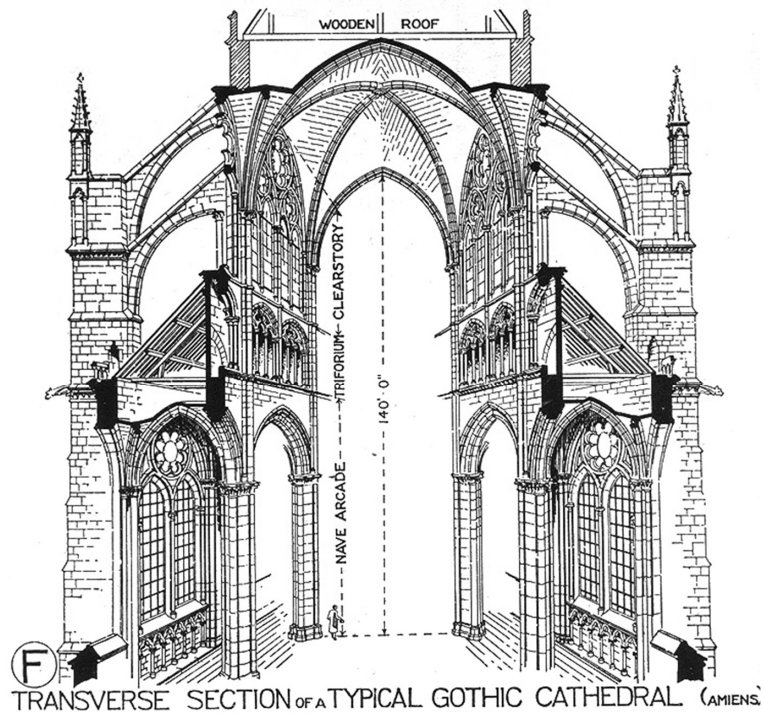


History part 2

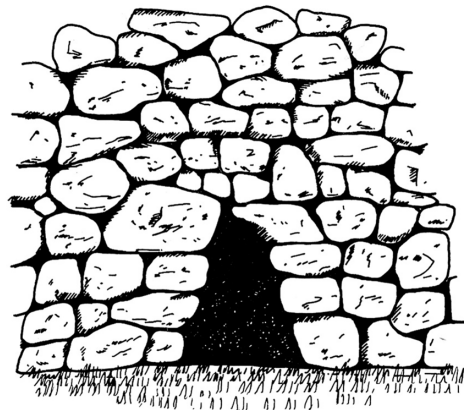
Roman Domes
Byzantine Domes
Renaissance Domes
Gothic Vaults



Amiens Cathedral

Corbeled Dome

Greek
Corbels (not a true arch)



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

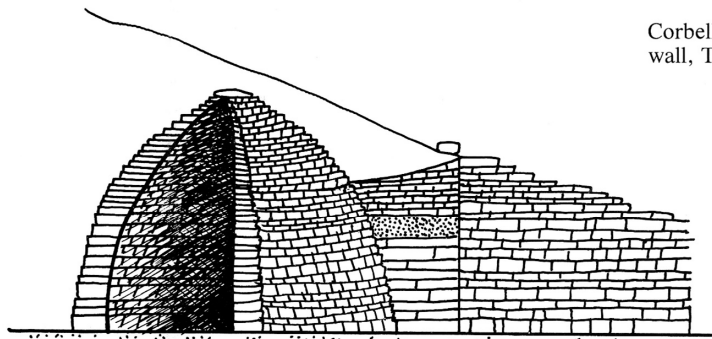


Figure 1.21 Tomb of Agamemnon (c. 1325 B.C.).

