

العمارة فى عصر النهضة (١٤٥٠-١٥٥٠م)
والباروك (١٥٥٠-١٧٠٠م)

Architecture in the Renaissance (1450-1550)
& Baroque (1550- 1700)

Dr. Kamal Elgabalawy

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Renaissance & Baroque style



RENAISSANCE BAROQUE



The Empire of Charles V and his son Philip II of Spain 1519-1556

Spain Spain united 1497 1519-Charles V-1556-Philip II of Spain-1598

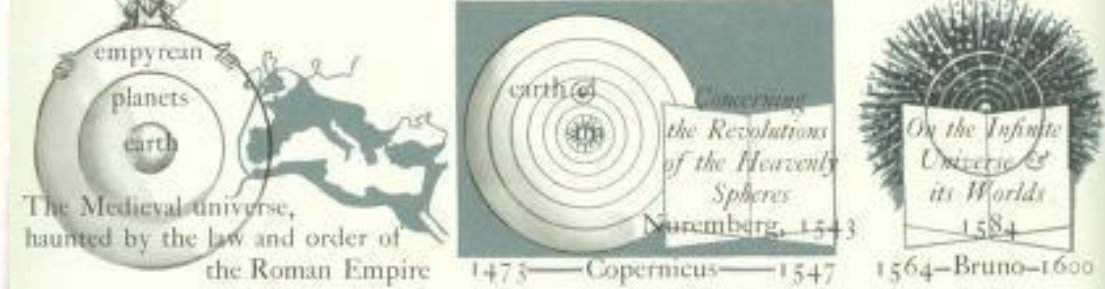
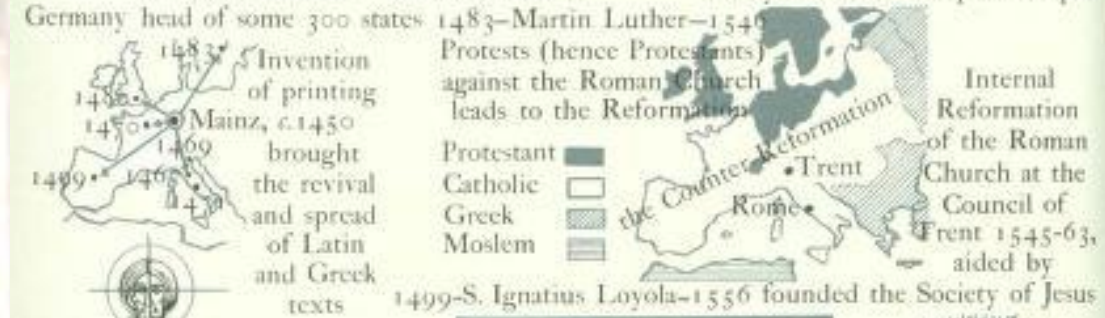
Italy Florence: the Renaissance Rome: temporal power of the Popes Venice: trade lost

France Franco-Spanish rivalry in Italy 1515-Francis I-1547 Italian influence

Holland 1568 Revolt of the Netherlands from Spain 1648 Republic of the United Provinces

England 1485-Henry VII-1509-Henry VIII-1547-1558-Elizabeth I-1603

War of the Roses Italian influence Mary I marries Philip II of Spain



THE RENAISSANCE

The Renaissance (Florence) High Renaissance (Rome) Mannerism

1400 Renaissance churches were centralized and designed on the drawing-board. They were inspired by classical architecture, as interpreted by Vitruvius (above all, by Roman temples, arches, domes & the Five Orders (pp.116-117)), & obeyed the canon of the Divine Proportions (pp.118-119). The increasingly dramatic movements of High Renaissance and Mannerist buildings became, especially in the 'theatrical' churches of the Counter-Reformation, an interplay of forces. (This required the drawing of

INTRODUCTION



Conflict for colonies and overseas trade to new Atlantic seaports. Domination of Spain in Italy ends 1710

1610-Age of the Cardinals-1643-Ascension of France: Louis XIV-1715-Louis XV-1774

Netherlands from Spain 1648 Republic of the United Provinces

James I-1625-Charles I-1649-1660-Charles II-1685-89 1702-Anne-14-George I-1727

Divine Right of Kings Commonwealth James II Colonial Expansion

Impoverished by the 30 Years' War Kingdom of Prussia 1701 Frederick the Great 1740-85



THE BAROQUE

Baroque Rococo

1600 three-dimensional elevations and curved details by means of projective geometry, which had been developed by the new science of dynamics.)

The architecture of each European country was a reaction to that of Italy, modified by its own native characteristics. France (pp.130-133), Germany & Austria (pp.134-135), Spain (pp.136-137), England (pp.138-139).

This Baroque style was finally resolved into the lighter curves of the Rococo.

RENAISSANCE - BAROQUE

Florence Cathedral: *Brunelleschi* (1377-1446) (pp. 109, 124)

the dome, 1420-34

S. Andrea, Mantua, 1472-1512 *Alberti* (1404-72) (pp. 120, 122)

Pope Julius II (1503-13) had the old basilican church pulled down (p. 70), and successive plans were made for the new church:

- 1 *Bramante* (1444-1514) 1506
- 2 *Raphael* (1483-1520) 1515-20
- 3 *Sangallo the Younger* (1485-1546) 1539
- 4 *Michelangelo* (1474-1564) 1546-64

also designed the dome, completed 1585-90 by *Giacomo della Porta* (1541-1604) and *Domenico Fontana* (1543-1607);

- 5 side cupolas added 1564, by *Vignola* (1507-73)
- 6 *Carlo Maderna* (1556-1629) lengthened nave to form a Latin cross & added the façade 1606-12

S. Spirito, Florence, 1435 *Brunelleschi* (p. 122)

S. Maria della Consolazione, 1508, *Bramante & Cola di Caprarola*

St Peter's, Rome, 1506-1612 (pp. 93, 124)

PLANS & ELEVATIONS

plans and elevations to the same scale 500

S. Maria della Salute, Venice, 1632 *Longhena* (1604-75)

The Gesù, Rome, 1568-75 *Vignola* (1507-73) (pp. 120, 122)

Piazza, St Peter's, Rome, 1655-67 *Bernini* (1580-1680)

Vierzehnheiligen, S. Germany, 1744-72 *Neumann* (1687-1753) (p. 137)

The Escorial, near Madrid, 1559-84 *Juan de Herrera* (c. 1530-97) (p. 138)

St Paul's Cathedral, London, 1675-1710 *Sir Christopher Wren* (1631-1723) (pp. 144-145)

The Dome of the Invalides, Paris, 1693-1706 *J. H. Mansart* (1646-1708) (pp. 125, 131)

Karlskirch, Vienna, 1716-29 *J. B. Fischer von Erlach* (1656-1725)

RENAISSANCE - BAROQUE

Sources of Italian architectural theory:

1. The study of Roman buildings.
2. The Platonic-Aristotelian description of God and the Universe as a perfect circle.
3. The Pythagorean, and Medieval, idea of Man as the microcosm of the Universe (the macrocosm).
4. The linking of Geometry and Music, two of the Seven Liberal Arts: 'Geometry makes visible the musical consonances' (Boethius, *De Musica*, c.500). In Florence Cosimo de Medici (1389-1462) founded the Platonic Academy.

The Timaeus
Plato
477-347 B.C.
gives an account of the creation and geometrical form of the universe. He represents the four basic elements and the cosmos as:



these 'Platonic' bodies are the 5 regular solids. The elements of the cosmos, as well as its soul-substance & its motion, were created proportionate to musical ratios based on Pythagoras (582-c.507 B.C.) He 'regarded numbers as the elements of all things and the whole heaven as a numerical scale' (Aristotle), & found that tones could be measured by striking cords proportionate in length.



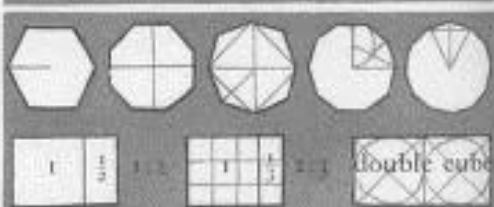
Plato gives the 'Harmonic' scale as:



which contain the musical consonances
1:2, 2:3, 3:4

For Renaissance architect-theorists, churches based upon these axioms, would be microcosms of the universe of God: '... the little temples we make ought to resemble this very great one' (Palladio).

