Erich Mendelsohn
(21 March 1887 – 15 September 1953)
“Every building material, like every substance, has certain conditions governing the demands that can be made on it.... Steel in combination with concrete, reinforced concrete, is the building material for the new formal expression, for the new style...

The relation between support and load, this apparently eternal law, will also have to alter its image, for things support themselves which formerly had to be supported...”

Erich Mendelsohn, letter to Luise Maas, March 14, 1914
Max Berg, Centennial Hall
Breslau, Germany
1913 (now Wroclaw, Poland.)
Wassily Kandinsky
*Painting with White Border*
1913

Max Berg, Centennial Hall
Breslau, Germany
1913 (now Wroclaw, Poland.)
Expressionism

Marc Franz
Rehe im Walde

Wassily Kandinsky
On White II
Analogy between a particular industrial technology—reinforced concrete—and the human body

Umberto Boccioni, *Unique Forms of Continuity in Space*, 1913
Newton’s fixed space

Einstein’s flexible space-time
Erich Mendelsohn, sketches for the Einstein Tower, Potsdam, Germany 1917
light
space
time
“organic”
shift in materials
Imagery worked on several levels. It represented the:

1. **Truth** of reinforced concrete construction in which a steel frame or skeleton supported and stiffened the concrete flesh

2. Stresses shaping the form (the compression and tension of both reinforced concrete and the human body)

3. Intricate curved pieces of the human spine corresponded to his aesthetic taste

4. Human presence that could arouse the empathy of viewers.

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Erich Mendelsohn,
Einstein Tower, Potsdam, Germany
1920-21
Erich Mendelsohn, The Steinberg, Hermann Company Hat Factory, Lukenwalde, Germany, 1921-23

“dynamic functionalism”
Erich Mendelsohn, The Steinberg, Hermann Company Hat Factory, Lukenwalde, Germany, 1921-23

ventilation system
Erich Mendelsohn, The Steinberg, Hermann Company Hat Factory, spinning room
Allgemein Hochbau Gesellschaft, Fritz Cohen Company textile factory, Gladbach, Germany, 1923

Erich Mendelsohn, The Steinberg, Hermann Company Hat Factory, spinning room, 1921-23
Mendelsohn believed that horizontal compositions best expressed the character of reinforced concrete slab construction and overthrew a dependence upon columns and piers that dated back to ancient Greece.
Erich Mendelsohn, Richard Neutra and Rudolf Paul Henning, Mossehaus renovation and addition, Berlin, Germany 1922-23
The Ring
April 1924

- Peter Behrens
- Otto Bartning
- Walter Gropius
- Hugo Haring
- Erich Mendelsohn
- Mies Van der Rohe
- Hans Poelzig
- Bruno and Max Taut
ZAHA HADID CURRICULUM VITAE
(born in 1950) Baghdad, Iraq

1977 Graduated from the Architectural Association School of Architecture

She joined Rem Koolhaas and Elia Zenghelis at Office of Metropolitan Architecture (OMA) became a partner in 1977.

It was with Koolhaas that she met Peter Rice who encouraged her.
Who was teaching at the Architectural Association?

Bernard Tschumi
Léon Krier
Rem Koolhaas
Elia Zenghelis
Daniel Libeskind

The A.A.'s chairman, Alvin Boyarsky, made sure that the faculty and guest lecturers represented a global range of ideas.
El Lissitzky
Proun (pronounced "pro-oon")
El Lissitzky, *Prounenraum*, 1923

reconstruction 1971
Kazimir Severinovich Malevich (23 February 1879, Russian painter and art theoretician. He was a pioneer of geometric abstract art and the originator of the avant-garde Suprematist movement.
Malevich's Tektonik
light

space

time

Erich Mendelsohn,
Einstein Tower, Potsdam, Germany
1920-21

Umberto Boccioni
*Unique Forms of Continuity in Space*, 1913
light
space
time

Erich Mendelsohn,
Einstein Tower, Potsdam, Germany
1920-21

Zaha Hadid
BMW Plant Central Building, in Leipzig
2005
ZAHA HADID CURRICULUM VITAE

1980 Started her own London-based practice.
1982 Awarded the Gold Medal Architectural Design, British Architecture
1993 Vitra Fire Station, Weil am Rhein, Germany
1997 MAXXI: National Center for Contemporary Arts, Rome, Italy – 1st
1998 Landesgartenschau, Weil am Rhein, Germany
1999 Phaeno Science Centre Wolfsburg, Wolfsburg, Germany – 1st
2001 Hoenheim-Nord Terminus, Strasbourg, France
2002 Bergisel Ski Jump, Innsbruck, Austria
2003 Lois and Richard Rosenthal Center for Contemporary Art, in Cincinnati
2005 Phaeno Science Center, in Wolfsburg, Germany
2005 BMW Plant Central Building, in Leipzig
2009 MAXXI, in Rome
Computer-modelling software arrived in Hadid's office in 1990 (ten years after she opened her own office)

*Model Shop*, which was created for Apple computers.

