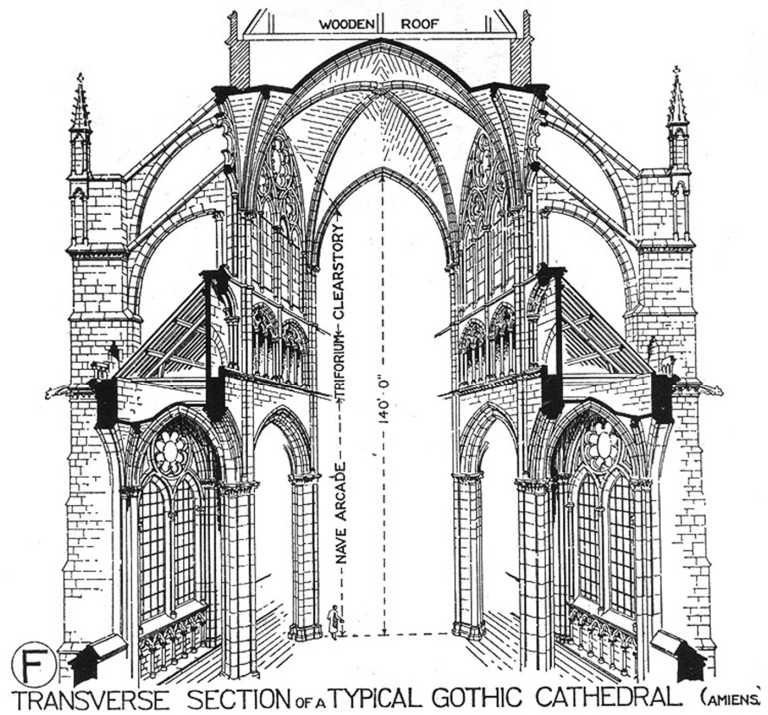


History part 2

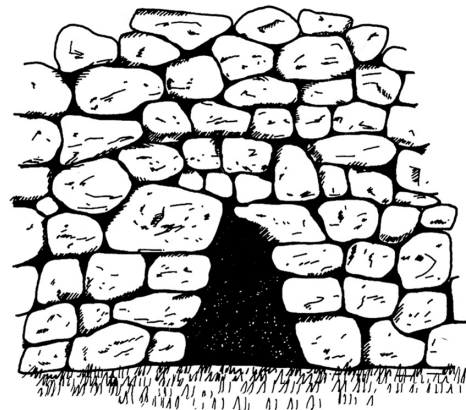
Roman Domes
Byzantine Domes
Renaissance Domes
Gothic Vaults



Amiens Cathedral

Corbeled Dome

Greek
Corbels (not a true arch)



Corbelled arch in wall, Tiryns, Greece (c. 600 B.C.).

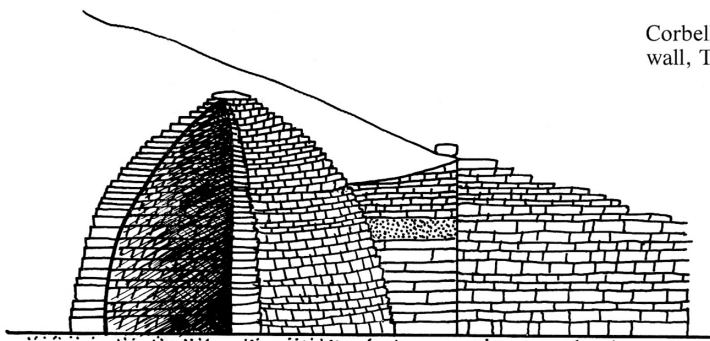


Figure 1.21 Tomb of Agamemnon (c. 1325 B.C.).

Vaults

Vault forms

- single
- parallel
- cross
- pointed (gothic)

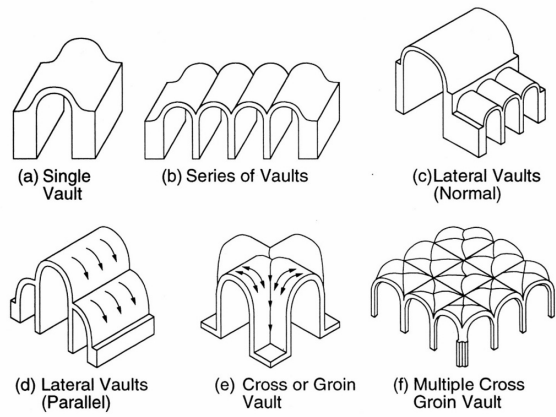


Figure 1.25 Examples of combined barrel vaults.