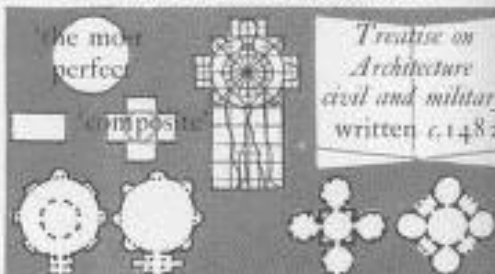
Marcus Vitruvius Pollio
The Ten Books on Architecture
Roman architect & engineer 1st century B.C.
VITRUVIUS
(edited by Fra Giocondo)
Venice, 1511



Ideal plans for churches (VII, 4)

Of all these numbers, the architects make very convenient use' (IX, 5)
Ten Books on Architecture
Florence 1485
England 1726

1404—Leon Battista Alberti—1471
Florentine architect and theorist



1439—Francesco di Giorgio—1501
Sienese sculptor and architect



1452—Leonardo da Vinci—1519

THE DIVINE PROPORTIONS

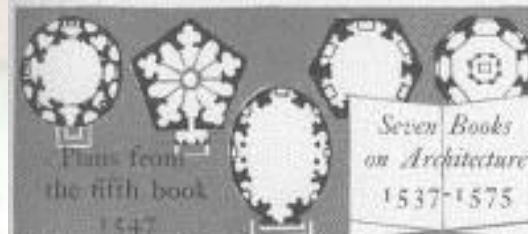


Vitruvius
(edited by Cesarino),
Como, 1521

Vitruvius
(edited by Barbaro,
illustrated by Palladio),
Venice, 1556

Architecture de Vitruve
ou Art de bien bâtir
mis en français
Jean Martin 1546

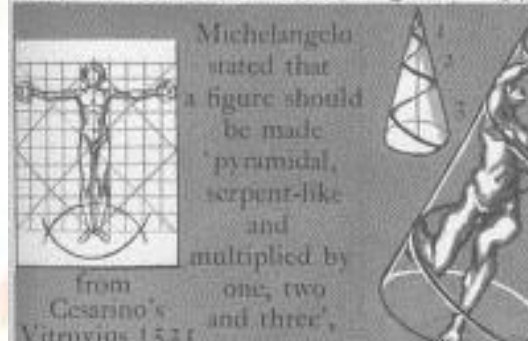
Vitruvius
First English
translation
1692



1475—Sebastiano Serlio—1554
Born Bologna. Architect, worked in France



1507—Giacomo Barozzo Da Vignola—1573

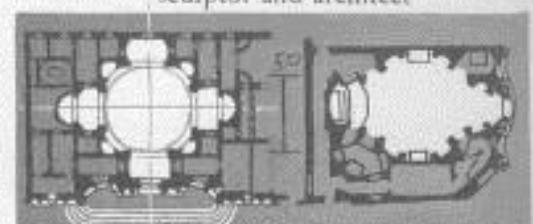


1475—Michelangelo—1564
1508—Andrea Palladio (pp.128-9)—1580

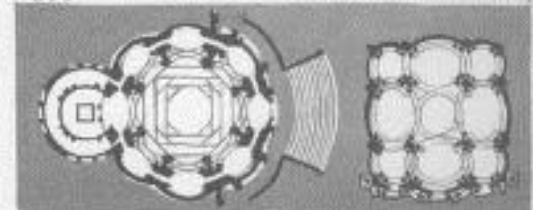
In Baroque churches musical ratios were resolved into an orchestration of visual forces comparable to the fugue, & measured by the eye and the mind of the beholder



1598—Giovanni Lorenzo Bernini—1680
sculptor and architect

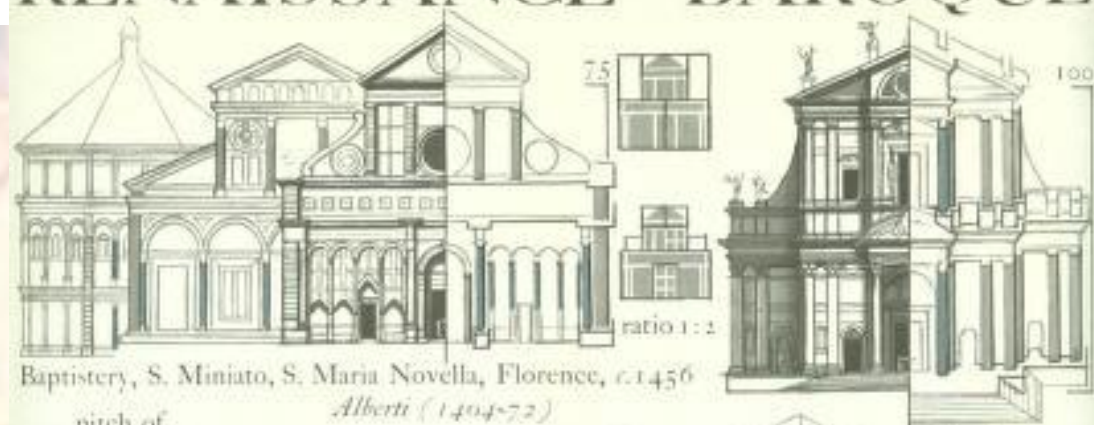


1599—Francesco Borromini—1667



1624—Guarino Guarini—1683
mathematician & architect, mostly at Turin

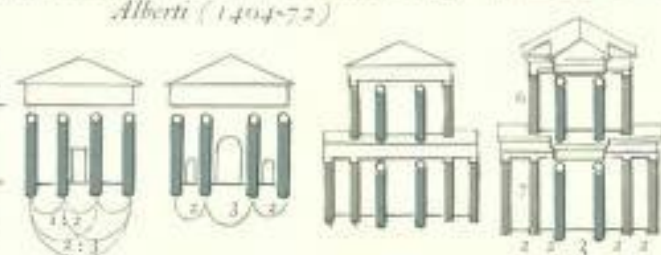
RENAISSANCE - BAROQUE



Baptistry, S. Miniato, S. Maria Novella, Florence, c.1456

Alberti (1404-72)

pitch of
round
column &
square
pilaster

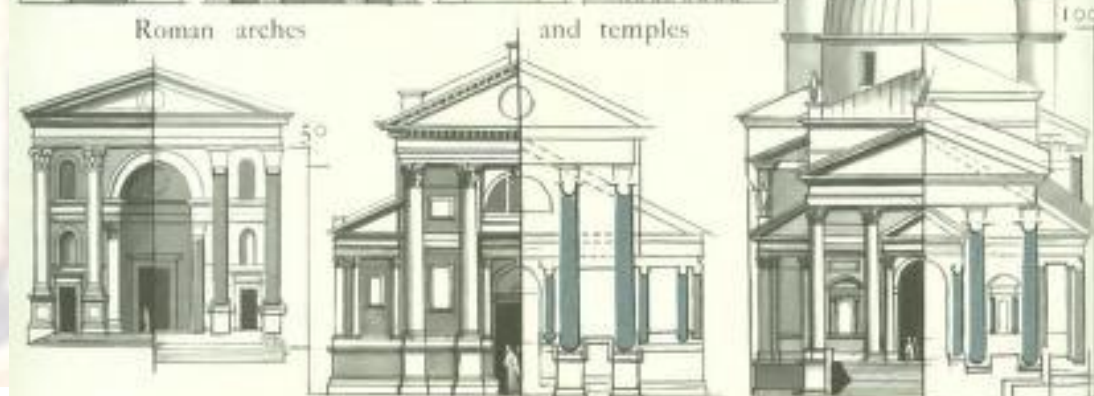


Arrangement & permutations of columns & pilasters to compose a visual 'overture'



Roman arches

and temples



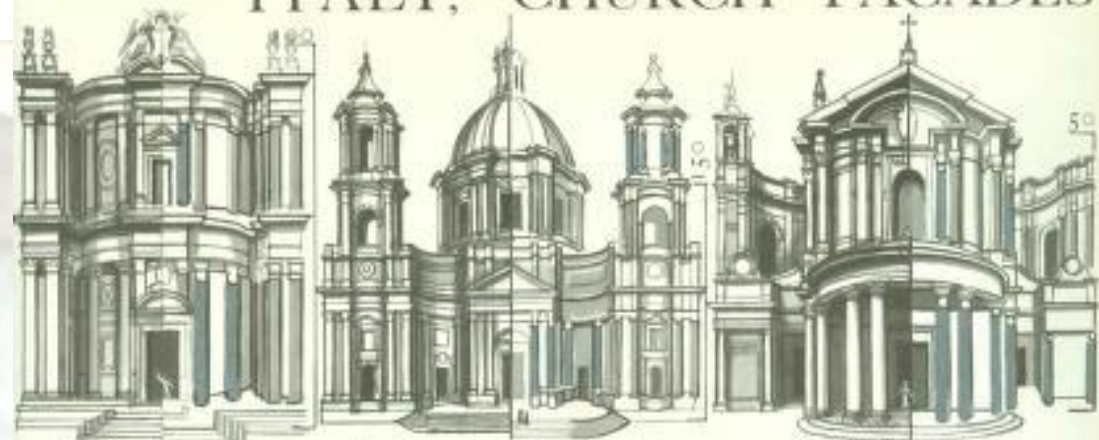
S. Andrea, Mantua, 1470 S. Francesco della Vigna, Venice, 1562 Il Redentore, Venice, 1566-92

Alberti (p.122)

1562

Andrea Palladio (1508-1580)

ITALY, CHURCH FACADES



SS. Martina e Luca,

Rome, 1635-50

Pietro da Cortona

(1596-1669)

