

ARCH 2321: History of 20th
Century Architecture

Introduction

What is the difference between
contemporary architecture and
modern architecture?

Modern architecture begun around 1890

Contemporary architecture begun around 1970

What is good architecture and what
is bad architecture?

Who decides?

What makes a building “good architecture”?

- It is comfortable
- It satisfies its program
- It fits into the neighborhood
- ?
- ?
- It is aesthetically pleasing (beautiful, attractive)
- Skillful design of space

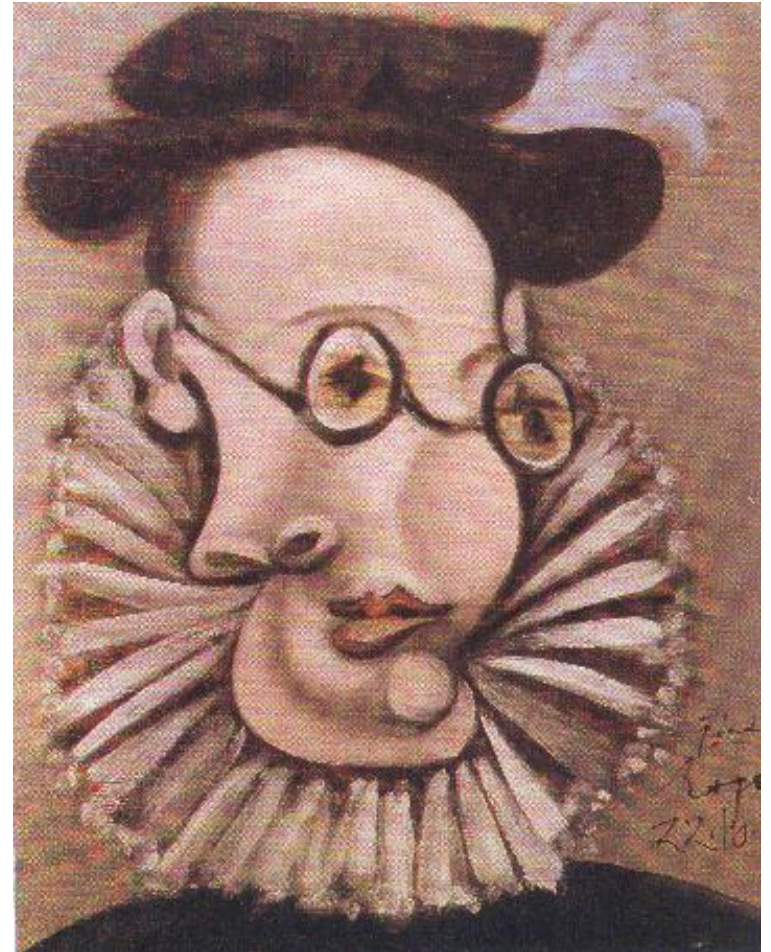
What is “beautiful” ?

**His mother thinks
he is beautiful.**



Photo credit: P. Sperling

The artist that created this creature thinks that he thinks is beautiful.



Art: Portrait of Jaime Sabartes by Pablo Picasso

Photo source: Picasso Museum, Spain ⁷

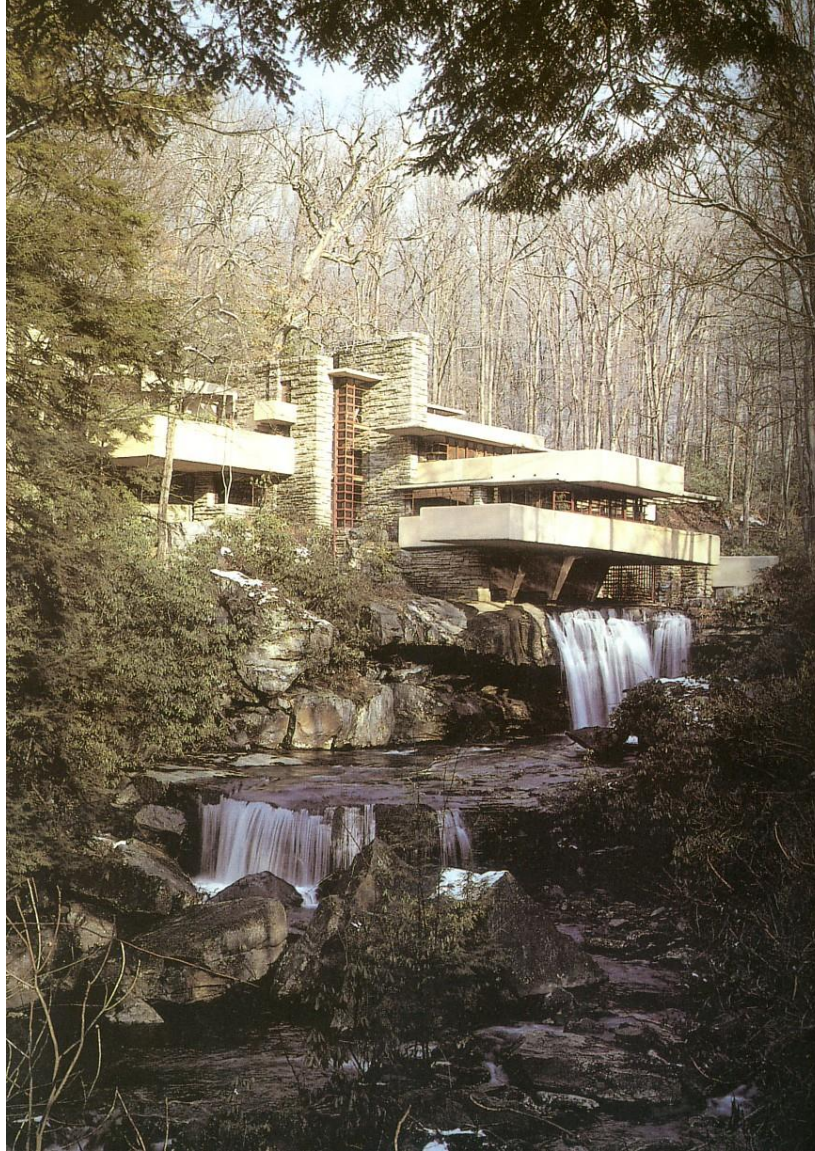
Are either of these judges
objective?