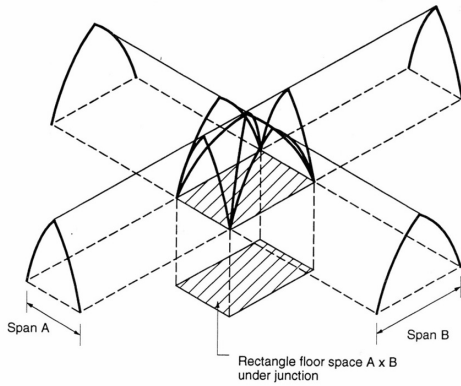
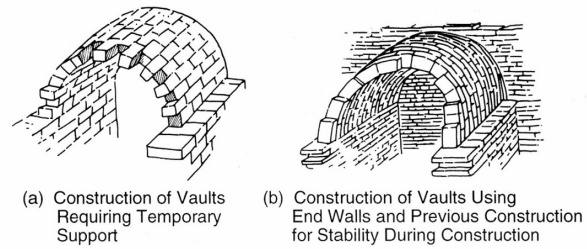


Figure 1.27 Intersection of pointed vaults.



Domes

Arch forms

- catenary
- parabolic
- circular

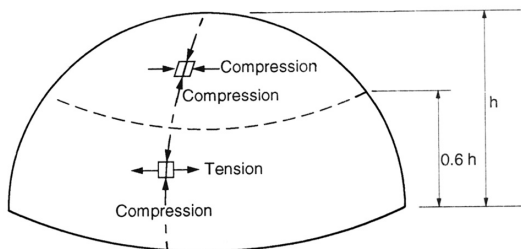


Figure 1.22 Stress in a hemispherical dome under its own weight.

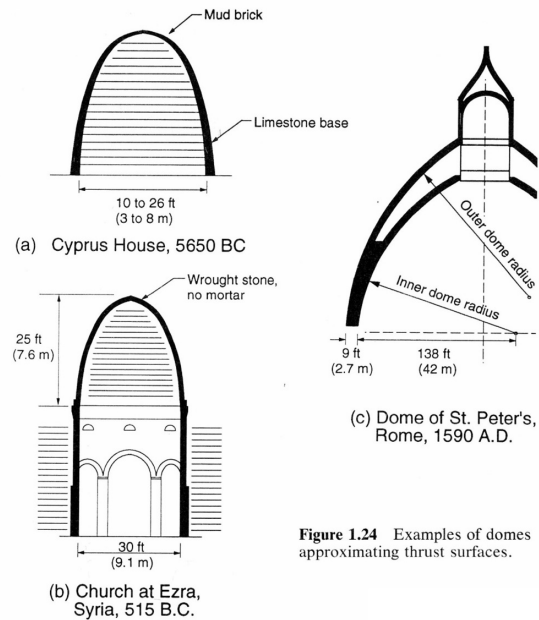


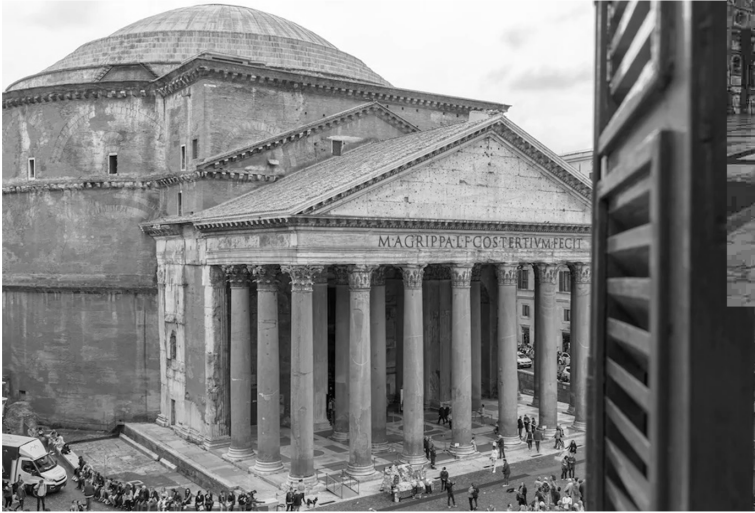
Figure 1.24 Examples of domes approximating thrust surfaces.