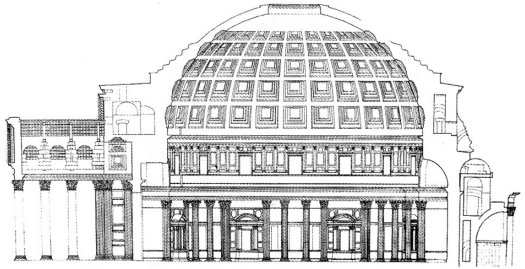
Historic Masonry

Roman

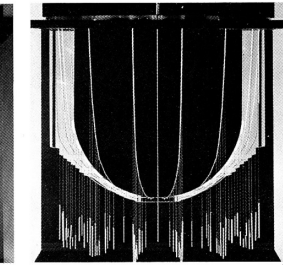
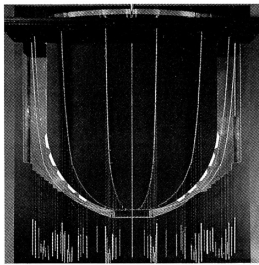
Pantheon

- Thrust line
- Catenary models

Institute for Lightweight Structures (IL)



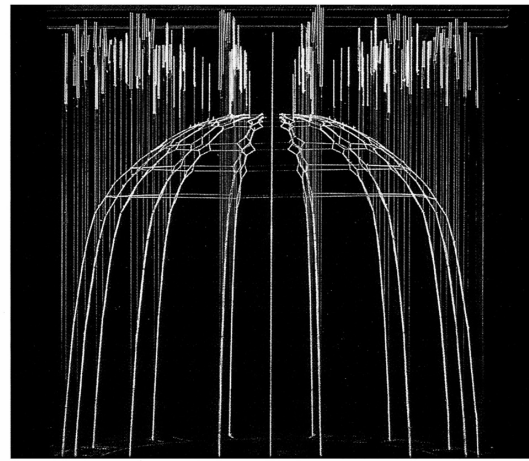
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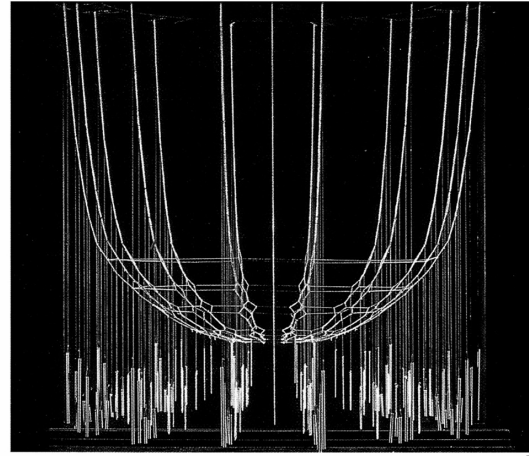
5

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6



7

Slide 3 of 30

Pantheon

Roman

Pantheon 125 AD

- First to use
- Spherical form
- Braced sides
- 43.6 m

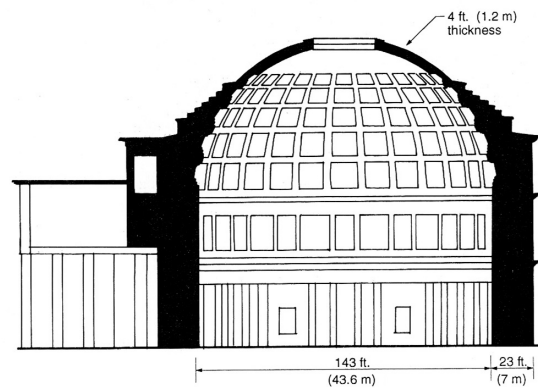


Figure 1.23 The Pantheon in Rome (A.D. 125). (Redrawn from Ref. 1.9)



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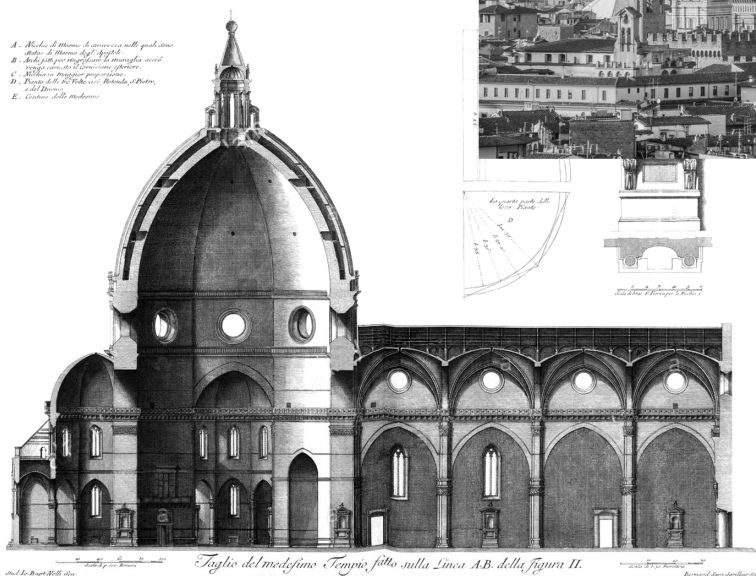
Slide 4 of 30