S. Agnese in Piazza Navona,

Rome, 1653-55

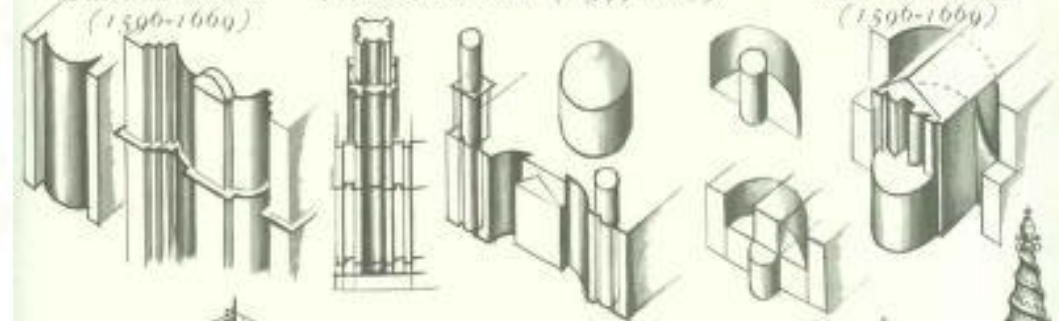
Francesco Borromini (1599-1667)

S. Maria della Pace,

Rome, 1656-57

Pietro da Cortona

(1596-1669)



S. Susanna, Rome, 1597-1603

Carlo Maderno (1556-1629)

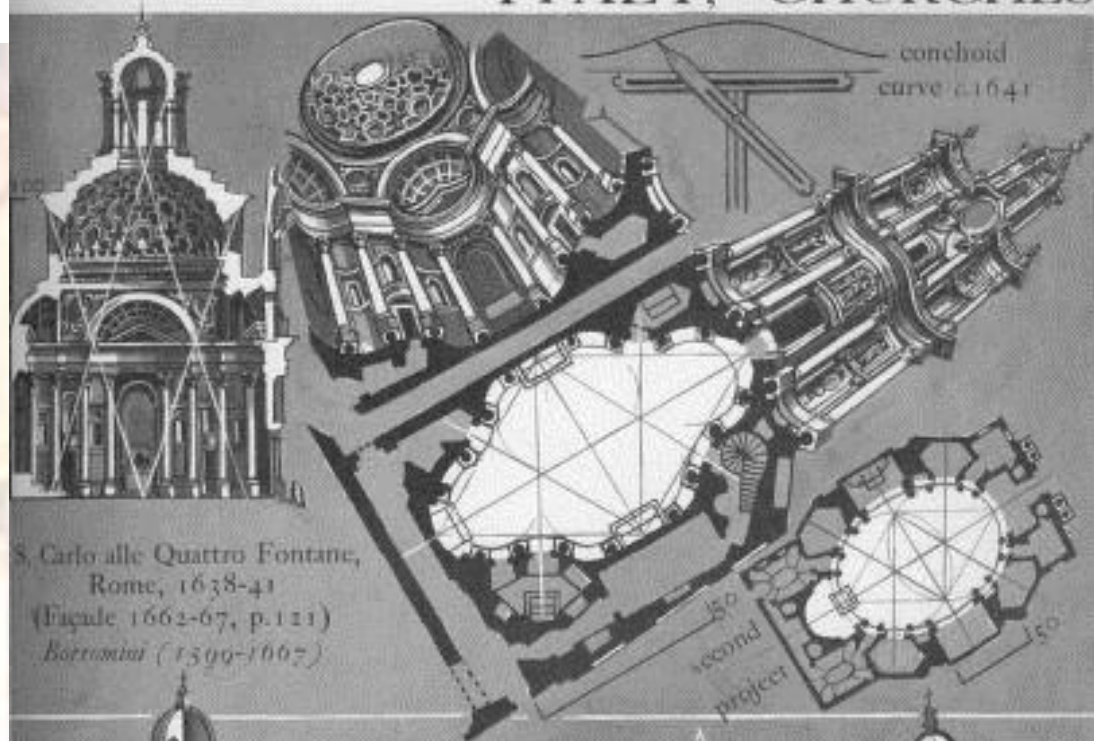
S. Carlo, Rome, 1665-7

Borromini (p.123)

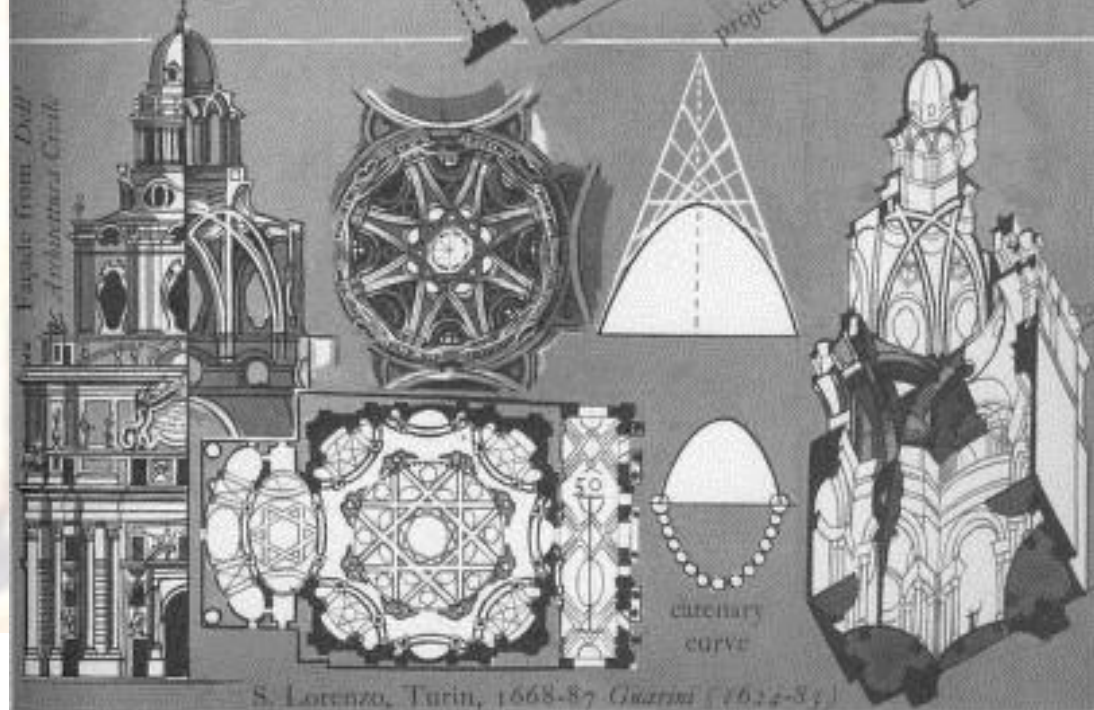
S. Gregorio, Messina, 1660

Guarini (1624-1683)

ITALY, CHURCHES



S. Carlo alle Quattro Fontane,
Rome, 1638-43
(Facade 1662-67, p.121)
Borromini (1599-1607)



S. Lorenzo, Turin, 1668-87 *Guarini (1624-84)*

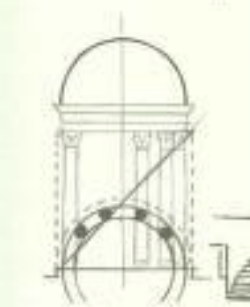
RENAISSANCE - BAROQUE



The Pantheon,
Rome, A.D. 120-124



Florence Cathedral,
Rome, 1420-44
Brunelleschi (1377-1446)
(pp. 91, 109, 116)



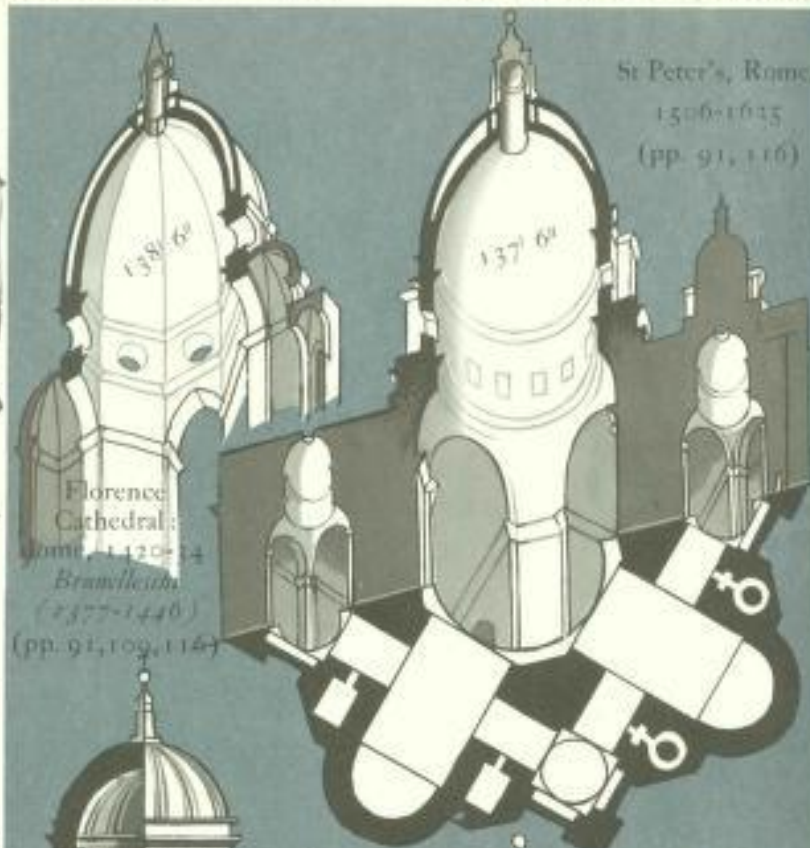
Circular temples,
Vitruvius (IV, 9)