Domes

Roman

The masonry dome

- First to use
- Spherical form
- Braced sides



Pantheon 124 AD

Domes

Roman

Pantheon 125 AD

- First to use
- Spherical form
- Braced sides

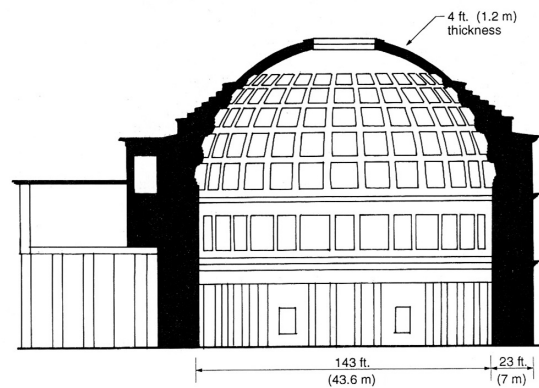


Figure 1.23 The Pantheon in Rome (A.D. 125). (Redrawn from Ref. 1.9)



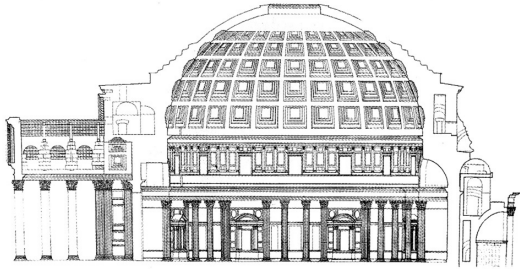
Historic Masonry

Roman

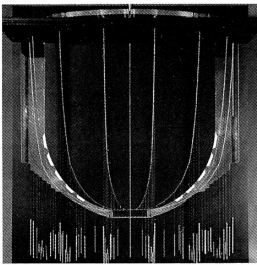
Pantheon

- Thrust line
- Catenary models

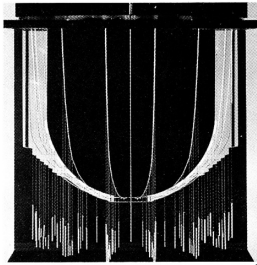
Institute for Lightweight Structures (IL)



3



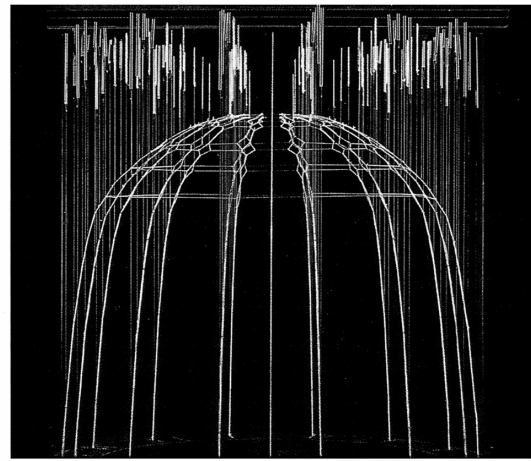
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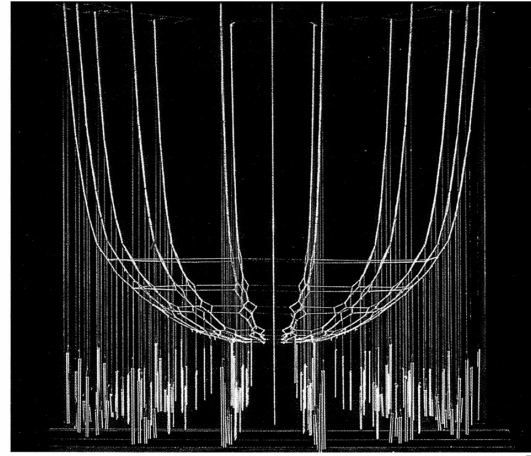
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6



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Domes



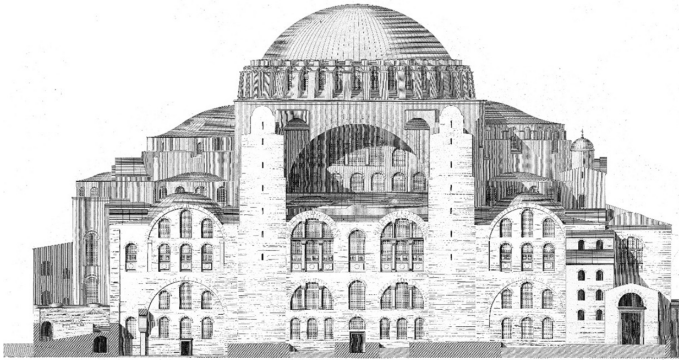
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Byzantine 313 to 1000

Hagia Sophia (532–537)
by Byzantine emperor Justinian
largest cathedral in the world until 1507
Unites a cube (earth) with
a dome (heaven).