Florence Dome Gothic/Renaissance

Santa Maria del Fiore

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



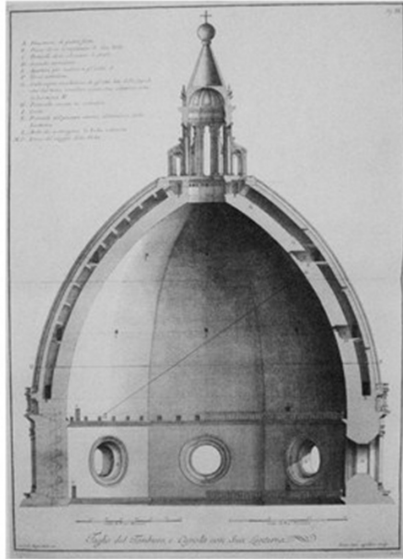
A. Veduta di Firenze, la cattedrale e gli altri edifici.
B. Veduta di Firenze, la cattedrale e gli altri edifici.
C. Veduta di Firenze, la cattedrale e gli altri edifici.
D. Veduta di Firenze, la cattedrale e gli altri edifici.
E. Veduta di Firenze, la cattedrale e gli altri edifici.

Florence Dome

Gothic/Renaissance

Santa Maria del Fiore

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



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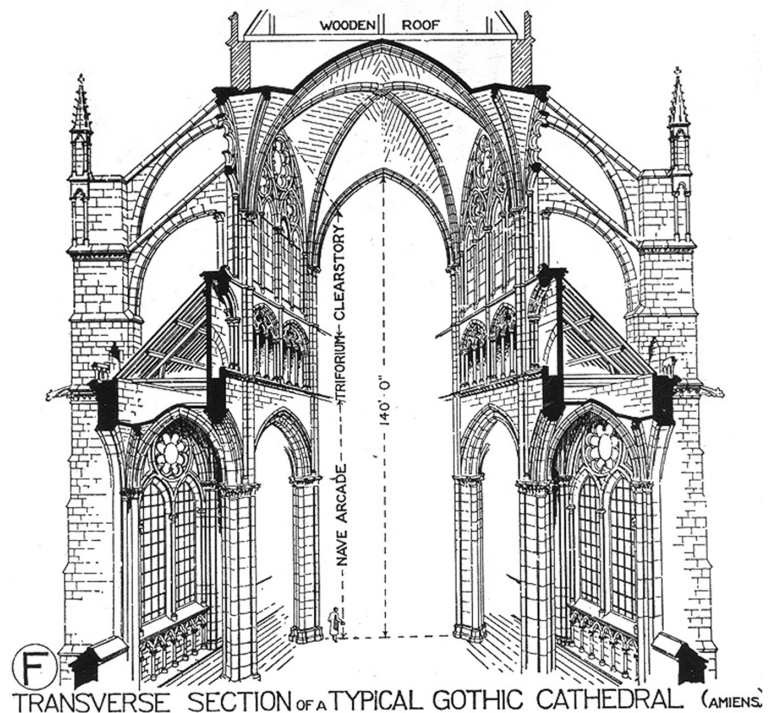
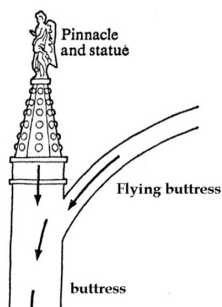
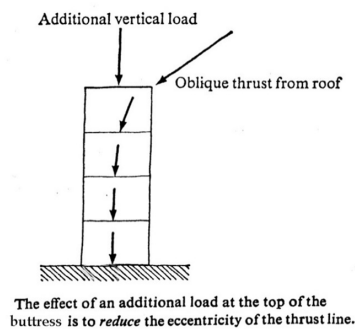
Masonry