What is the difference between
“objectivity” and “subjectivity”?

- Objective: Having actual existence or reality. Based on observable phenomena. *Uninfluenced by emotion or personal prejudice, feelings or opinion.*
- Subjective: Particular to an individual. *An opinion. Influenced by personal feelings.*

Can we be completely objective
when we evaluate a building's
aesthetics ?

Frank Lloyd Wright



Falling Water (Kaufman House), 1935
Bear Run, PA Photo credit: A.F.Kerstein

Philippe Starck



Asahi Beer Azumbashi Hall₁₂

Tokyo, Japan 1989

Photo: Siling

Peter Cook and Colin Fornier



Kunsthhaus Graz (Museum), Graz, Austria

2003₁₃

Proportion has traditionally been a key factor in determining beauty; however, this began to be discussed during the 19th century.

Are aesthetics the only criteria for judging architecture?

Although art is often beautiful, some of the world's greatest masterpieces (in painting, music, or literature) are enigmatic, difficult or disturbing.

Aesthetic experience puts us outside
ourselves.

-*Oscar Wilde*

Renzo Piano and Richard Rogers



Centre Pompidou, Paris 1971-1979 Photo credit:
(Phaidon/Steele)

Who determines what is beautiful,
(or “cool” or “in”)
when it comes to design?

Are we to draw our own
conclusions?

Do we make these judgments in a vacuum?

Who influences our aesthetic decisions?

Marketing?

VISIONARY.

{ *frosted glass* }



{ *sky glass* }



{ *cobalt glass* }



{ *antique glass* }



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Peer influences?



Cultural influences?

METROPOLIS

“WE ALREADY KNOW WHAT YOU WANT!”

ARCHITECTURE < CULTURE > DESIGN
December 2003

Restoring **Aalto's**
MIT Masterpiece

SOM's
Quiet Renegade

*YABU and PUSHELBERG Get Inside
the Client's Head*

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Teacher influence?



Can we protect ourselves from these influences?

Should we?

“All works of art have to do with meaning. We can never, in fact, experience form without deriving meaning from it. All forms have their physical and associational or symbolic meanings built into them, and all those meanings, but especially those involved with association, will change as cultures change.”

Vincent Scully, Jr. in The Natural and the Manmade

Do architects influence each other?

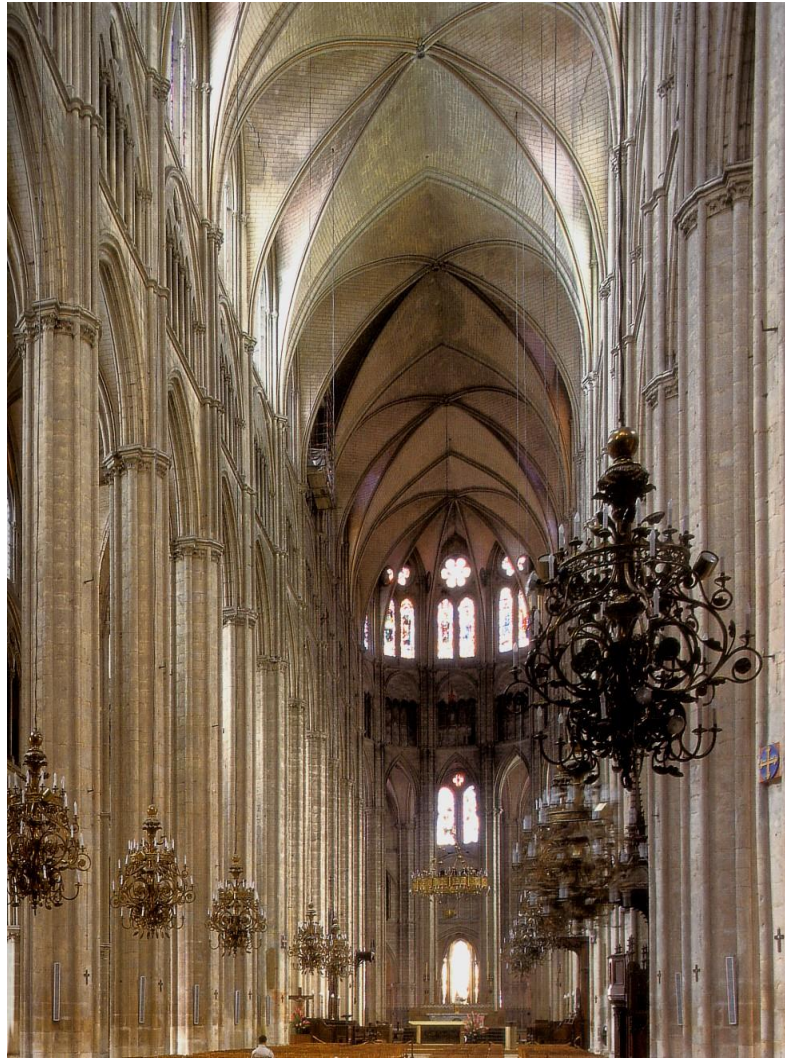
Why is it that some architects, working more or less during the same time period, seem to be repeating off each other?