Justinian and Constantine

Byzantine 313 to 1000

Hagia Sophia (532–537)
by Byzantine emperor Justinian
largest cathedral in the world until 1507

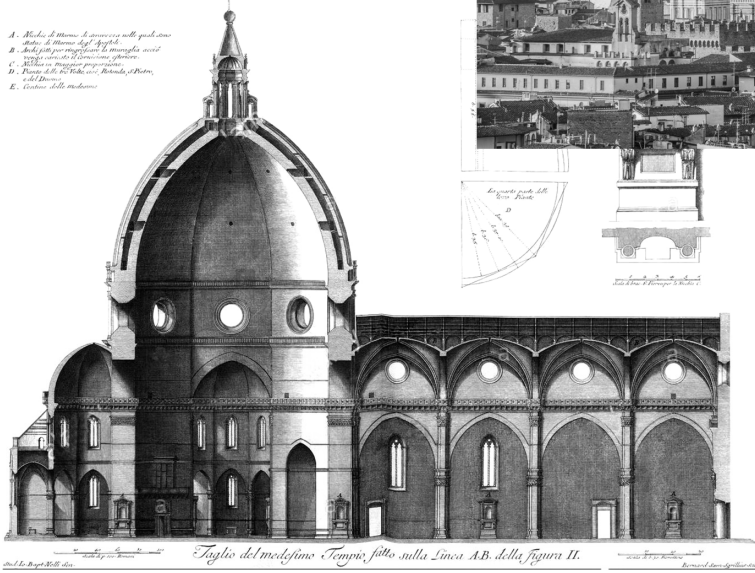


Florence Dome

Gothic/Renaissance

Santa Maria del Fiore

- Brunelleschi
- 1296-1436
- 43 or 45 m span ?
- Largest brick dome



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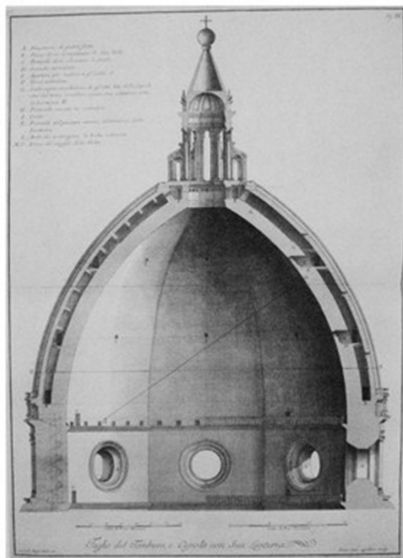
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Florence Dome

Gothic/Renaissance

Santa Maria del Fiore

- Brunelleschi
- 1296-1436
- 43 or 45 m span ?
- Largest brick dome



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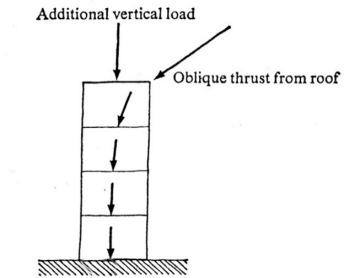
Masonry

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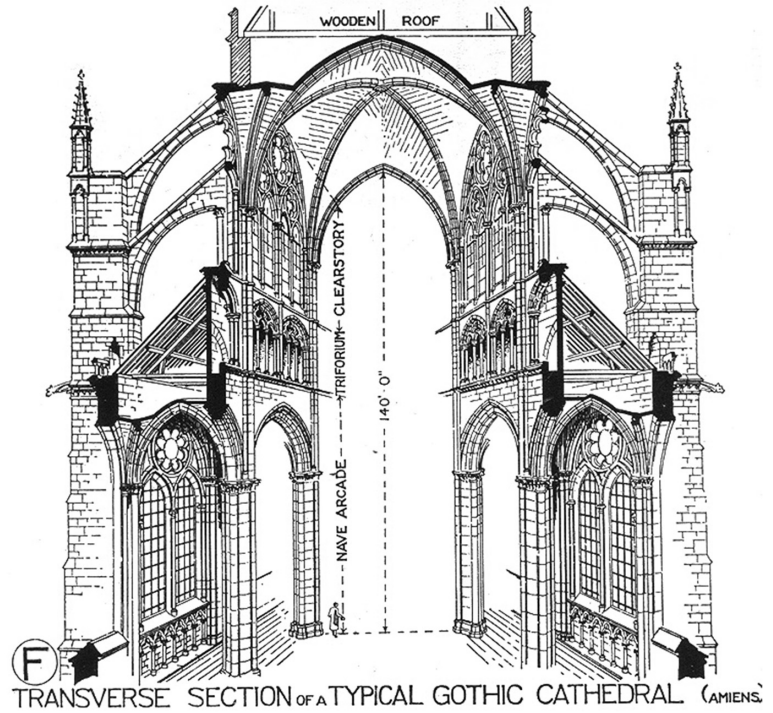
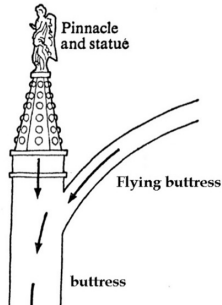
Gothic Vaulting