Slide 7 of 30

Gothic Vaulting

Gothic vaults and buttressing

- Amiens
- 1220-1225



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Slide 8 of 30

Gothic Vaulting

Gothic vaults

- Amiens
- 1220-1225



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Slide 9 of 30

Gothic Vaulting



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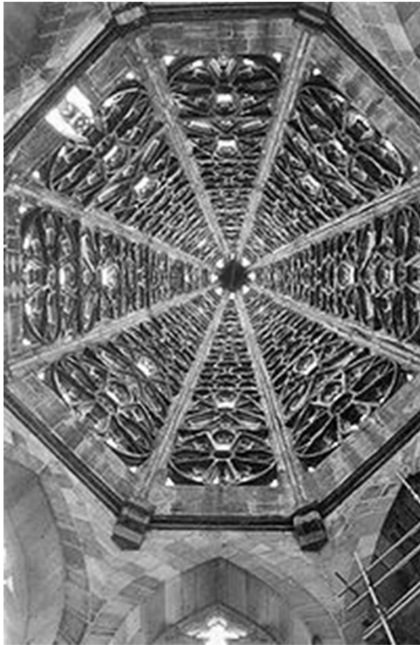
Masonry

Slide 10 of 30

Gothic Vaulting

Gothic vaults

- Freiburg
- 1260



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Slide 11 of 30

Gothic Vaulting

Gothic vaults

- Freiburg
- 1260



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Slide 12 of 30

Gothic Vaulting

Gothic vaults

- Chartres
- 1194



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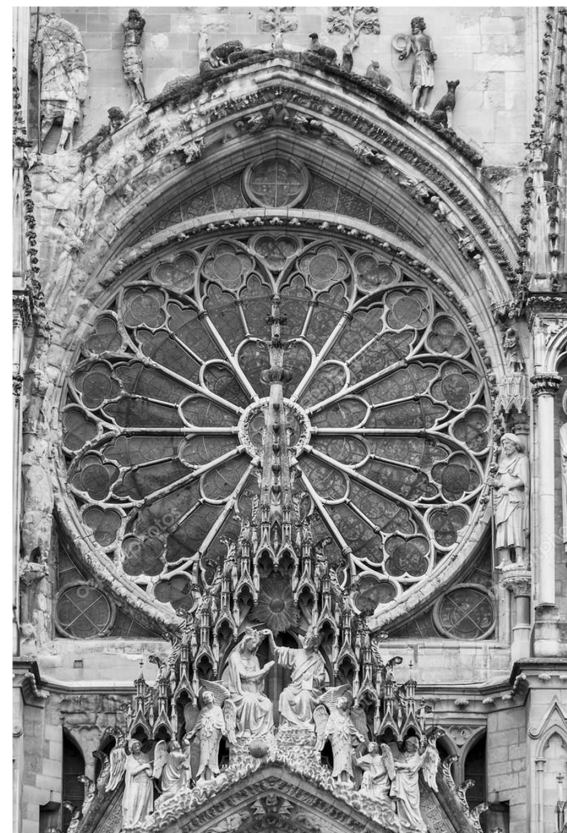
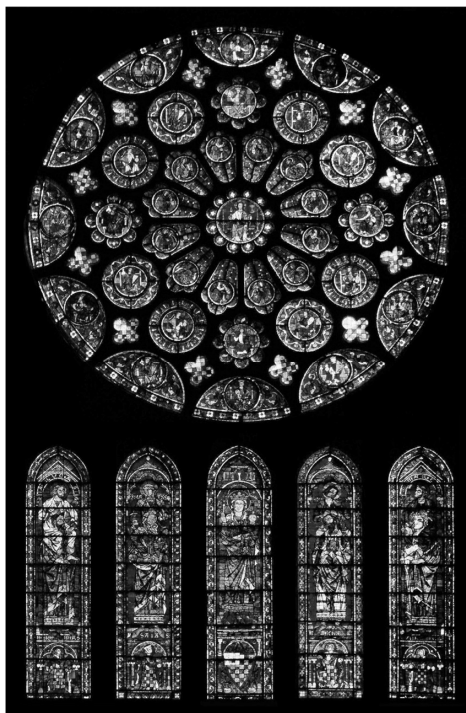
Masonry

