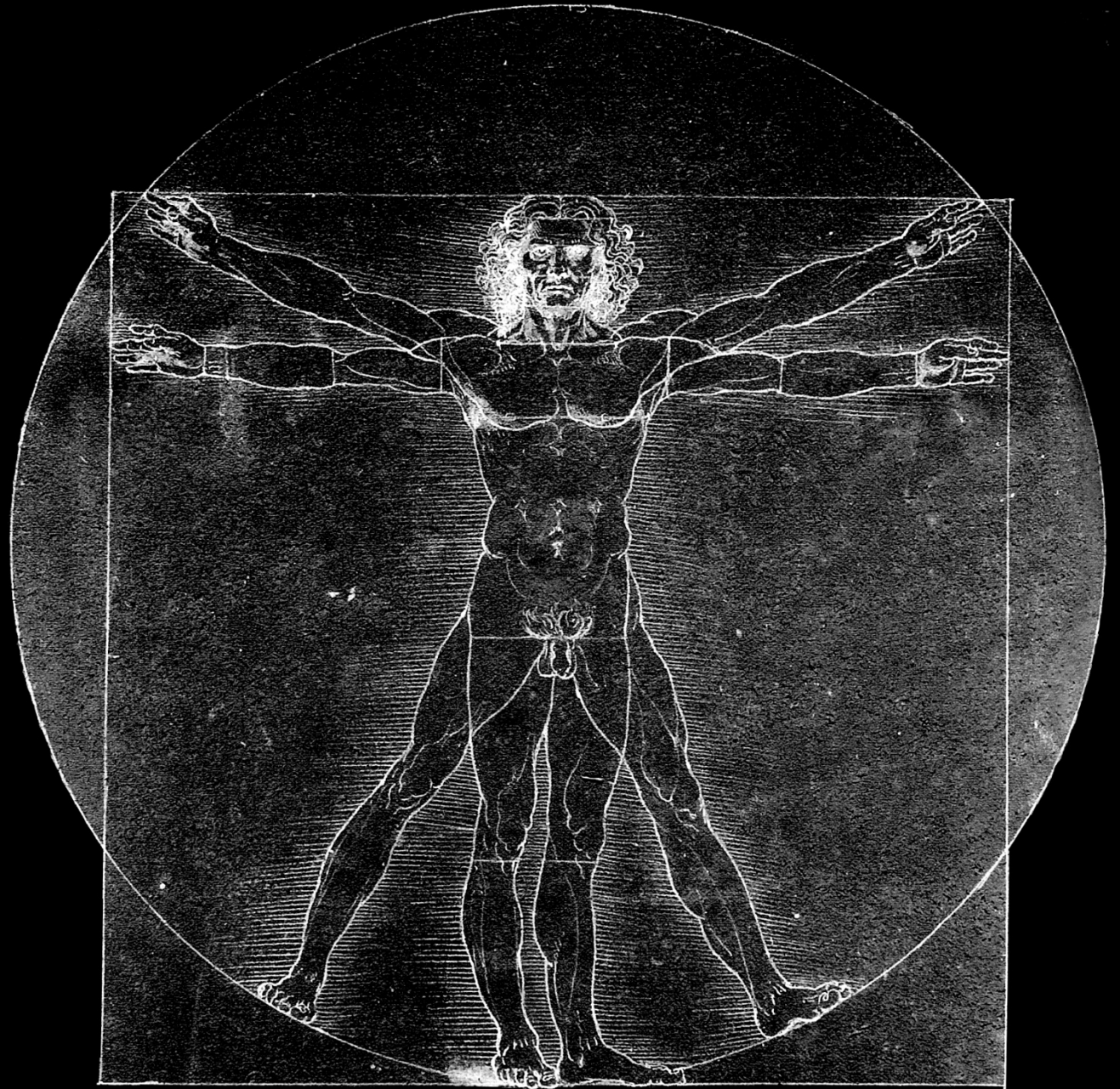# Renaissance & Mannerism

ARCH 1121 - HISTORY OF WORLD ARCHITECTURE TO 1900

## Renaissance & Mannerism

Professor: Shelley E Smith, PhD
email: ssmith@citytech.cuny.edu

Course Overview:
- What is architecture? What is history?
- Prehistoric, Mesopotamia, Egypt
- Early Aegean, Greece
- India & Southeast Asia, China & Japan
- Rome, Early Christian & Byzantine, Islamic
- Early Medieval, Romanesque, Gothic
- The Pre-Columbian Americas, Africa
- The Renaissance, Baroque, Rococo in Europe
- 18th Century & Neo-Classicism in Europe & America