By the late nineties, they had switched to *Maya*, which was invented for animators to model elements like curtains and windblown hair; it became the standard program in computer-aided design.

Although Hadid did not like working on the computer—she hated the mouse—she was quick to grasp its advantages as a 3-D modeling tool, and the ease with which one could alter the scale of drawings. With the move to the computer, her architecture began to change; the sharp angles of her early Malevich-inspired designs gave way to more biomorphic shapes.
“There are three hundred and fifty-nine other degrees, why limit yourself to one?”

Zaha Hadid

Vitra Fire Station, in Weil am Rhein, Germany (1994)

Her exteriors seem to be shaped by the movement inside and around them, rather than by some predetermined notion of external form.
Hadid is concerned with movement and speed: both the way people will move through the buildings and the way a sight line travels through light and shadow.
Sometimes, to create an effect of light fading away, she would soften the ends of her lines by painting over them with a water-soaked brush, a method she called "whooshing."

As she worked, the influence of another giant of the Russian avant-garde, Wassily Kandinsky, whom she had also studied under Koolhaas, began to emerge in her designs, particularly in the flowing lines that connected the blockier, Malevich-inspired shapes. (Kandinsky made renderings of Arabic calligraphy during an extended visit to Tunis in 1905, and some critics see the influence of those studies in his later work.)
Wolfsburg, Germany

Phaeno Science Centre

It is made out of "self-compacting" concrete, which was developed in Japan in the late nineteen-eighties for bridge-and-tunnel construction, and does not require vibration to make it set or troweling to make it smooth.
is unlike anything else in the industrial city. And while it sits at the end of a chain of important buildings by Alvar Aalto, Hans Schumacher and Peter Zumthor’s is distinctly different and a style conjured only in had faith in the sense of the imagination. It is a site where people can stand and look out across the city, the diagonal lines of the center are balanced and alien, an extra-terrestrial mothership ready to support or a mysterious creature come to check out the site of the land, ready to assist as a reminder of a force. Out of the area support the law, while the other four panes in the façade to sustain the complex canopy steel framework supporting the roof, filling in the interior’s columns. Free landscape, the massive grid structure stands in stark contrast to the fluid simplicity of the museum’s concrete floor and walls. The center also acts as a functional space for a bar, lecture room, a conference area, a 270-seat theater and the museum entrance leads to the largest of them. Entering an amazing world, visitors are transported up and into a three-dimensional structure where the exterior unfolds gradually, to discover an inhabited landscape of stages, one area, terraces and platforms, a tech to expose thrilling themes from the world of science and technology.
The structure measuring 153x80m is conceived as an object lifted up and supported by 10 inverted (melted) “cones” all “peeling” and unfolding to connect and create the main concourse. Only four cones continue up to the roof to provide support to a “fanning” vierendeel steel roof.
The five-hundred-foot-long structure is raised about twenty-three feet off the ground, supported by ten giant steel-reinforced concrete cones that house services, including a bookstore, a conference room, a two-hundred-and-fifty-seat theatre, and the science center's entrance.
Hanif Kara, Structural Engineer, with engineers Adams Kara Taylor
The use of “self-compacting” concrete and a variety of timber, polystyrene and metal forms was used to construct the challenging geometrics and transitions in geometry. Each cone for instance consists of three or four plane walls inclining $35^0$ $90^0$ to reach basement level with a flared geometry to meet floor slabs.
Fair-faced concrete

What does the term “fair-faced concrete” mean? Officially, “fair-faced concrete” is taken to mean concrete surfaces that fulfil the appearance requirements of DIN 18217 “Concrete surfaces and formwork surface.” Interestingly, this Standard neither mentions nor defines the term “fair-faced concrete”, nor does it set out any precise rules or guidelines for it. The reason given for this (by the German cement industry association “Bundesverband der Deutschen Zementindustrie”) is that there are a number of influences that cannot be foreseen or controlled with absolute certainty in the course of manufacture and on-site job execution. This is somewhat at variance with the position taken by the architect and book author Jürgen Schmidt-Morsbach, who contends that “fair-faced concrete is a concrete surface that constitutes a design element and that has a pre-determinable result”. Doka’s view of the matter is that fair-faced concrete is concrete with certain surface characteristics, and that these characteristics will depend upon three essential factors: Choosing the most suitable formwork system, having the right concrete recipe, and treating the formwork and the concrete with proper care. Doka offers the right formwork equipment for all construction works where the surface of the concrete is exposed to view, which is why the maxim governing all Doka’s research, development and manufacturing activities is simply this: “concrete surfaces are the mirror image of the form-ply”.