Slide 13 of 30

Gothic Vaulting

Gothic vaults

- Chartres
- 1194



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Slide 14 of 30

Gothic Vaulting

Gothic vaults

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



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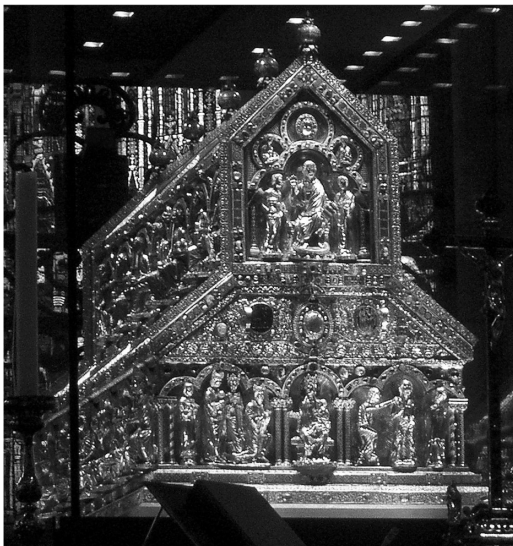
Slide 15 of 30



Gothic Vaulting

Gothic vaults

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



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Slide 16 of 30



German Expressionism



Jensen Klimt, Grundtvig Church



Chilehaus, Hamburg
Fritz Höger

German Expressionism



Einstein Tower, Potsdam
Erich Mendelsohn

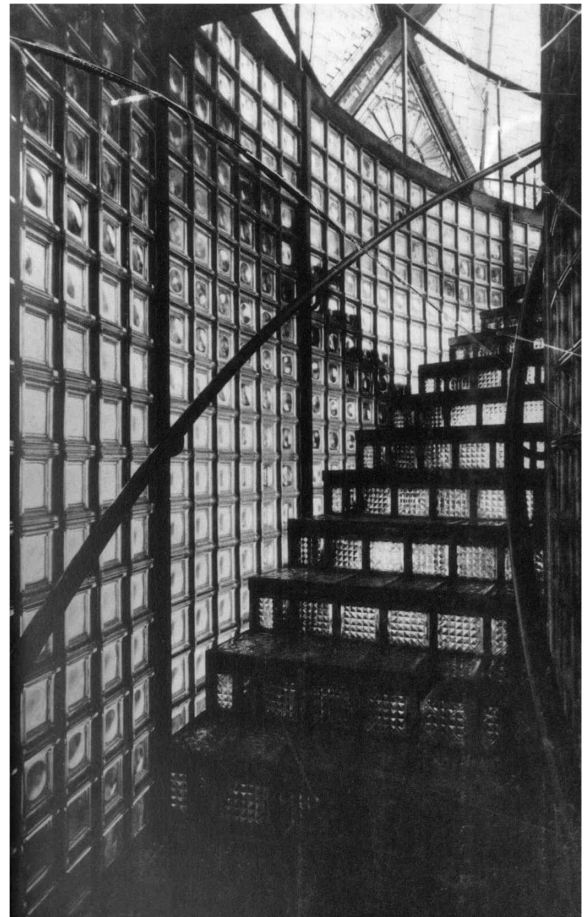


Goetheanum, Dornach CH
Rudolf Steiner

German Expressionism



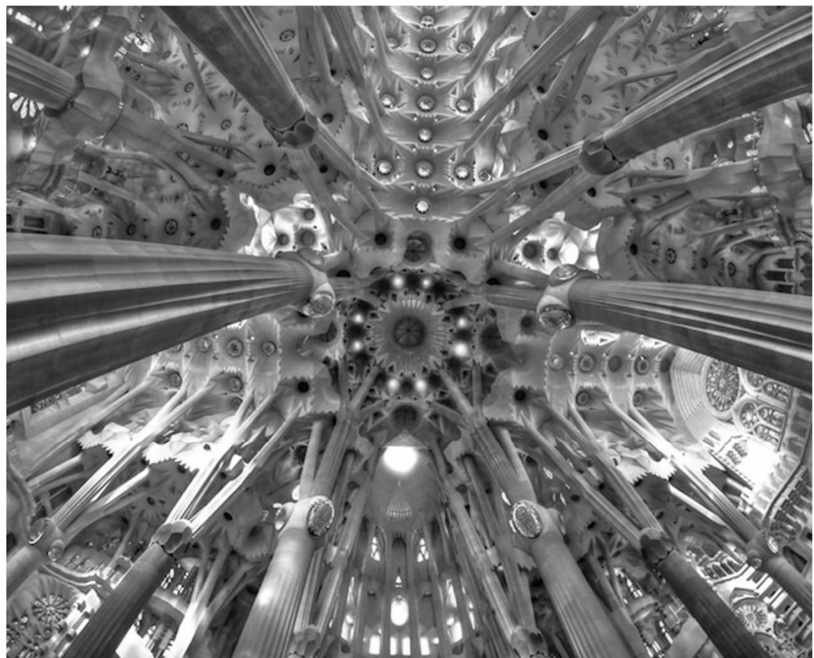
Glass Pavilion, Buno Taut



Art Nueveau

Catalonian

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