Gothic vaults and buttressing

- Amiens
- 1220-1225



The effect of an additional load at the top of the buttress is to *reduce* the eccentricity of the thrust line.



Gothic Vaulting

Gothic vaults

- Amiens
- 1220-1225



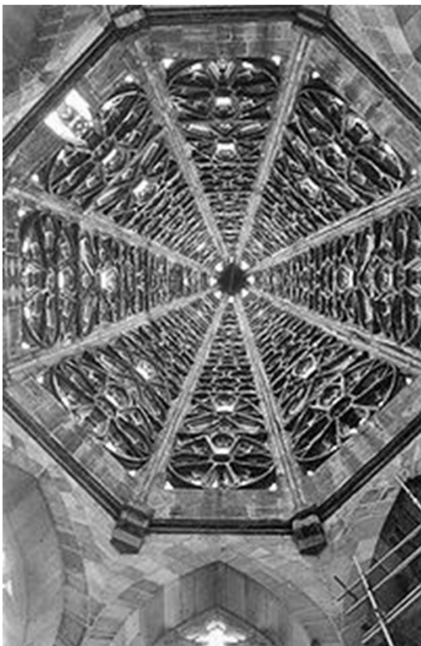
Gothic Vaulting



Gothic Vaulting

Gothic vaults

- Freiburg
- 1260



Gothic Vaulting

Gothic vaults

- Freiburg
- 1260



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Gothic Vaulting

Gothic vaults

- Chartres
- 1194



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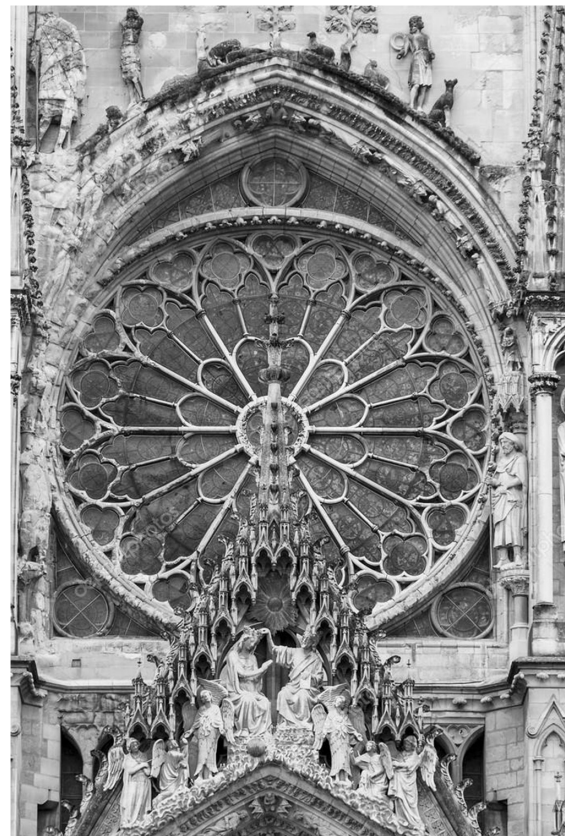
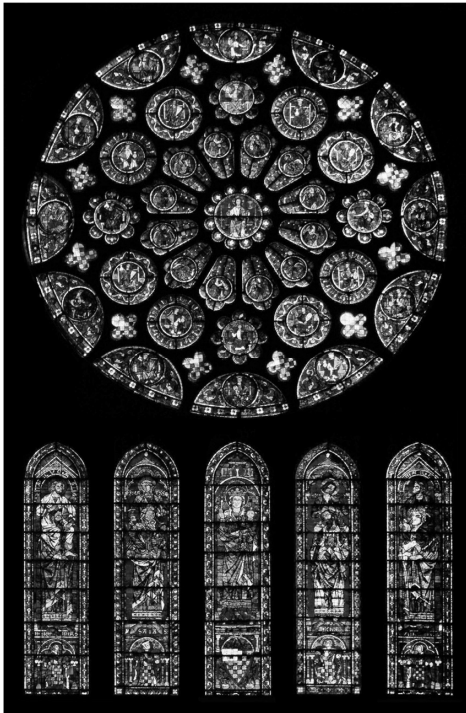
Masonry