Gothic Cathedral examples



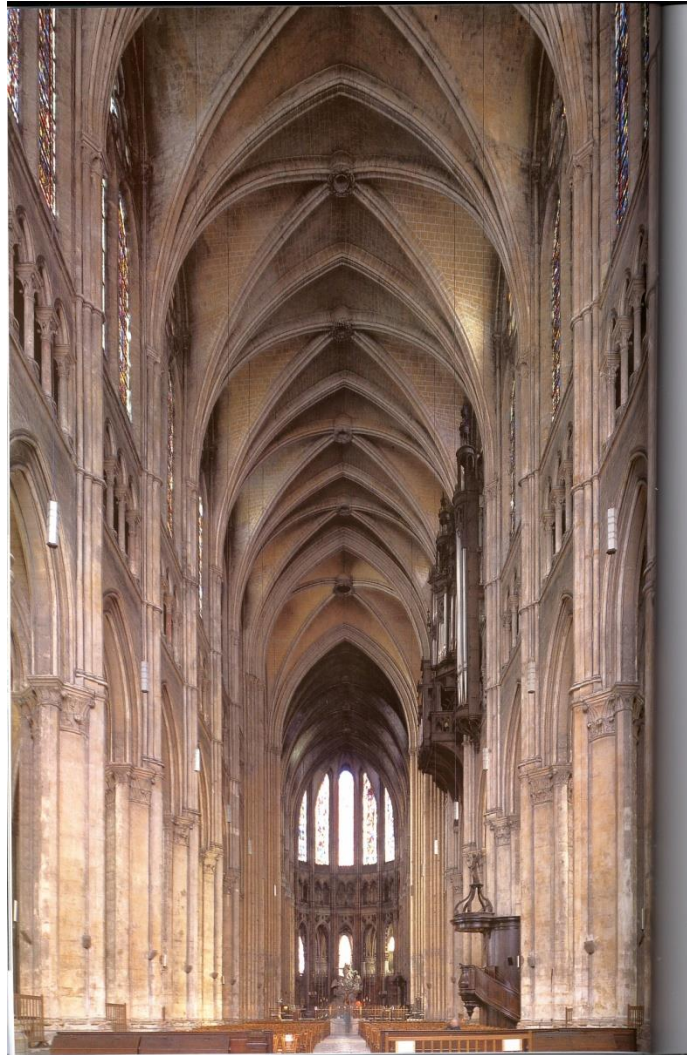
Chartres Cathedral France, 1193-1250

Photo credit: Museum slide ₂₈



Bourges Cathedral France, 1194-1255

Photo credit: Museum slide



Notre Dame Cathedral, France, 1163-1240

Photo credit: Museum slide
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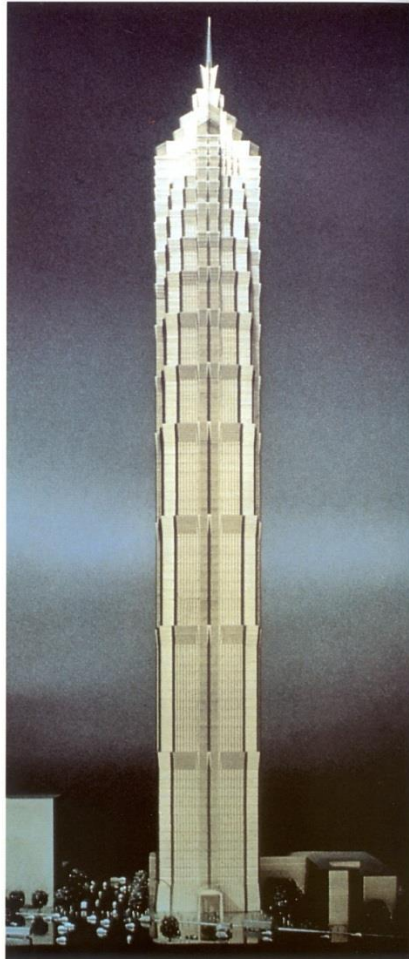


Rouen Cathedral

France, 1202-1880

Photo credit: Museum slide

Skyscrapers



SOM: tower sketches



Cesar Pelli: Petronas

Photo credit: Jodidio

Eric Owen Moss



Culver city project

Los Angeles, CA

(Deconstructivism)

Photo credit: (Jodidio)

Zaha Hadid



Vitra fire station

Germany, 1990-1994

(Deconstructivism)

Photo credit: (Jodidio)

*“It is difficult to establish a one-to-one relationship between a given historical or economic event and a development in the arts, if only because the creative process is not oriented to such specific inspiration. Rather, a mood or a climate is established and its influence may be so pervasive as to give rise to an esthetic response that is almost involuntary on the part of the creator. **This is nothing other than the spirit of the times.**”*

(Philip Jodidio)

Is there such a thing as a “classic”?

A building that never seems to go out of style,
that is always considered great?

Who determines which buildings are “classics”?

Classic buildings respond to the mood or climate of its time



Hagia Sophia, Anthemius of Tralles, Istanbul, 537

Photo credit: A.F.Kerstein

(Most sacred and important building of the Byzantine era)

Gerrit Rietveld



Schroder House 1920's

Photo credit: H. Sands

The Netherlands

(The Stijl)

Eric Mendelsohn



Einstein tower 1920

Germany, 1919-21

(Expressionist) 40

Photo credit: Edifice/Darley

Le Corbusier



Ronchamp Cathedral,
Photo credit: H. Sands

France 1951

(Modern Expressionism)

Jorn Utzon



Sydney Opera House (Australia) 1970's (Modern Expressionism)

Photo credit: P. Sperling

Modern Architecture:

- *Considered to have begun around 1890*
- *Crystallized around 1920*
- *Continued until 1960*

Contemporary architecture:

- *Considered to have begun around 1970*

SPACE

Space is the essence of architecture (*F. Ll. Wright*)

ARCHITECTURE IS:

- The art into which we walk and that envelopes us.
- The making of space.
- Frozen music.
- The creation of the perfect and most beautiful efficiency.
- A powerful shaper of behavior. We shape our buildings and they shape us.