Art Nueveau

Catalonian

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



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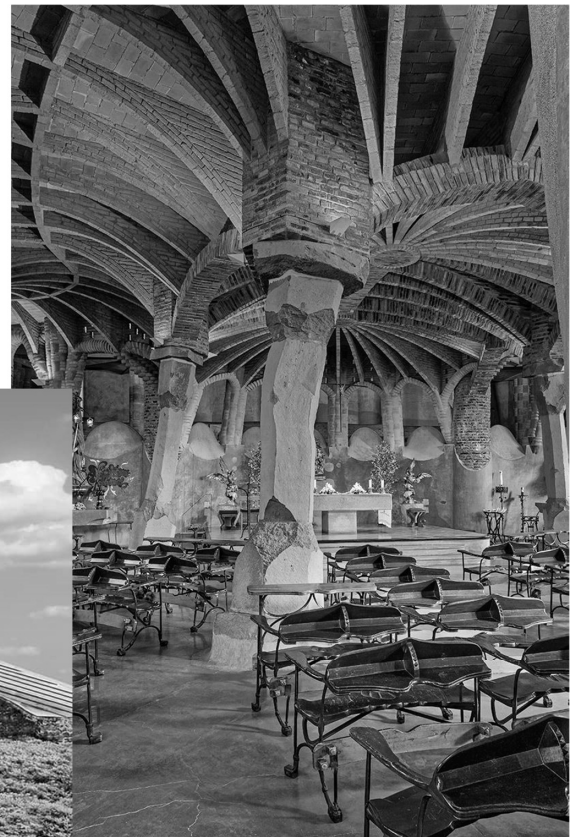
Masonry

Slide 21 of 30

Art Nueveau

Catalonian

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



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Masonry

Slide 22 of 30

Art Nouveau

Catalonian

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



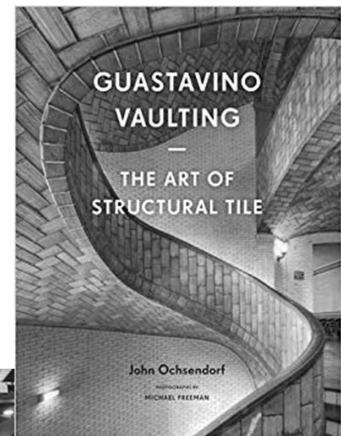
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Slide 23 of 30

Guastavino Vaulting

- Guastavino Co. 1885 – 1962
- Started in Boston



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Slide 24 of 30

Guastavino Vaulting

- Guastavino Co. 1885 – 1962
- Detroit Train Station



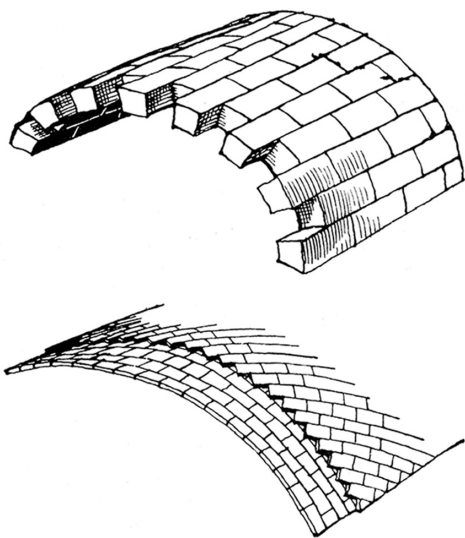
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Guastavino Vaulting