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Gothic Vaulting

Gothic vaults

- Chartres
- 1194



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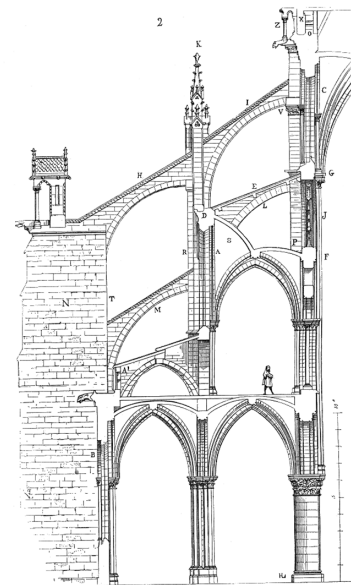
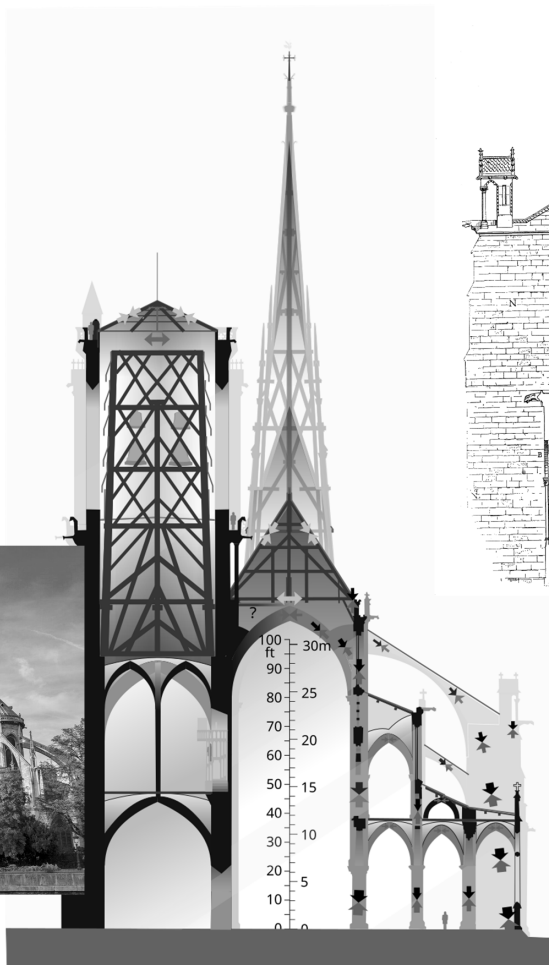
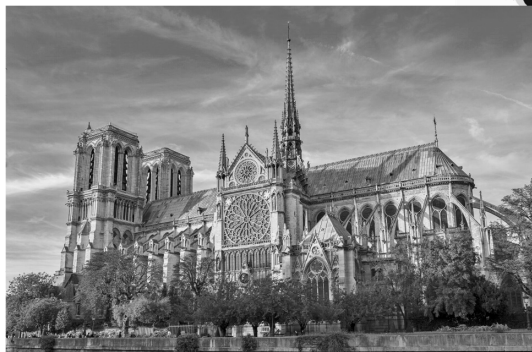
Masonry

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Gothic 1300 – 1700

Notre-Dame de Paris

(1163 – 1260)



Peter von Buelow

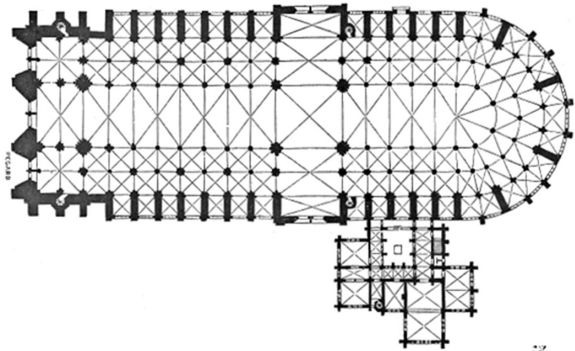
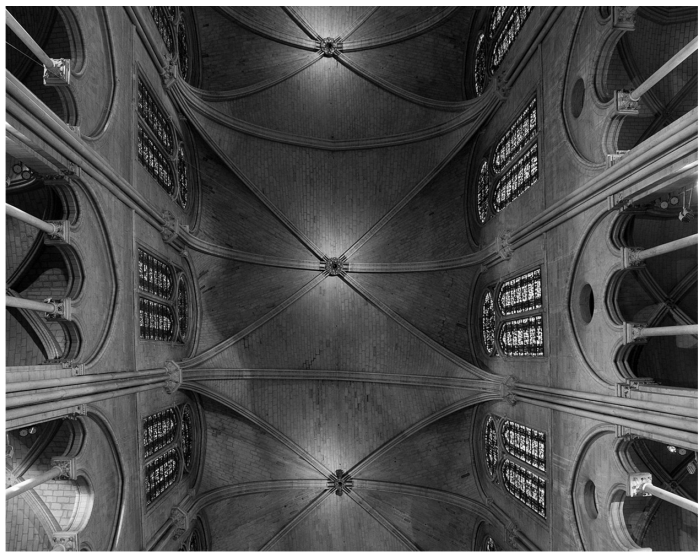
Church Architecture