Experience architecture by moving around a building and through its interior spaces.

Credit: Understanding architecture: Its elements, history and meaning (Leland M. Roth)

SPACE (CONTINUED)

Some types of space:

- Physical: volume of air bounded by walls, floor and ceiling of a room
- Perceptual: space that can be perceived or seen
- Behavioral: space we can actually move through and use (flowing spaces):
 - [Prairie Houses]
- Directional: emphatic axis (Gothic cathedrals)
- Non-directional: no obvious path through the building, but a variety to choose (Barcelona Pavillion)
- Personal: the distance that members of the same species put between them

Vocabulary

- Modern architecture
- Contemporary architecture
- Objective
- Subjective
- Classic architecture
- Space

**The Roots of Modern
Architecture:
Industrialization, Rational
Engineering, New Forms—
Bridges, Railway Stations, &
Skyscrapers**

Abraham Darby
Burton and Turner
Joseph Paxton
Barlow and Ordick
Gustav Eiffel
August Perret
Burnham and Root
William le baron
Jenny
Louis Sullivan
Daniel Burnham

Almost all of the new building forms constructed today can be traced to one of the modern movements that developed in the years surrounding 1900.

It is interesting to note how many new strains of architecture emerged during the years between 1890 and 1930.

The beginning of the 20th Century
(1890 – 1920)
was a time of new ideas
and transition

These radical social, artistic and technological theories significantly influenced the development of modern architecture.

*In fact, most current architecture
can be traced to the modern
movements developed around
100 years ago.*

These are the early movements
that still influence architecture
today:

Engineering-Architecture

Back to Nature Architecture

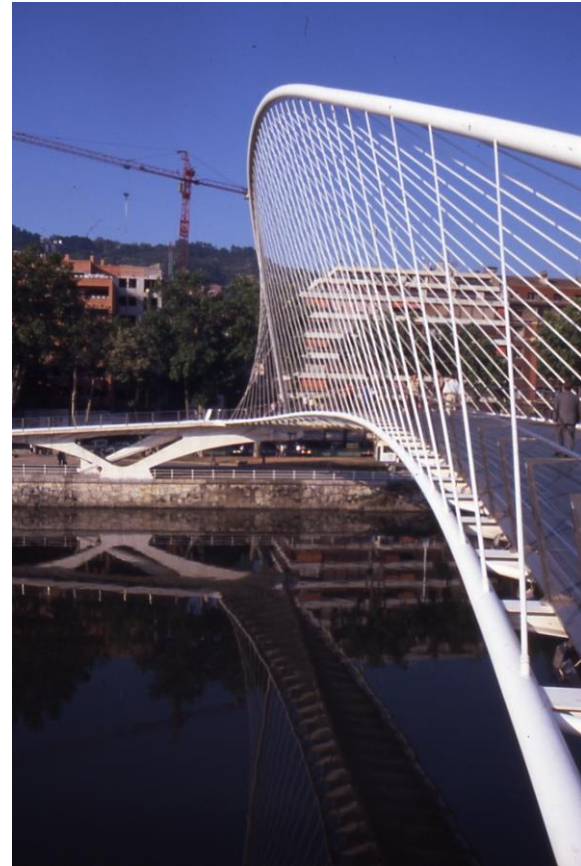
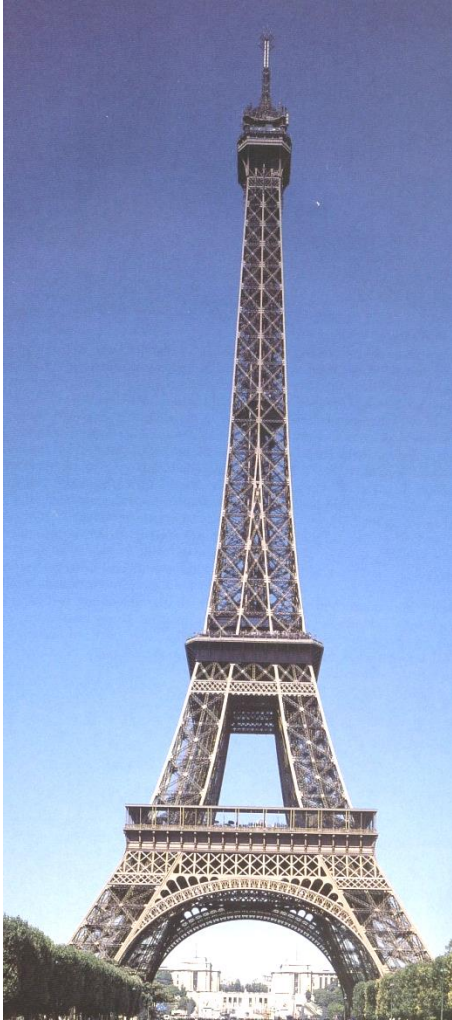
Expressionism

Modernism

Engineering Architecture

- *The engineer as designer*
- *Structure determines the form*

Engineering Architecture



from Eiffel, the 'father' of engineering-architecture to Calatrava

The background story

Revivalism:

Before 1920, most important buildings were designed in conformance to one of the tried-and-true historical styles. Thousands of elegant and lovely buildings were constructed in either the neo-classical, neo*-gothic, neo-romanesque or neo-renaissance style.

The Beaux Arts style of architecture was the prevalent one before modernism was introduced.

*(*the term 'neo' means a new and different form of. When 'neo-' precedes a word it generally means that the style is being brought back or reinterpreted.)*

The Beaux Arts movement:

(pronunciation: bO-zärt; or bO-zar' in French)

In French, the term 'beaux arts' means fine arts. Based on ideas taught at the legendary École des Beaux-Arts in Paris, the Beaux Arts style flourished between 1885 and 1920.

