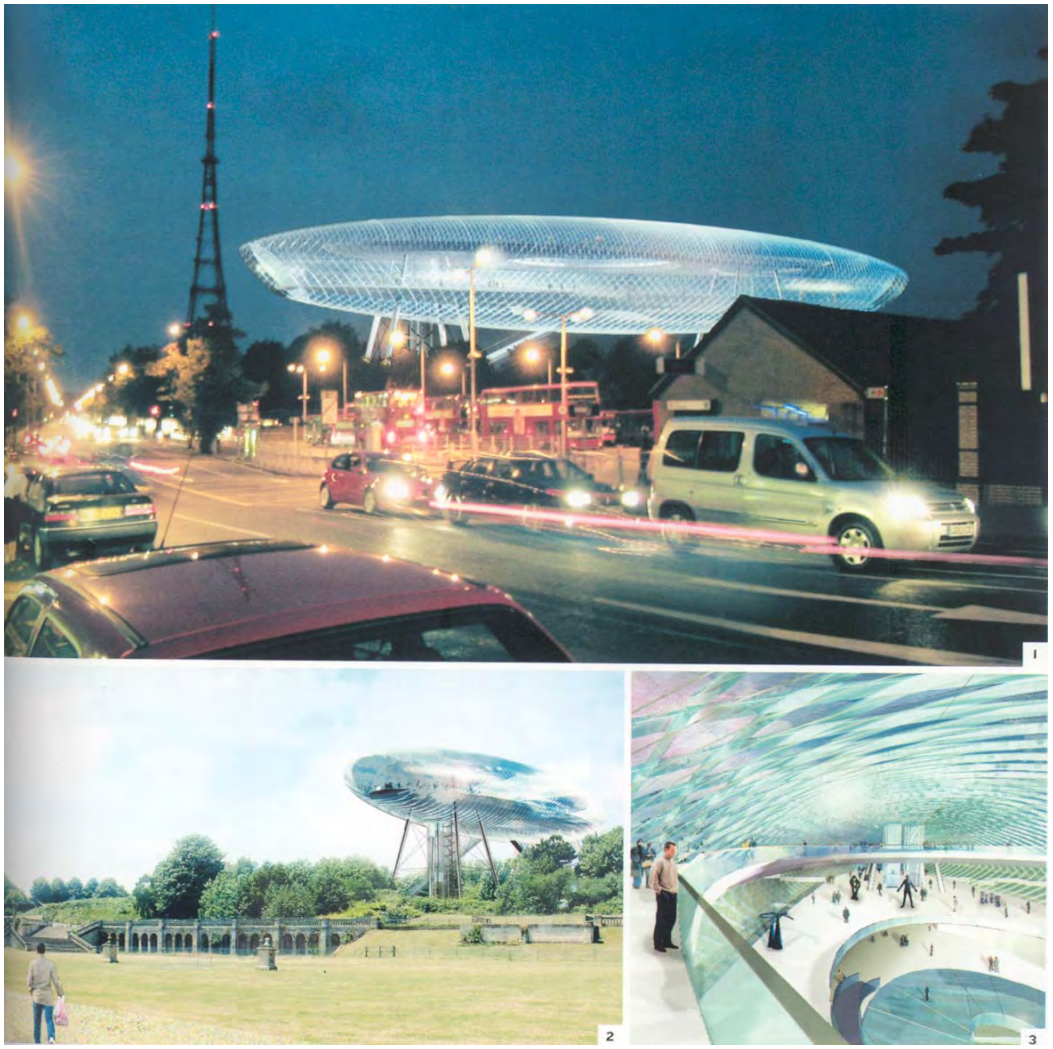
100 Flats Hospital Herold Site, Paris, France, 2003 to present

MVRDV



Container City, Rotterdam Biennale 2002

Wilkinson Eyre Architects



Proposal for new Crystal Palace, London, UK 2003

Alsop Architects

The Fourth Grace

Project