Tempietto, S. Pietro in
Montorio, Rome, 1502-10
Bramante (1444-1514)

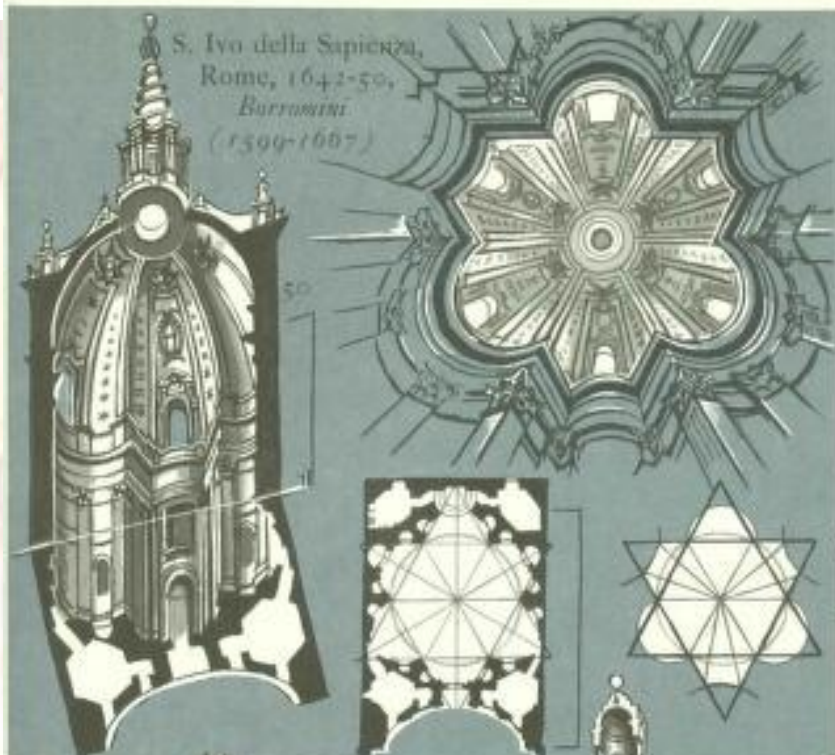


Dome 1564-90
Michelangelo (1475-1564)



St. Peter's, Rome,
1506-1635
(pp. 91, 116)

ITALY, DOMES



S. Ivo della Sapienza,
Rome, 1642-50,
Borromini
(1599-1667)



St Paul's
Cathedral,
London,
1675-1710
Wren (1631-1723)

(pp. 46-7)



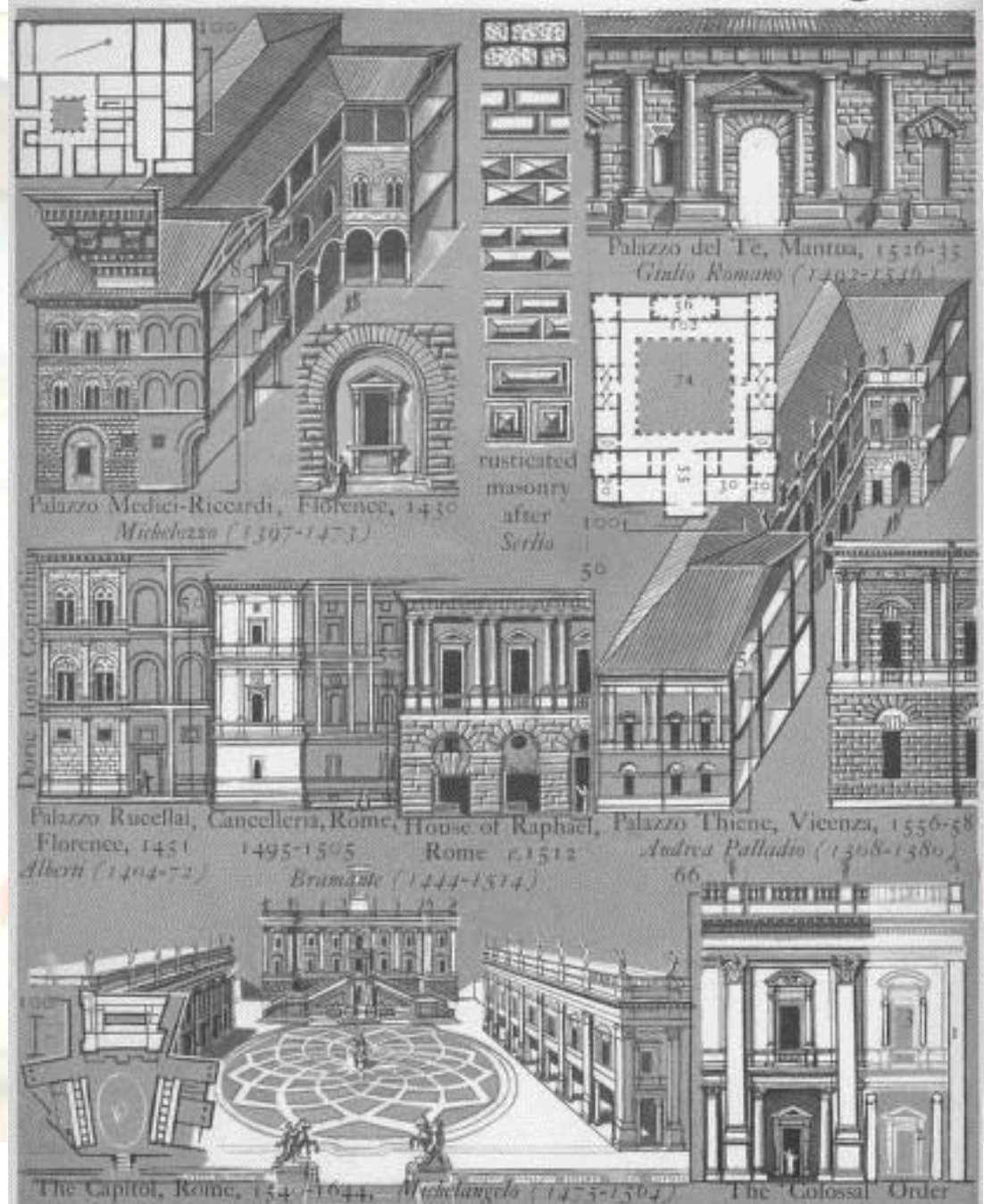
The Dome of the
Invalides, Paris,
1693-1706 Jules
Hardouin-Mansart
(1646-1708)

(p.131)



Sanctuary, Vallinotto, near Turin, 1738-49
Bernard Vittone (1704-70)

RENAISSANCE - BAROQUE



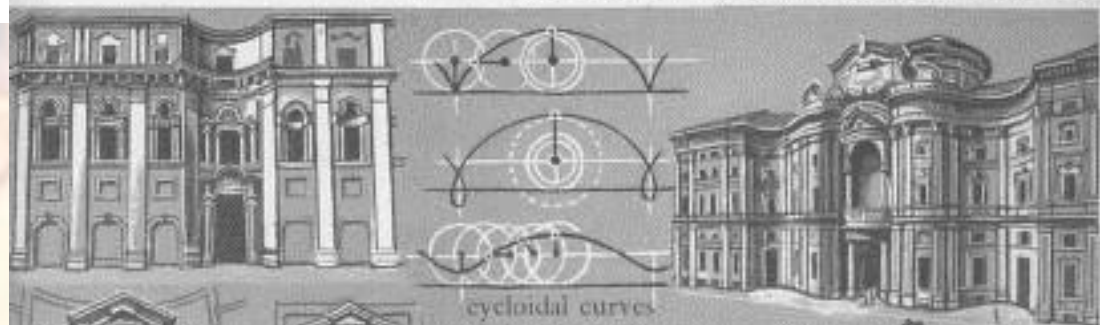
Palazzo Medici-Riccardi, Florence, 1430
Michelozzo (1397-1473)

Palazzo del Te, Mantua, 1526-35
Giulio Romano (1492-1546)