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Gothic 1300 – 1700

Notre-Dame de Paris

(1163 – 1260)



Peter von Buelow

Church Architecture

Slide 21 of 37

Gothic 1300 – 1700

Notre-Dame de Paris

(1163 – 1260)



Peter von Buelow

Church Architecture

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Gothic Vaulting

Gothic vaults

- Kölner Dom (Cologne) 1248 -1880
- Spire height 157 m (515 ft)



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Masonry

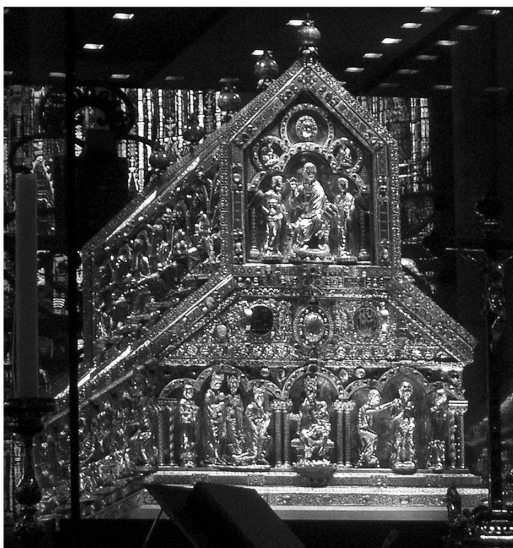
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Gothic Vaulting

Gothic vaults

- Kölner Dom (Cologne) 1248 -1880
- Spire height 157 m (515 ft)



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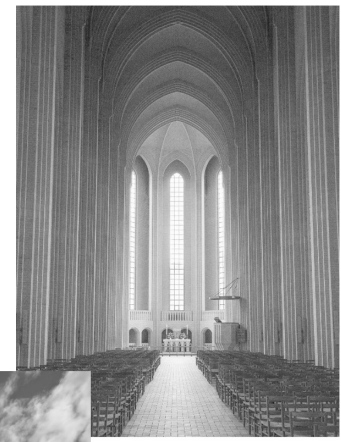
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German Expressionism

1918 – 1931

Following on the free forms of Art Nouveau, German Expressionism focused more on geometry rather than organic forms. It was also primarily in brick.