Combining ancient Greek and Roman forms with Renaissance ideas, Beaux Arts is an eclectic Neoclassical style. **Colossal** masonry buildings are **highly ornamented**. Because of the size and **grandiosity** of these buildings, Beaux Arts became the favored style for court houses, museums, railroad terminals and government buildings.

(For more on the Beaux Arts, see
<http://architecture.about.com/library/blgloss-beauxarts.htm>)

Giuseppe Sacconi
Victor Emanuel
Monument, Rome, 1885



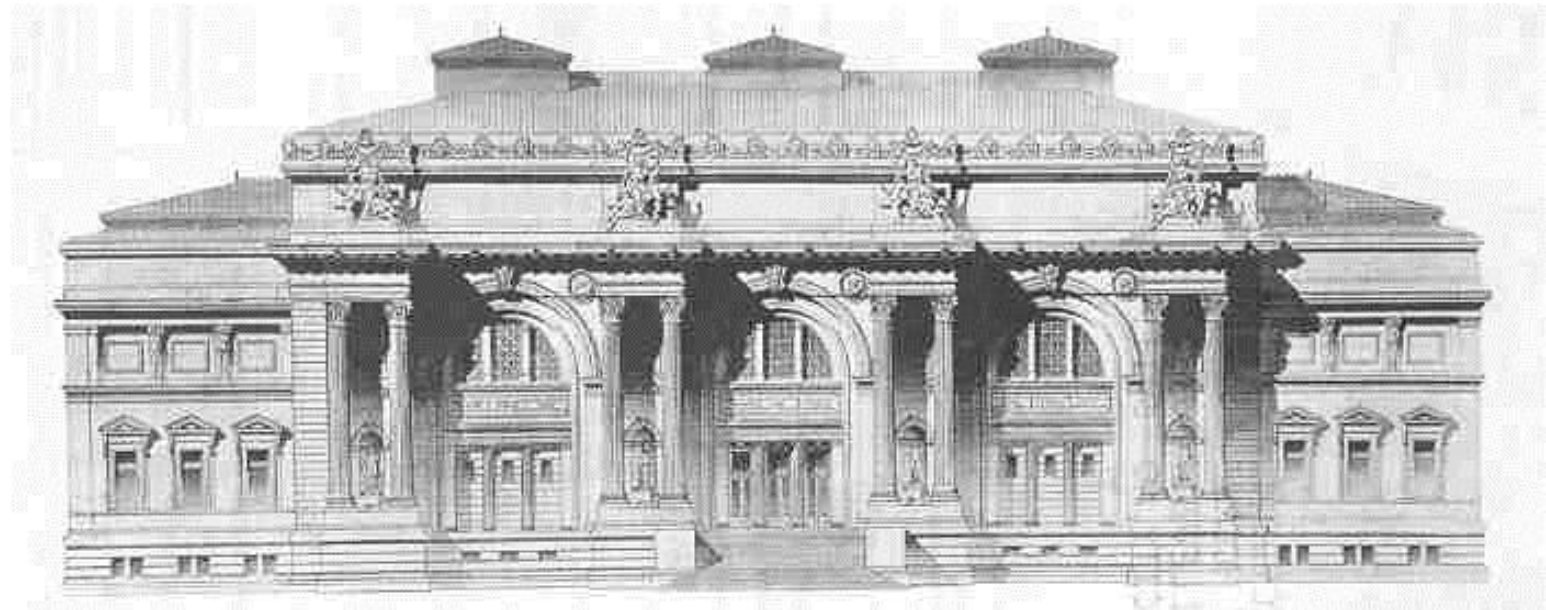
A. The Victor Emanuel II Monument, Rome (1885–1911). See p. 1086

Charles Girault
Petit Palais, Paris, 1897



B. The Petit Palais, Paris (1897–1900). See p. 1086

Richard Morris Hunt



The Metropolitan Museum of Art

Photos: internet sources

NYC 1902

(Beaux Arts)

These old forms persisted far into the century alongside the new architectural philosophies. For the last 70 years, however, with the exception of some residential builders, no serious architect designs in a historical style.

What materials and methods of construction were available in the early 1800's?

- Stone
- Timber
- Brick (1633)
- Iron

Structural iron was used in buildings as early as 1800. However, most architects used the iron columns and beams to add strength to their stone structures. The iron supports were hidden away within the stone walls.

Architectural- Engineering

Structural engineers, and not architects, were the earliest innovators. They began to use iron in bridges, and went on from there to design exhibition halls and railroad stations.

(In 1900 few architects were prepared to recognize technical innovation as an artistic challenge. The structure of building was a means to an end and had no influence on the outer form.)

Abraham Darby



Coalbrookdale Iron Bridge

England

1789

For more information: <http://www.civil.bcit.ca/edufacts/ironbridge.html>

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Photo credit: AA Photo Library