- Guastavino Co. 1885 – 1962
- Started in Boston



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Slide 26 of 30

Guastavino Vaulting

- Other examples



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Masonry

Slide 27 of 30

High Rise

Walls – thrust line calculation

- Sum moments at sections to find axis

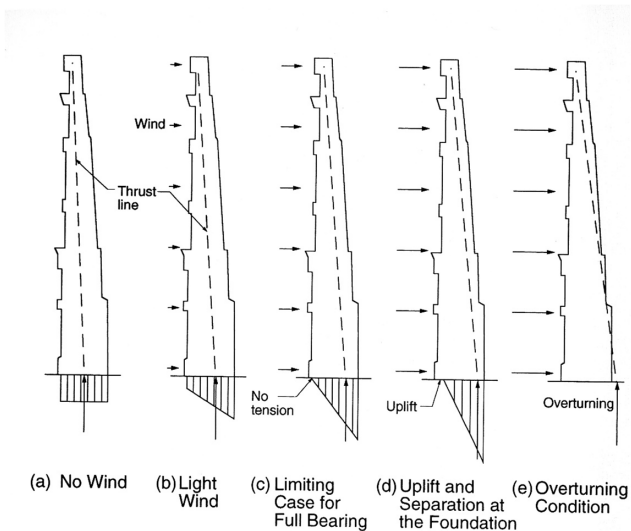


Figure 1.9 Stability of wall under increasing wind force.

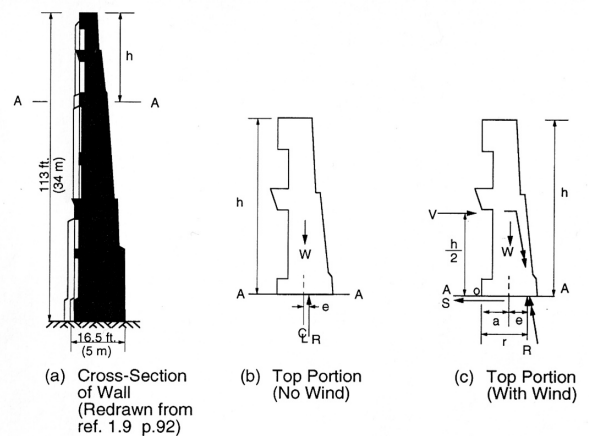


Figure 1.8 Equilibrium of mud brick wall at Palace of Ctesiphon (c. A.D. 550).

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Masonry

Slide 28 of 30

High Rise

Monadnock Building
Burnham & Root
1892, Chicago
215 ft., 16 stories



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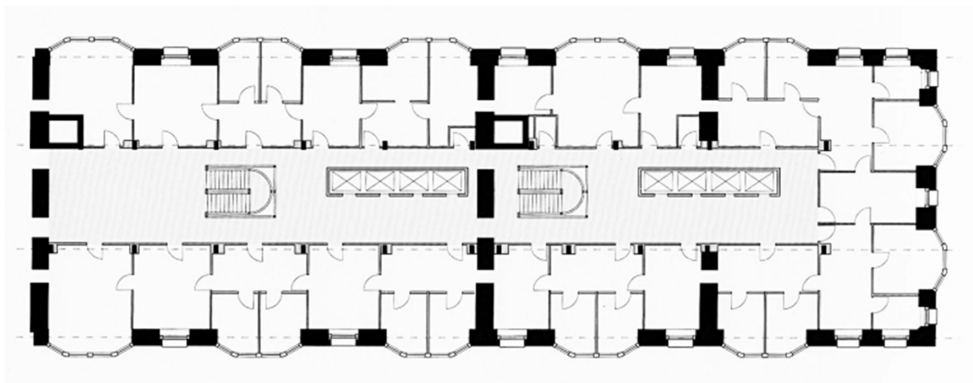


Masonry

Slide 29 of 30

High Rise

Monadnock Building
Burnham & Root
1892, Chicago
215 ft., 16 stories



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Masonry

Slide 30 of 30