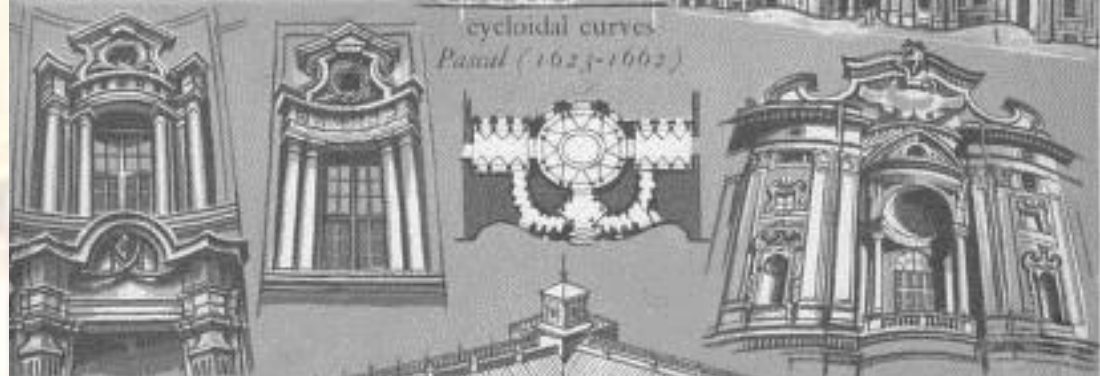
Palazzo Rucellai, Cancellaria, Rome, House of Raphael, Palazzo Thiene, Vicenza, 1556-58
Florence, 1451 1495-1505 Rome 1512 Andrea Palladio (1508-1580)
Alberti (1404-72) Bramante (1444-1514)

The Capitol, Rome, 154-1644, Michelangelo (1475-1564) The Colossal Order

ITALY, PALACES



cycloidal curves
Pascal (1623-1662)



Collegio Propaganda
Fide, Rome 1646-66
Borromini (1599-1667)

Palazzo Carignano,
Turin, c.1678-80
Guarini (1624-1683)



Palazzo Farnese, Caprarola, 1550-1564
Giacomo Barozzi da Vignola (1537-1573)

RENAISSANCE-BAROQUE



(p.117)

after Serlio
1537

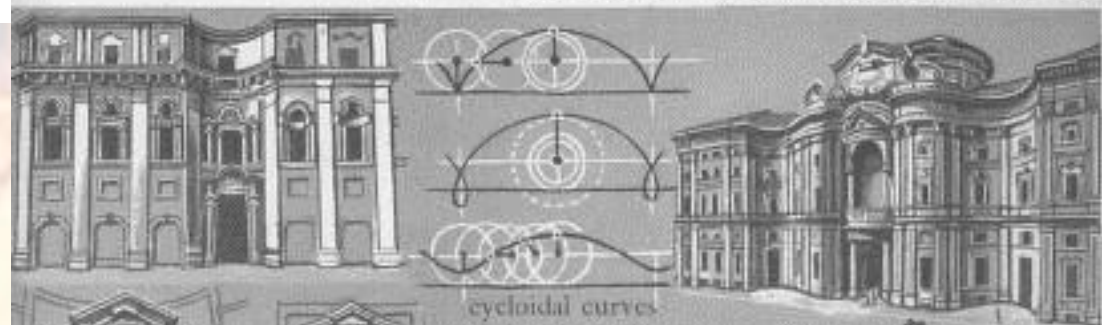


Château d'Anet: chapel, 1549-53
Philibert de l'Orme (c.1510-1570)

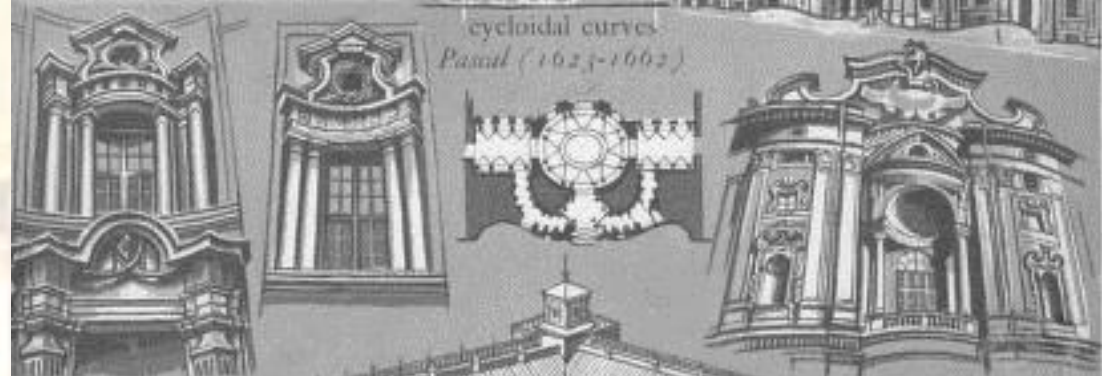
Church of the Sorbonne, Paris, c.1635
Jacques Lemercier (c.1580/5-1654)

The Italian campaigns of the French Kings, Charles VIII (1483-98), Louis XII (1498-1515) and Francis I (1515-47), failed in their aims; instead France was invaded by the ideas and the arts of the Italian Renaissance.

ITALY, PALACES



cycloidal curves
Pascal (1623-1662)



Collegio Propaganda
Fide, Rome 1646-66
Borromini (1599-1667)

Palazzo Carignano,
Turin, c.1678-80
Guarini (1624-1683)



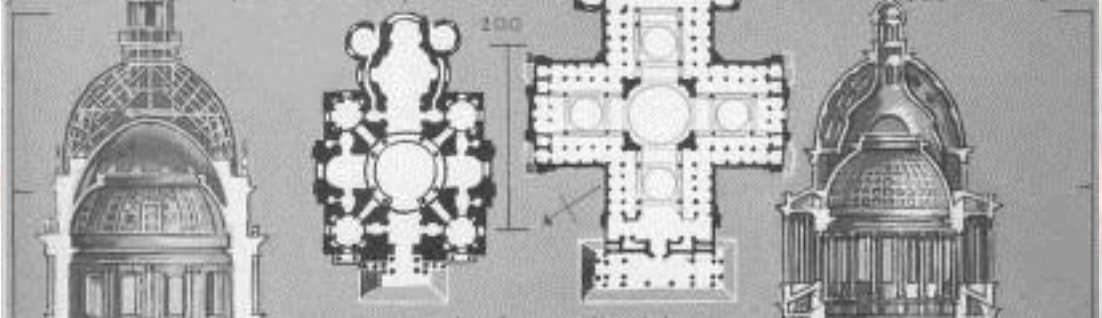
Palazzo Farnese, Caprarola, 1550-1564
Giacomo Barozzi da Vignola (1537-1573)

FRANCE, CHURCHES



(pp. 56, 117)

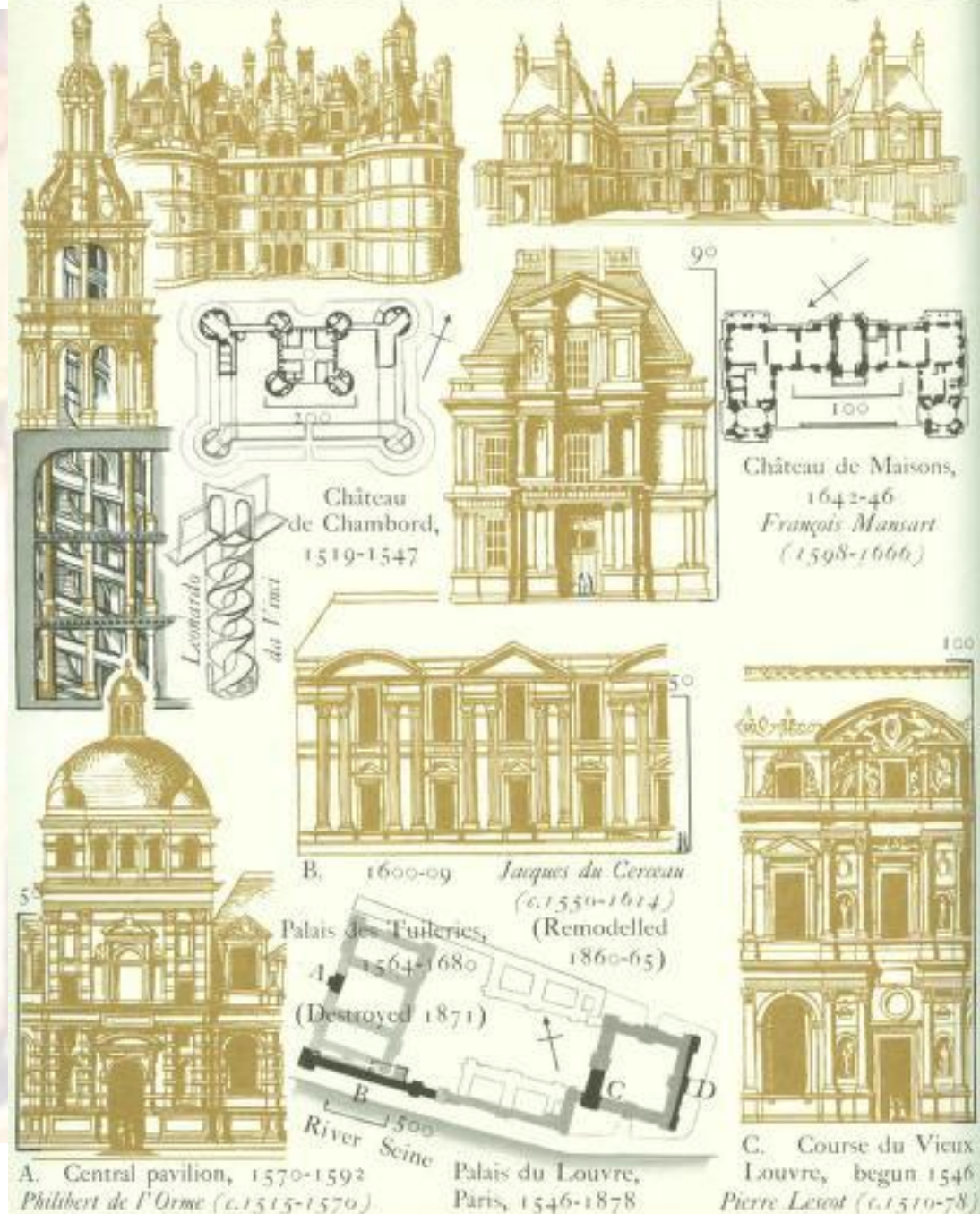
(p. 124)