Concrete at phaeno
Working in close liaison with the architects, the Doka Formwork exactly defined the joint spacing and form-tie pattern in advance.

9000 m² of custom-manufactured project-specific formwork for the cones—owing to the complicated shapes--formwork items are only used once each!
The cones than are also sometimes "infilled" to provide further floor spaces, whilst in some instances they provide voids that give access to the main floor. The shape of each "cone" is unique and is formed to provide the visual transparency at the ground level while "fanning" out at the concourse to provide floor spans ranging 14-16m.
The fourth facade is suspended from the roof as it was light and to avoid it sitting on the concourse where large cantilevers occur.

The main exhibition level then supports the facade and perimeter of the roof structure.
She rarely uses the word "space" in talking about her designs, preferring words like "energy" and "field" and "ground conditions";
The structure is made of crossed strands, like a tangle of fettuccine. These wavy spaces are remarkably true to the sketches that Hadid drew in 1998, at the onset of the MAXXI competition, on lined paper in ink.
Emiliano Cerasi, a contractor who, when asked what it had been like to work on the MAXXI, rolled his eyes and put his hands together fervently, and said, "Very dee-fee-cult." The self-compacting **concrete** works best when poured at temperatures between fifteen and twenty-five degrees centigrade, he said, which in Rome means only six months a year. (59-77F)
Welcome to Lafarge's website! Here you will learn all about our Group, the world leader in building materials, from the challenges facing our industry to the attention that we give to each of our stakeholders: customers, current and future employees, shareholders, local communities, non-governmental organisations and journalists.

Cement

09/03/2010
Manufacturing process
See this new flash animation! Cement manufacturing is a complex process: from the extraction of raw materials to the firing and the shipment, follow every step in the process...
> The cement manufacturing

Greece

09/02/2010
Education and ecology
In Greece, Lafarge Heracles found a fun way to raise children’s awareness on the protection of environment.
> Case study

Architecture

09/08/2010
Malleable concrete with Optacolor®
In Germany, the 2010 winner of an architects’ international competition experimented with the ductility of concrete using Optacolor® cement for the manufacturing of the material. His project proved astonishing results!
> The completed project
1 Außenansicht Gliedeaton +00 mm
2 Wärmedämmkern +30 mm
3 Balken in Längsrichtung vorgesetzte Lackierung
4 Balken in Querrichtung vorgesetzte Lackierung
5 Verbundverglasung
6 Rost komplett verdunkelt
7 Leichtmetallrahmen
8 Acrylglasdecke transitzierend (Farbe) und 8 mm (Farbe)
9 Holzkleber 1:2 (Farbe), mechanisch Kappen für Kanten
10 Verbundverglasung 6 mm (Farbe) mit 6 mm (Farbe), 50 mm Drapiertglas in Aluminiumrahmen (Farbe)
11 Unterkonstruktion (Farbe) Fußverlängerung
12 Schaufenster (Farbe) Klarglas
13 Lichtführung Leuchtstofflampe
project info:

architect: zaha hadid architects
project director: jim heverin
project architect: glenn moorley, sara klomps

project team: alex bilton, alex marcoulides, barbara bochnak, carlos garilo, clay shorthall, ertu erbay, george king, giorgia cannici, hannes schafelner, hee seung lee, kasia townend, nannette jackowski, nicolas gdalewitch, seth handley, thomas soo, tom locke, torsten broeder, tristan job, yamac korfali, yeena yoon

competition project team: saffet kaya bekiroglu (project architect), agnes koltay, feng chen, gemma douglas, kakakrai suthadarat, karim muallem, marco vanucci, mariana ibanez, sujit nair

consultants:
sports architect: s+p architects (london)
structural/services: ove arup & partners (london, newcastle)
fire safety: arup fire (london)
acoustics: arup acoustics (london)
façade: robert-jan van santen associates (lille)
lighting: arup lighting (london)
kitchen design: winton nightingale (london)
maintenance access: reef (london)
temp construction: edwin shirley staging (london)
security: arup security (london)
av/lit: mark johnson consultants (london)
access: access = design (london)
cdm coordinator: total cdm solutions (cardigan)
breem: ove arup & partners (london)