New methods and materials were developed in the 19th century

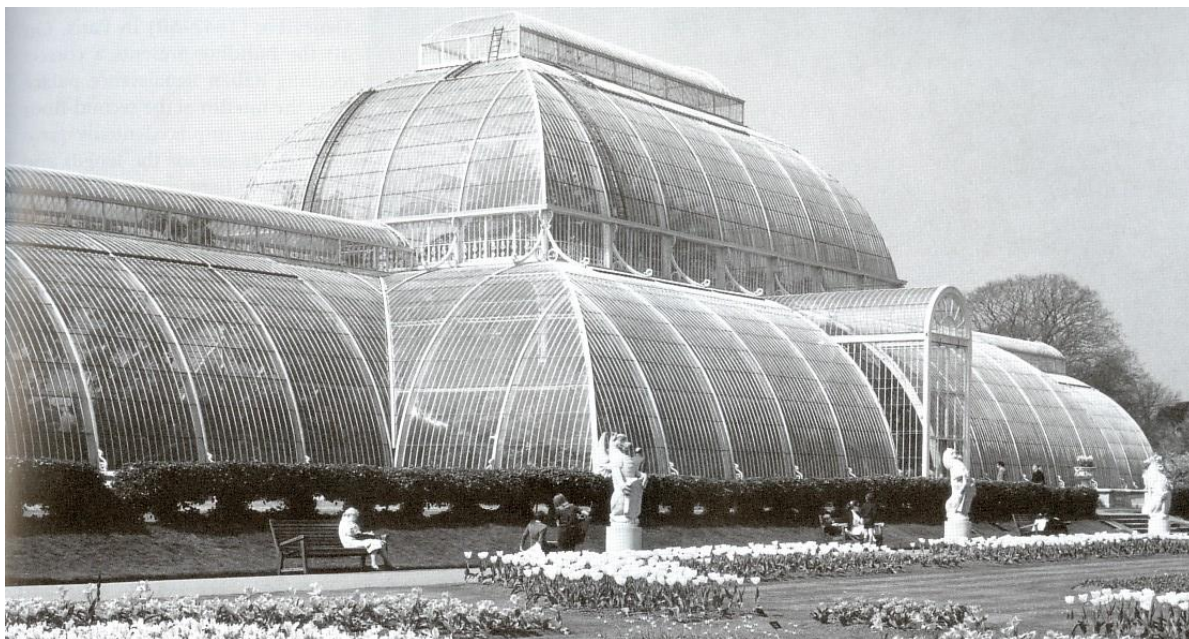
- Steel
 - The combination of iron and carbon (1781)
 - Bessemer Process (1856)
 - Standardized rolled sections (1879)
 - Fireproofing methods
- Portland cement (1824)
- Indoor plumbing (1829)
- Reinforced concrete (1854)
- The beginnings of mass production
 - Cast iron (1840)
 - Machines for making bricks (1850)
 - Plate glass (1880's)
 - Steel fabrication
- The Otis elevator (1903)

(For more information: See the time-lines at the end of this chapter.)

As the methods and materials of construction evolved so did the design of buildings.

But very, very slowly

Burton and Turner



While the design of the Palm House was Burton's, the extraordinary engineering and construction work was very much Richard Turner's. The technology was borrowed from shipbuilding and it can be seen that the design is essentially an upturned hull. The unprecedented use of light but strong wrought iron 'ship's beams' made the great open span possible, giving room for the unhindered growth of tall specimen palms. (For more: www.kew.org)

Palm House,

England

1845

Photo credit: AF Kursting

Joseph Paxton

In 1851, Paxton erected his Crystal Palace. It was an amazing glass and iron pavilion, over a third of mile long, with 800,000 square feet of floor space. The construction had an avant-garde cantilevered iron frame. He made it from interchangeable prefabricated parts and acres of glass panels. It was certainly influenced by the greenhouses he'd designed earlier. (www.uh.edu/engines)



Crystal Palace

UK Photo: Curtis (and internet)

1851, London,₆₈



NYC boasts the greatest collection of cast iron structures in the world. Approximately 250 cast iron buildings stand in New York City and the majority of them are in SoHo. Cast iron was initially used as a decorative front over a pre-existing building. With the addition of modern, decorative facades, older industrial buildings were able to attract new commercial clients. Most of these facades were constructed during the period from 1840 to 1880. And because stone was the material associated with architectural masterpieces, cast iron, painted in neutral tints such as beige was used to simulate stone. In addition to revitalizing older structures, buildings in SoHo were later designed to feature the cast iron. For more:

<http://www.artnyc.com/SoHoHistory.html>

Cast iron building, about 1850

(New York City) Photo credit: H. Sands

Barlow & Ordich



For More: http://www.greatbuildings.com/buildings/St_Pancras_Station.html

St. Pancras RR Station (central London) 1864-1868

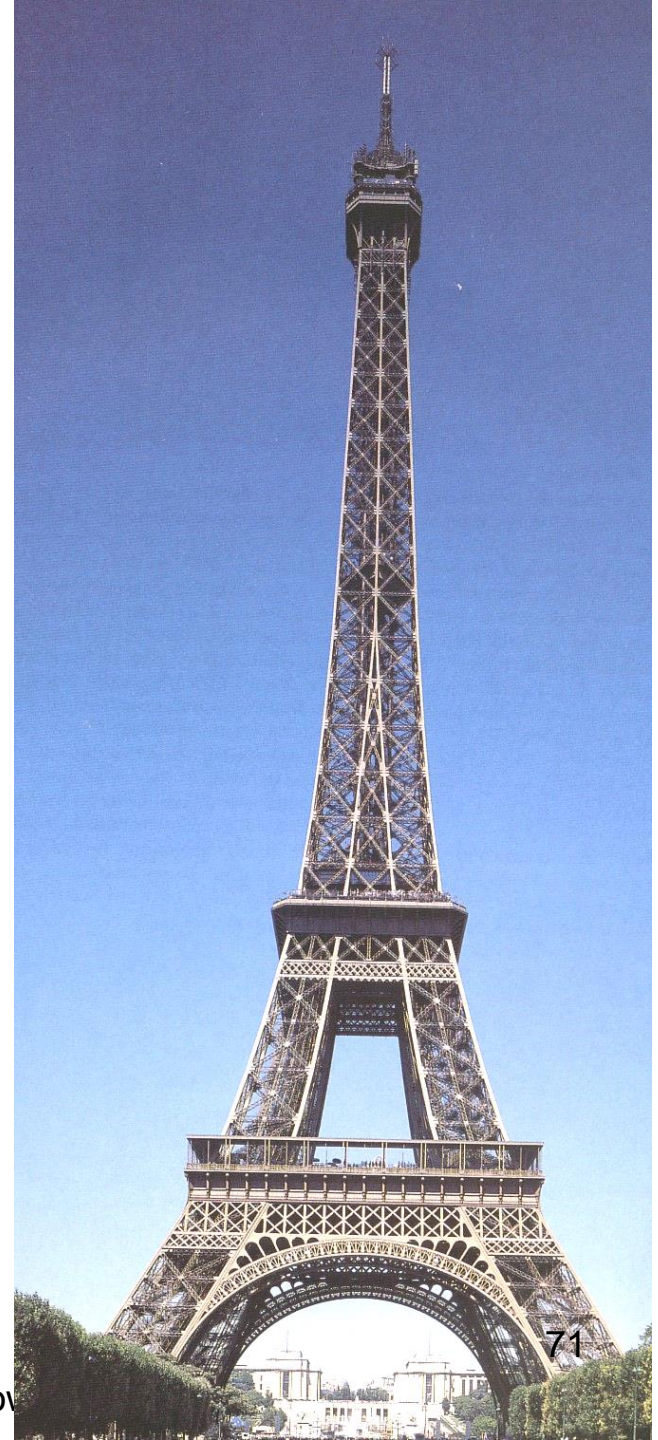
(Gothic front) Photo credit: AA Photo Library