Church of the
Invalides,
Paris, 1680-91
Jules
Hardouin
Mansart
(1646-1708)

Pantheon
(St Genevieve),
Paris, 1764-90
Jacques-
Germain
Soufflot
(1713-80)

RENAISSANCE-BAROQUE



FRANCE, CHATEAU TO PALACE



RENAISSANCE-BAROQUE

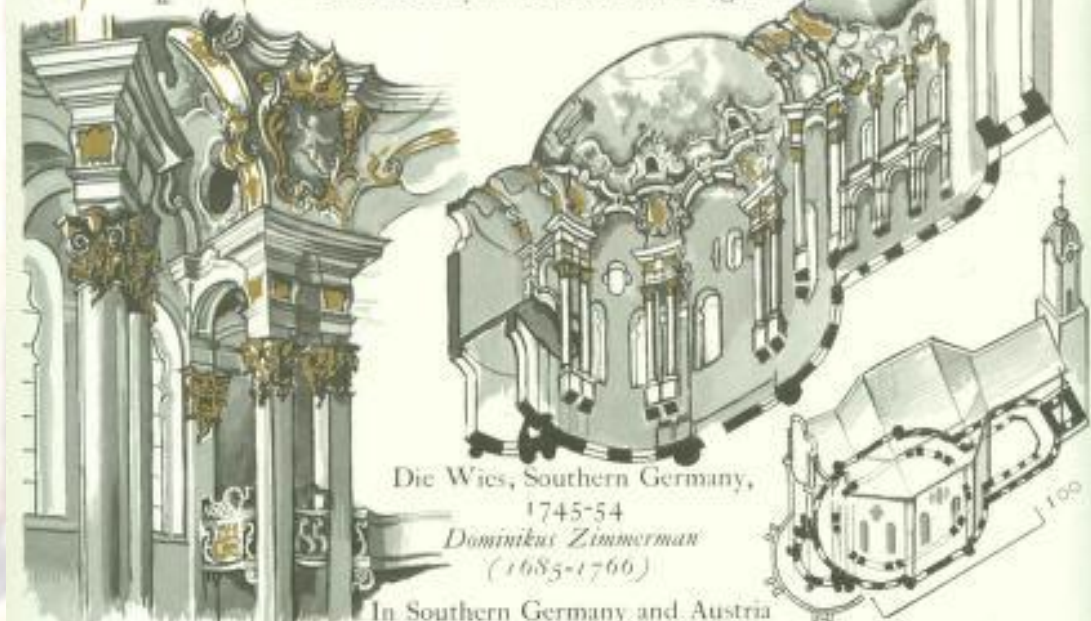


The Gesu, Rome, 1668-83 (p.122): fresco and stucco figures on nave vault, 1674-79; 'Adoration of the Name of Jesus' Giovanni Battista Gaulli (1639-1709)

S. Andrea in Valle, Rome, 1591-1623: fresco in dome, 'The Virgin in Glory' Giovanni Lanfranco (1582-1647)

Italian Baroque churches

Vaults, domes and apses were frequently 'opened out' to heaven by means of *sotto in tu* (Italian: 'from below upwards'), illusionist paintings, and often reinforced by three-dimensional figures



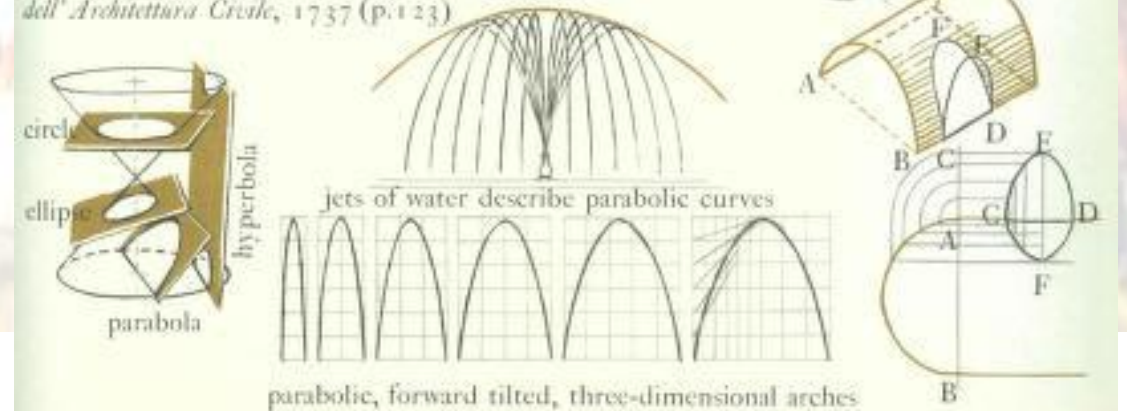
Die Wies, Southern Germany, 1745-54 Dominikus Zimmermann (1685-1766)

In Southern Germany and Austria many Jesuit Baroque churches were built in the style of the Gesu (p.122). The 'Thirty Years' War (1618-48) was followed by a resurgence of church-building in which all the arts—architecture, sculpture, painting and music—were fused into Rococo.

GERMANY, ROCOCO CHURCHES



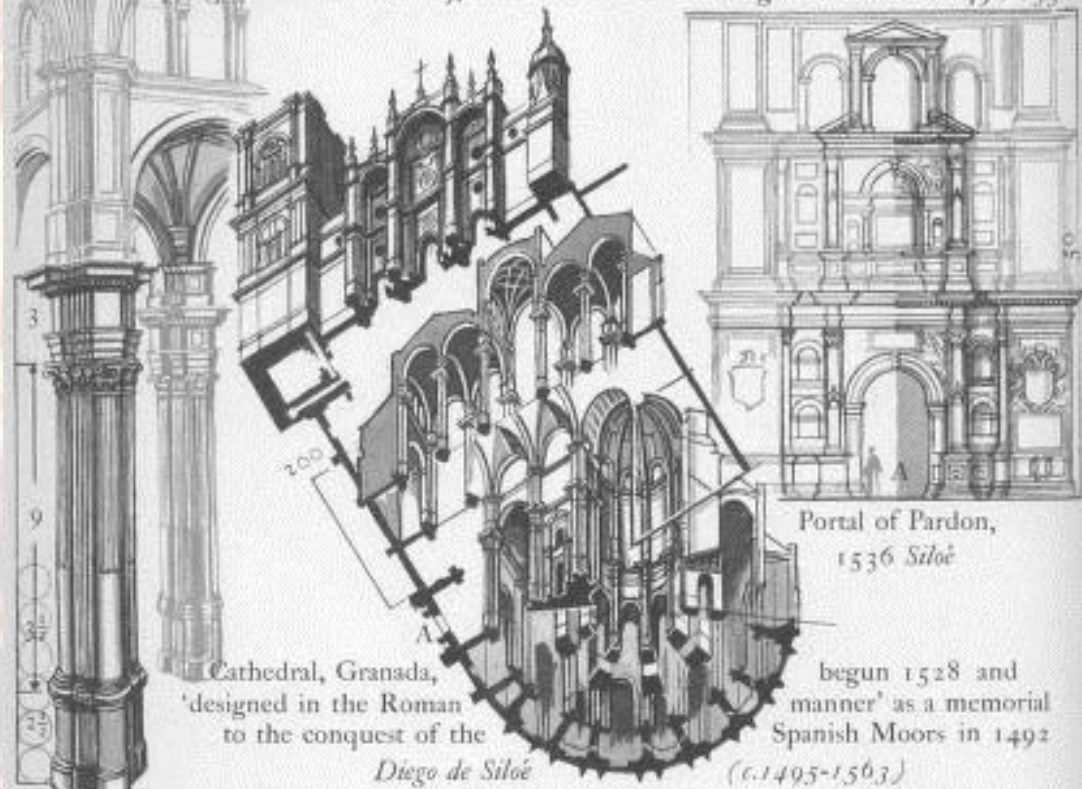
Vierzehnheiligen, Southern Germany, 1744-72 Balthasar Neumann (1687-1753), architect, mathematician, military engineer, town-planner, designer of fountains, bell-caster; possessed Guarini's *dell' Architettura Civile*, 1737 (p.123)