Grundtvig's Church by Peder Vilhelm in Copenhagen, Denmark

German Expressionism



Grundtvig Church, Copenhagen
Jensen Klimt



Chilehaus, Hamburg
Fritz Höger



German Expressionism



Einstein Tower, Potsdam
Erich Mendelsohn



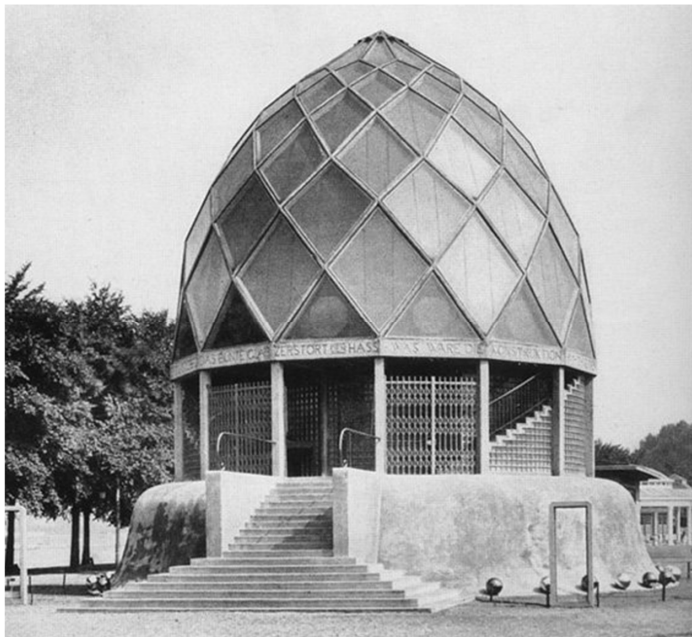
Goetheanum, Dornach CH
Rudolf Steiner

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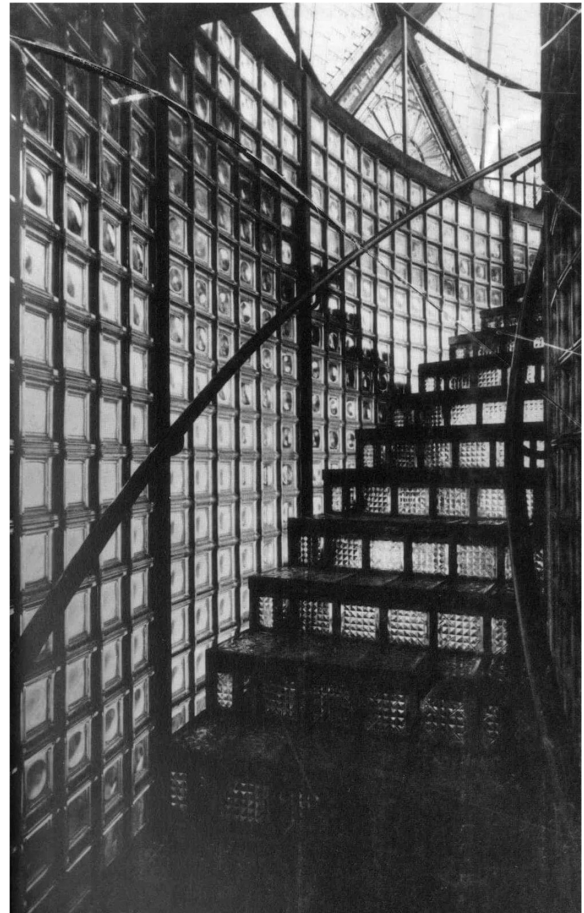
Masonry

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German Expressionism



Glass Pavilion, Buno Taut



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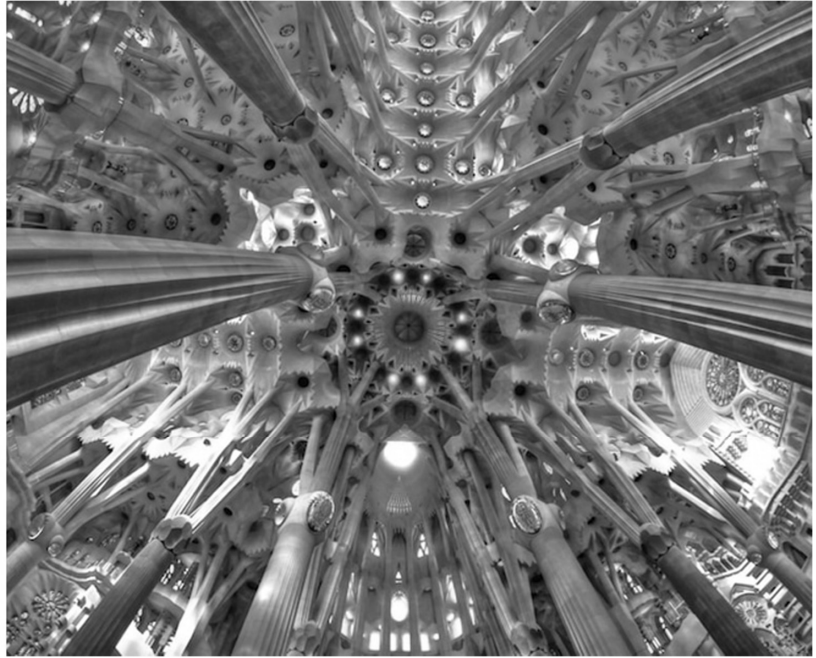
Masonry

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Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- La Sagrada Familia



Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- La Sagrada Familia



Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- La Sagrada Familia



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Masonry

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Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- La Sagrada Familia



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Masonry

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Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- La Sagrada Familia



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Masonry

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Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- La Sagrada Familia



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Masonry

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Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- Park Guell



Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- Crypt at Colonia Guell



Art Nouveau

Catalonian

- Antonio Gaudi 1852 - 1926
- Catalonian Art Nouveau
- Crypt at Colonia Guell