Gustav Eiffel

The 984-foot Eiffel Tower was the tallest building in the world when it was unveiled 1889. The open-lattice wrought iron tower remains one of the world's premiere tourist attractions. Before the Tower's construction, critics called Eiffel's design an eyesore and predicted that the tower would cost too much to build. Eiffel's crew assembled the 18,000 pieces of iron in just 21 months, under budget and in time for the Paris Worlds Fair opening day. Eiffel was one of the first engineers to recognize the importance of wind forces on tall structures. He designed the surface of his tower to be so minimal that the wind has virtually nothing to grab onto. All pieces of the Tower form an open lattice of light trusses through which the wind can

blow. **The Eiffel Tower, Paris 1889**

Credit: http://www.pbs.org/wgbh/buildingbig/wonder/structure/eiffel_tow



And now, the architects.....

Auguste and Gustave Perret were among the first architects to use new technology and new construction materials. Their designs in reinforced concrete revolutionized construction. **They were the first architects to recognize that the structure of the building could contribute to its beauty.**

“Ornamentation and structural support are intimately connected.....Any architect who could express himself through a building’s construction was a poet.”

Auguste Perret

Auguste (and Gustave) Perret



Trained in the Ecole de Beaux Arts

New interpretation of neo-classical style.

Leader and specialist in reinforced concrete.

Established a connection between natural forms, classical symmetry and order and the structural system

For more on the Perretts:

www.encyclopedia.com/html/P/Perret-A1.asp

Esders Ready-made Cothings, Paris 1919

(reinforced concrete) Photo credit: (Taschen:Gossel)

Auguste Perret



Apartment House: rue Franklin,
Photo credit: (Prestel:Icons)

Paris

1903

The development of the skyscraper

The new financial systems tended to concentrate business in the largest cities, such as Chicago and New York , making building-sites extremely expensive. Instead of spreading a building out across the site, it made sense to build up. This need coincided with the new technologies and materials recently developed such as frame construction, indoor plumbing, steel and reinforced concrete.

But, perhaps the most important invention was that of the elevator, which was able to take business to new heights.