parabolic, forward tilted, three-dimensional arches

RENAISSANCE-BAROQUE

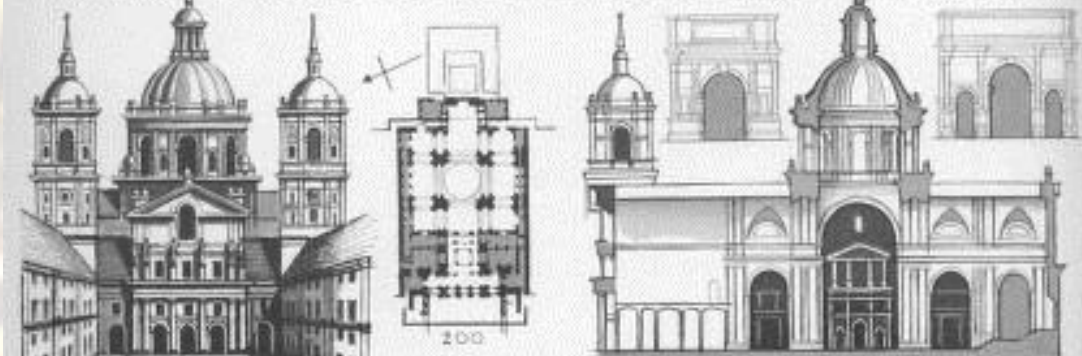
I 'Plateresque' (*platero* = silversmith), from the use of extravagant decoration 1492-1556



Cathedral, Granada, 'designed in the Roman manner' to the conquest of the *Diego de Siloe*

begun 1528 and as a memorial Spanish Moors in 1492 (*c.1495-1503*)

II Herrerian style or '*Estilo desornamentado*' (plain style), 1556-1650; adaptation of the design of the Italian High Renaissance by *Juan de Herrera* (*c.1530-97*)



The Escorial 1574-82 (p.145), Doric Church, first designed by *Juan Bautista de Toledo* (*d.1567*), philosopher and mathematician, who worked under Michelangelo; redesigned by *Juan de Herrera* (*c.1530-97*) built in yellow-grey granite, in 2:3 ratios

SPAIN

III 'Churrigueresque', named after *José de Churriguera* (1665-1723)



Cathedral, Santiago de Compostela: west façade, known as 'El Obradoiro', *c.1738*
Fernando de Casas y Novoa (*fl. 1711-94*)

The Alhambra, Granada, 1309-54: Moorish scalloped capitals in plasterwork



Charterhouse sacristy, Granada, 1713-47. Designed by *Francisco Hurtado* (1669-1725), begun 1730 by *Luis de Arévalo* (1727-64), stonemason; plasterwork by *Luis Cabello*

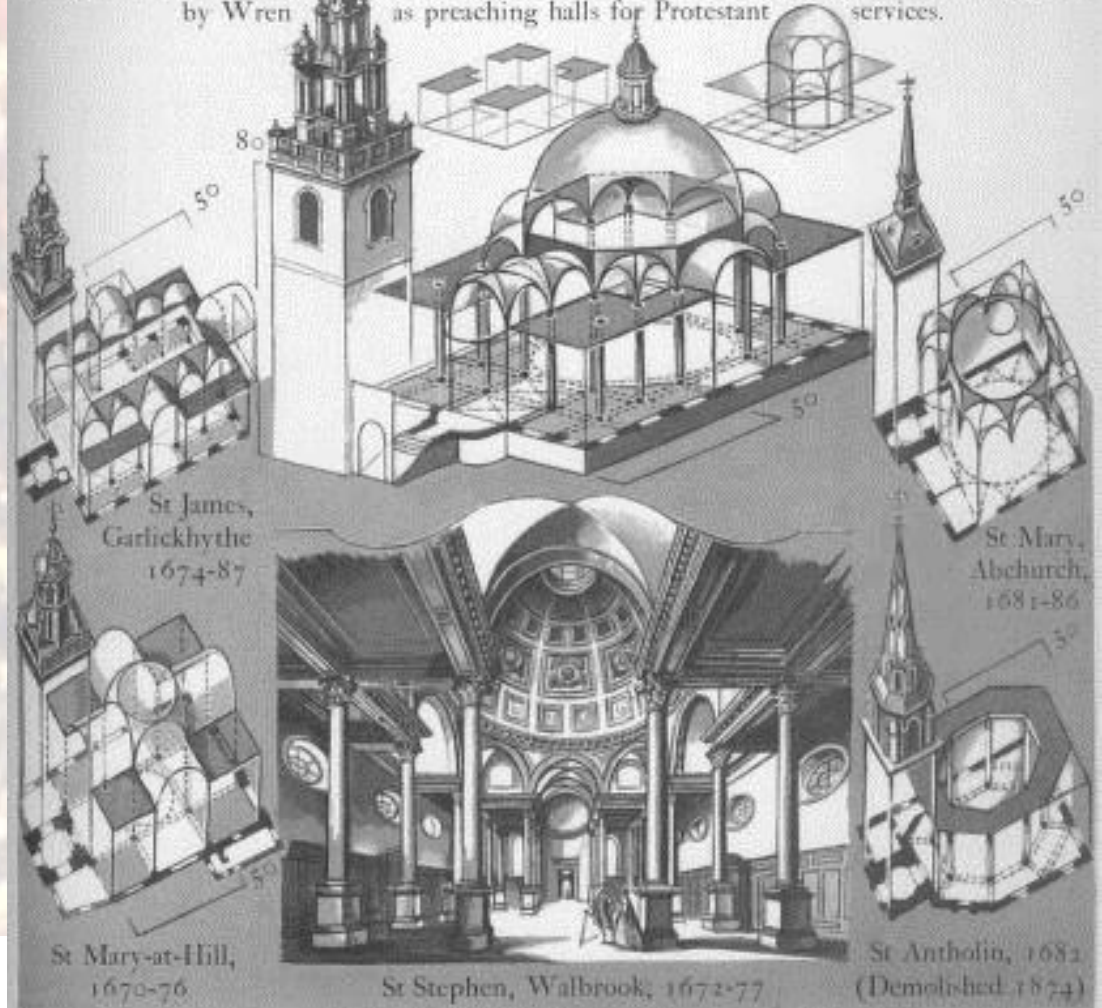
ENGLAND, WREN'S CITY CHURCHES

The fire of London lasted from 2-5 September 1666. On 11 September



Wren submitted a plan for rebuilding the City of London.

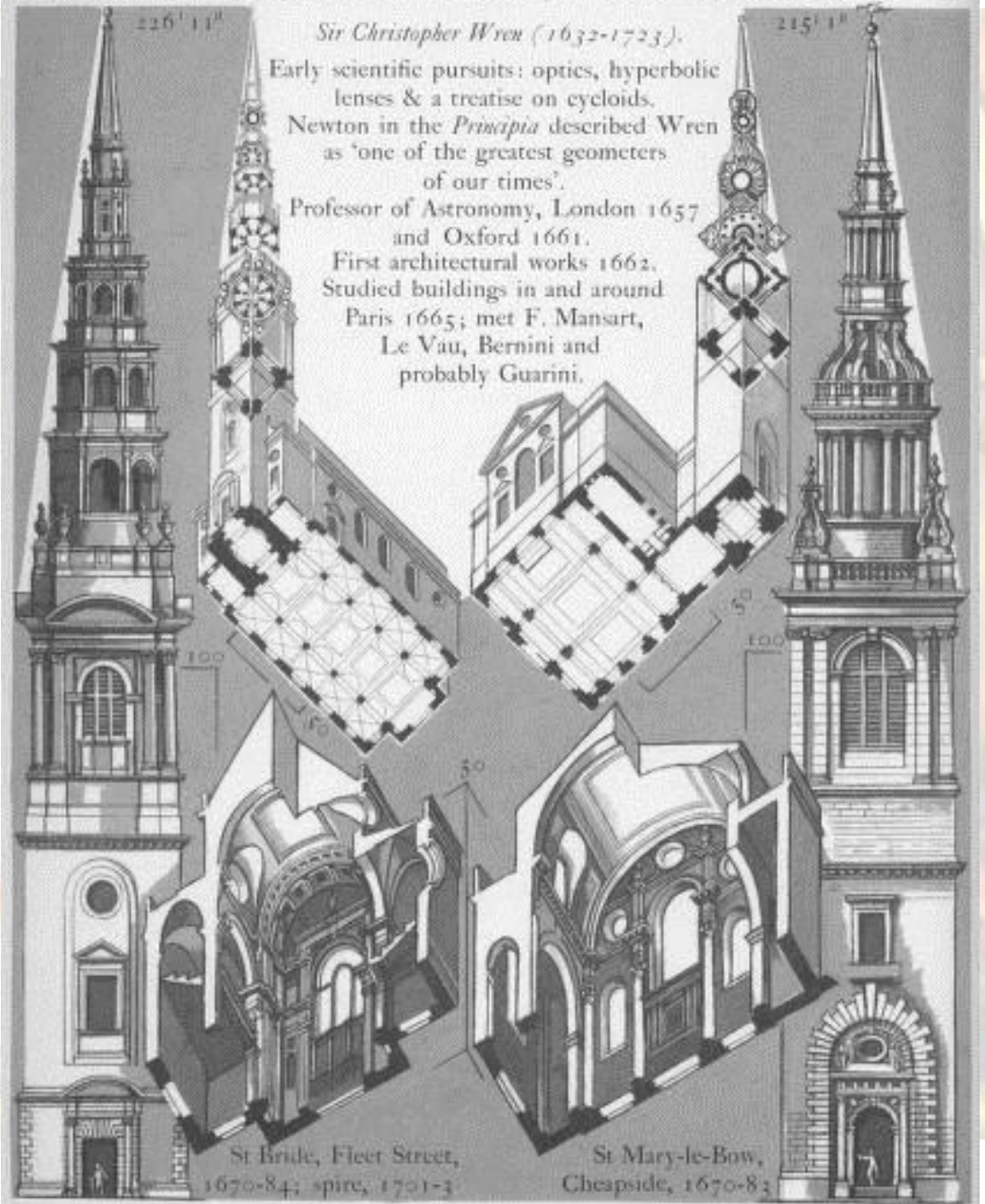
Though this plan was later abandoned, of the 87 churches destroyed 52 were redesigned by Wren as preaching halls for Protestant services.