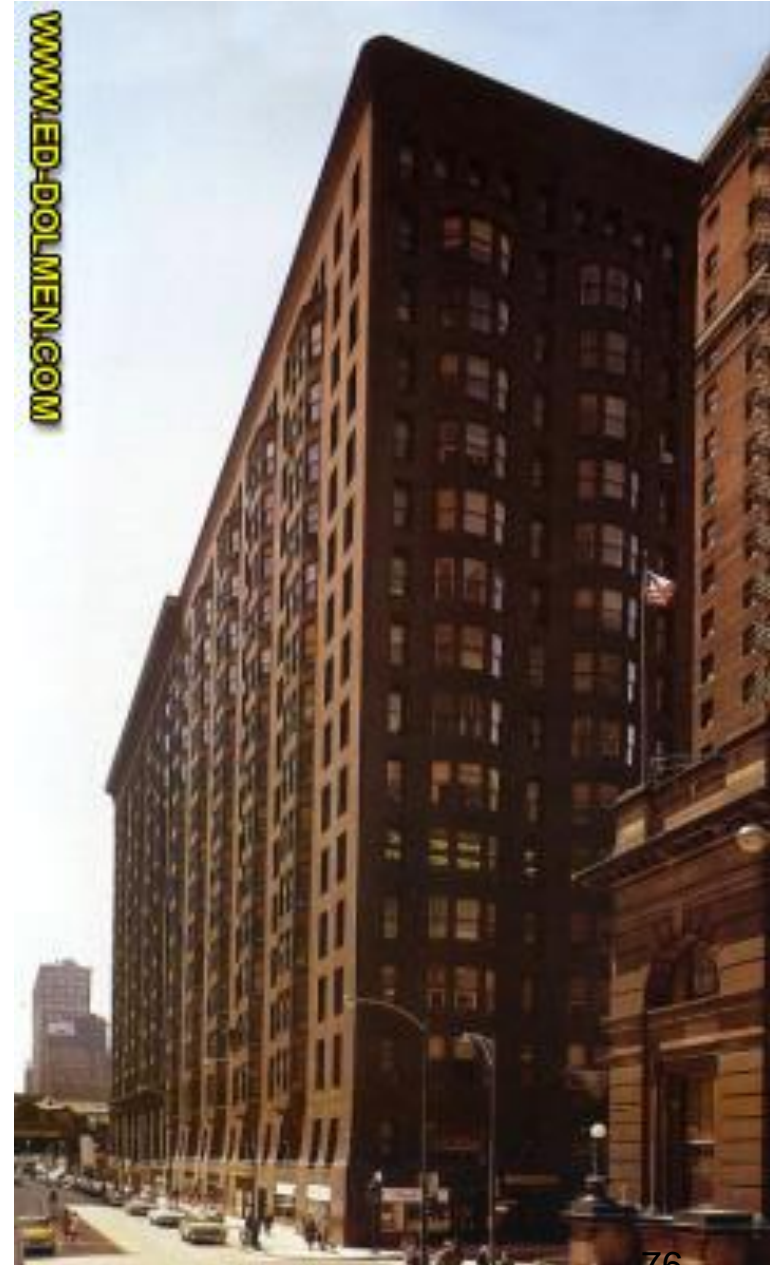
Burnham and Root

*The Monadnock Building is famous as being **the last tall building constructed with masonry (brick) load-bearing walls**. The two halves of this building provide a unique perspective for examining the history and development of modern architecture. **The north part--famed for its lack of traditional ornamentation--is a masonry, wall-bearing structure**, the last skyscraper to employ this method of construction, with six-foot thick walls at the base. **The south addition, on the other hand, is an early example of steel-frame construction**, its underlying structure revealed through narrow piers and wide windows. **Together, they mark the end of one building tradition and the beginning of another.***

(www.ci.chi.il.us/Landmarks/M/Monadnock)

The Monadnock Building

(Chicago, Ill) 1889 Photo credit: Internet



William le Baron Jenney

*..is known as the father of the steel skeleton skyscraper. **This building was the first occasion when Bessemer steel beams were used, and this building of the Home Life Insurance Company has been considered as the initial and parent building of the steel construction method.** (www.archinform.net/arch)*



The Home Insurance Building

(Chicago, Ill) 1885 Photo credit: Internet

Sometimes an architect makes the structure of the building its biggest design asset.

Expressing structure

Such as we have just seen in these images on engineering architecture, has historical roots and is very popular today.



Pont du Gard, Nimes, Italy
BCE

20-16

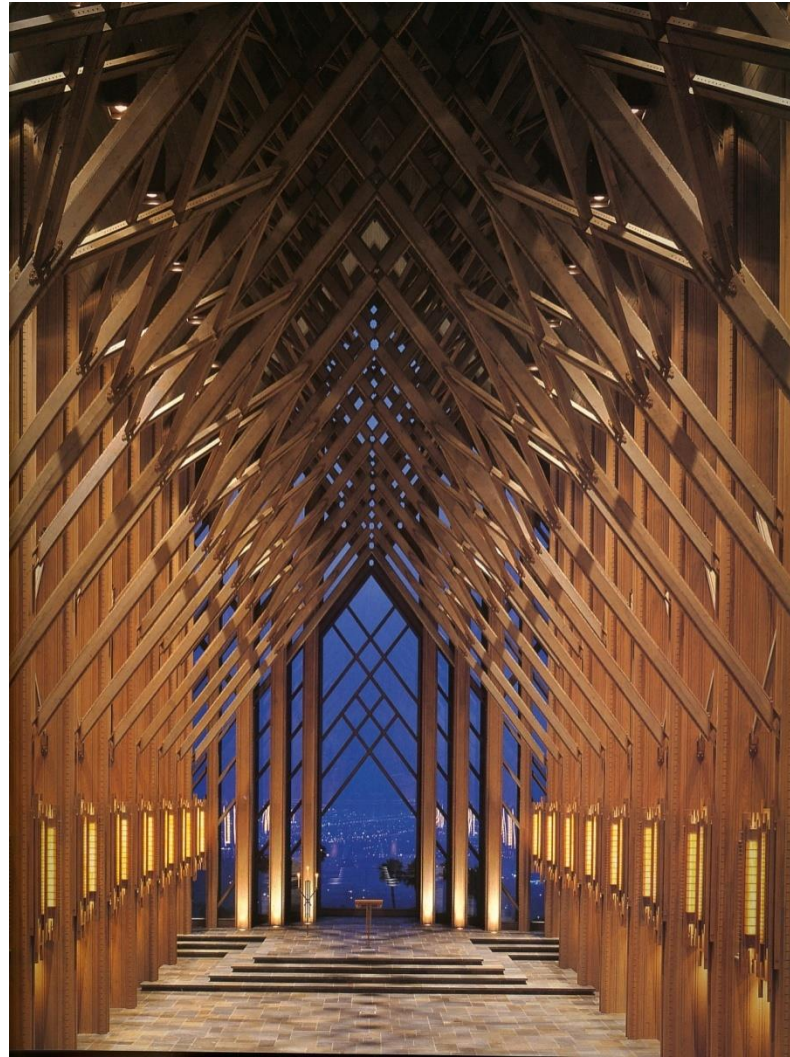
Henri Labrouste



Bibliothèque Nationale, Paris
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1858-

Fay Jones + Maurice Jennings



Thorncrown Chapel, Eureka Springs, Arkansas 1980
Photo: (Phaedon:Pearman)

Smith-Miller+Hawkinson



Corning Museum of Glass, Corning, NY

Photo: Paul Warchol

Norman Foster



Hong Kong and Shanghai Bank, Hong Kong 1979-

86

Photo: (Steele)

Norman Foster



Hong Kong and Shanghai Bank, Hong Kong

1979-86

Photo: (Konemann)

Santiago Calatrava



TGV Station, Lyon, France
1989-92

Santiago Calatrava



TGV Station, Lyon, France

Photo: (Jodidio)

1989-92

Santiago Calatrava



WTC PATH Station

Photo credit: Port Authority of New York press release

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