RENAISSANCE - BAROQUE

Sir Christopher Wren (1632-1723).

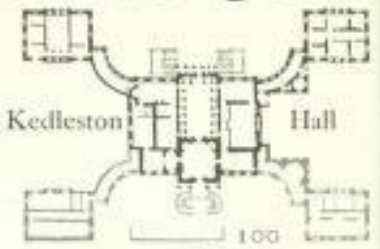
Early scientific pursuits: optics, hyperbolic lenses & a treatise on cycloids.
 Newton in the *Principia* described Wren as 'one of the greatest geometers of our times'.
 Professor of Astronomy, London 1657 and Oxford 1661.
 First architectural works 1662.
 Studied buildings in and around Paris 1665; met F. Mansart, Le Vau, Bernini and probably Guarini.



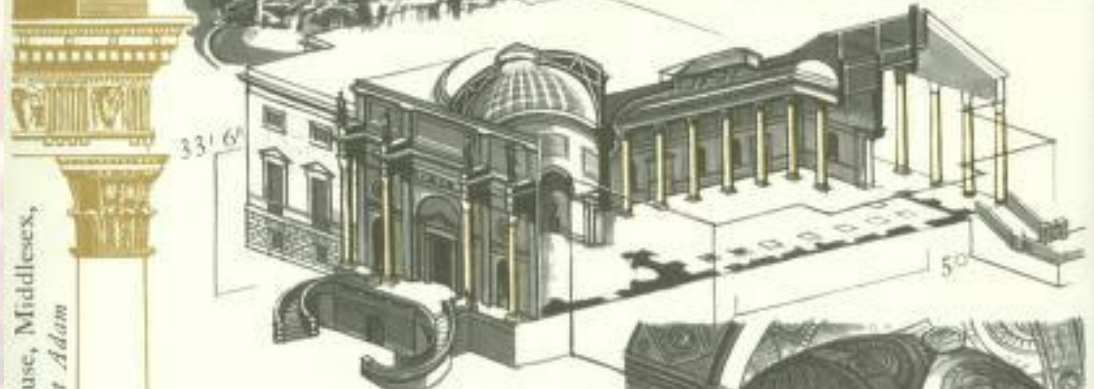
RENAISSANCE - BAROQUE



Fontana Trevi, Rome, 1732-1762
Salvi



Kedleston Hall



33' 6"

5'

Kedleston Hall, Derbyshire, 1756-70 designed by *James Paine* (1725-89); south front & interior by *Robert Adam* (1728-92). Studied in Italy 1754-58



26, Grosvenor Square, London, 1773-74 *Adam* (demolished 1862)



Pitzhanger Place, Middlesex, 1800-1803



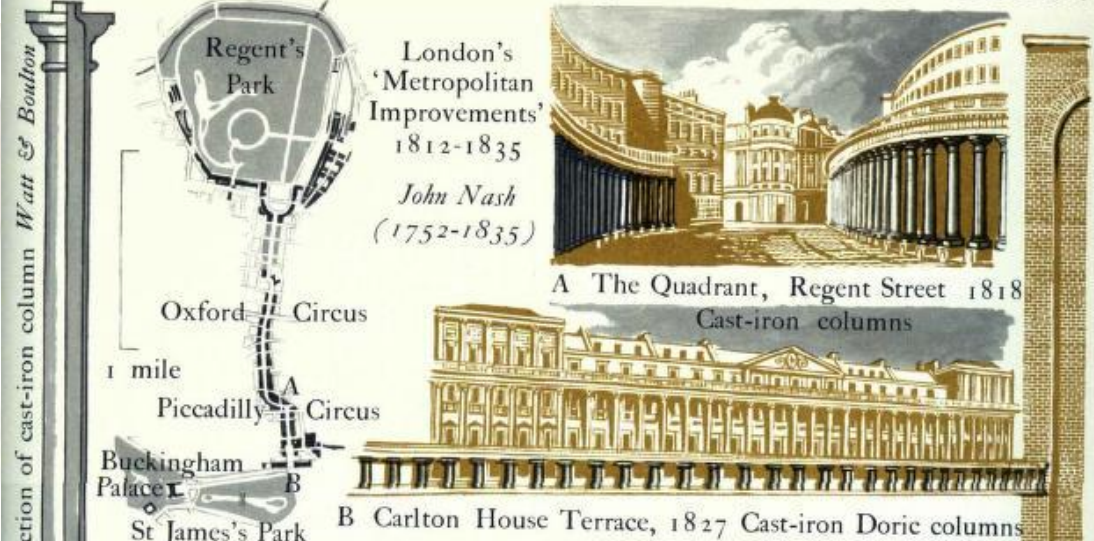
Bank Stock Office, Bank of England, 1792-93 (demolished 1927)

Sir John Soane (1753-1837). Visited Italy 1778-1780

Gate column: Syon House, Middlesex, 1761-63 *Robert Adam*



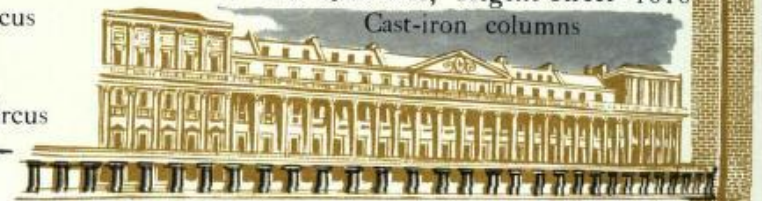
ENGLAND, STONE, BRICK & IRON



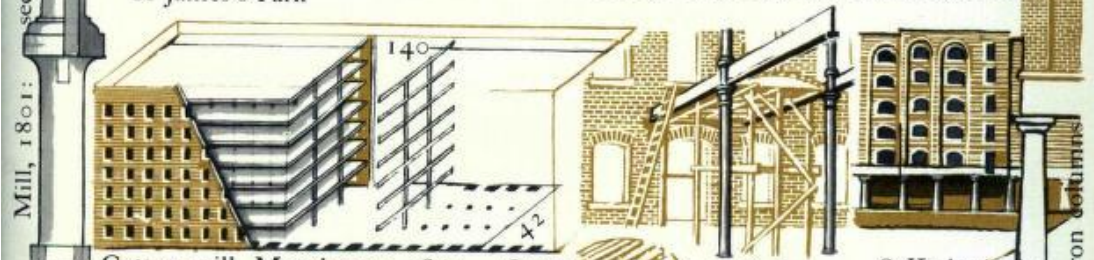
London's 'Metropolitan Improvements' 1812-1835
John Nash (1752-1835)



A The Quadrant, Regent Street 1818
Cast-iron columns



B Carlton House Terrace, 1827 Cast-iron Doric columns



Cotton mill, Manchester, 1801. Cast-iron columns & beams
James Watt (1736-1819) & *Matthew Boulton* (1728-1809)



First-iron bridge: Coalbrookdale, Shropshire, 1775-79 *Thomas Farnoth Pritchard* (d.1777)



Cast-iron rib-and-truss Bridge, Craigellachie, 1815 *Telford*



Suspension Bridge, Menai Straits, 1819-26
William Telford (1751-1834)

Cast-iron Bridge, Sunderland, 1793-96

العمارة فى عصر النهضة (١٤٥٠-١٥٥٠م)
والباروك (١٥٥٠-١٧٠٠م)

Architecture in the Renaissance (1450-1550)
& Baroque (1550- 1700)

THANK YOU

Dr. Kamal Elgabalawy

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