Renaissance 1420 - 1600

- Gutenberg invents printing press: 1450

- Columbus sails to America: 1492

- Leonardo da Vinci paints the Last Supper: 1495

- Copernicus – Sun was the center of the Universe: 1543

- Shakespeare's Hamlet performed: 1600
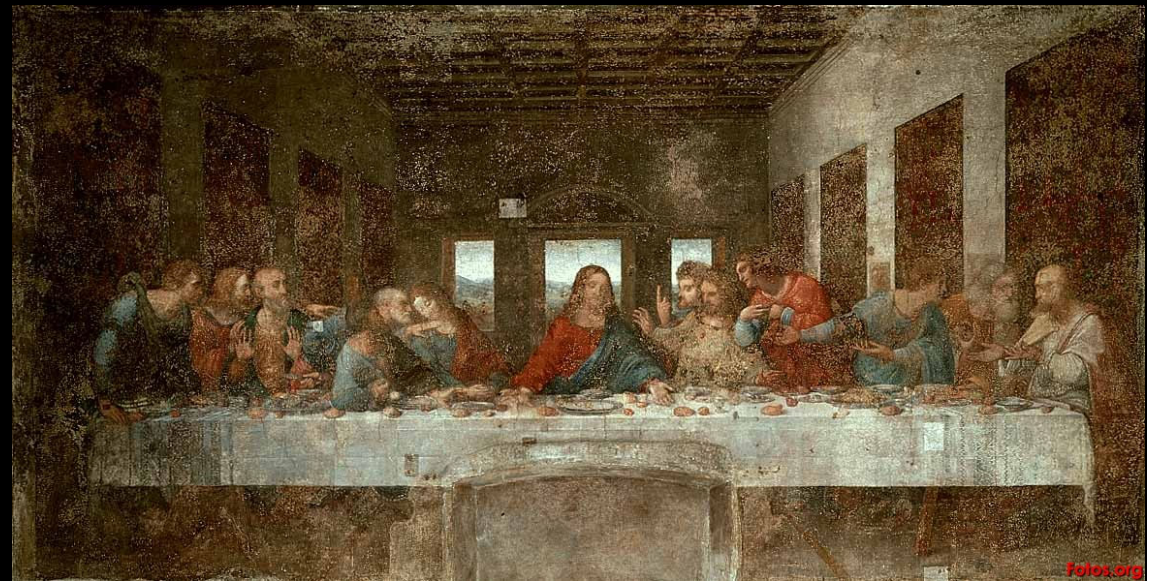
Florence

• Early Renaissance begins in Florence under the patronage of the Medici family

• Italy is a series of city-states that thrives on trade, and the Medici family is a prominent banking family based in Florence that supports the arts

Renaissance 1420 - 1600

- Means "rebirth": A renewed interest in Ancient Greek and Roman architecture

- A humanist approach to design, combined with innovations in technology and science; placed emphasis on the individual's ability to create and propose rational observations of the world

- Mathematical proportions, or <u>ratios</u>, were believed to produce ideal forms in <u>plan, section, and elevation</u>

- The central church plan, for example, was the preferred church plan rather than the Latin Cross plan

Timeline of Renaissance architecture

1400	1425	1450	1475	1500	1525	1550	1575	1600
Renaissance Early				Renaissance High		Mannerism		Baroque
Gothic Late								
Florence (Northern Italy)				Rome		France (Europe)		

Dome of Florence, 1412
Fillippo Brunelleschi

Santa Maria 1458
Leon Battista Alberti

Tempietto, Rome 1502
Donato Bramante

Laurentian Library,
1524 Michelangelo

Cathedral Milan,
Italy: 1386-1572

Doges Palace,
Venice: 1309-1424

San Andrea, Mantua 1472
Leon Battista Alberti

St. Peters, 1546-64

Suleymaniye Mosque,
Istanbul: 1550-57

Place Royale,
Paris, 1605-12

| 1387 Chaucer publishes Canterbury Tales | 1429 Joan of Arc battles to drive English from France in 110 Years War 1450 Florence under Medici center humanism | 1450 Gutenberg invents printing press 1453 Constantinople falls 1458 Turks sack Acropolis | 1481 Spanish Inquisition 1492 Moors driven from Spain; Columbus 1493 First Spanish in New World | 1498 Vasco da Gama discovers sea route to India 1509 Slave trade begins 1517 Reformation | 1519-21 Magellan circumnavigate the globe 1519-21 Cortez conquers Mexico | 1540 Jesuit order founded 1543 Copernicus Sun (not Earth) is center of solar system 1559 Elizabeth I England | 1585 English found Virginia 1588 Philip II's Spanish Armada defeated by British | 1600 Shakespeare's Hamlet performed 1620 Mayflower lands in Massachusetts 1632 Galileo theory on motion |

Fillippo Brunelleschi
1377-1446

- Began as a goldsmith, sculptor, and clock maker; was a mathematician, architect, engineer and Latin scholar

- Developed linear perspective, a precise system for the representation of three-dimensional objects in two dimensions
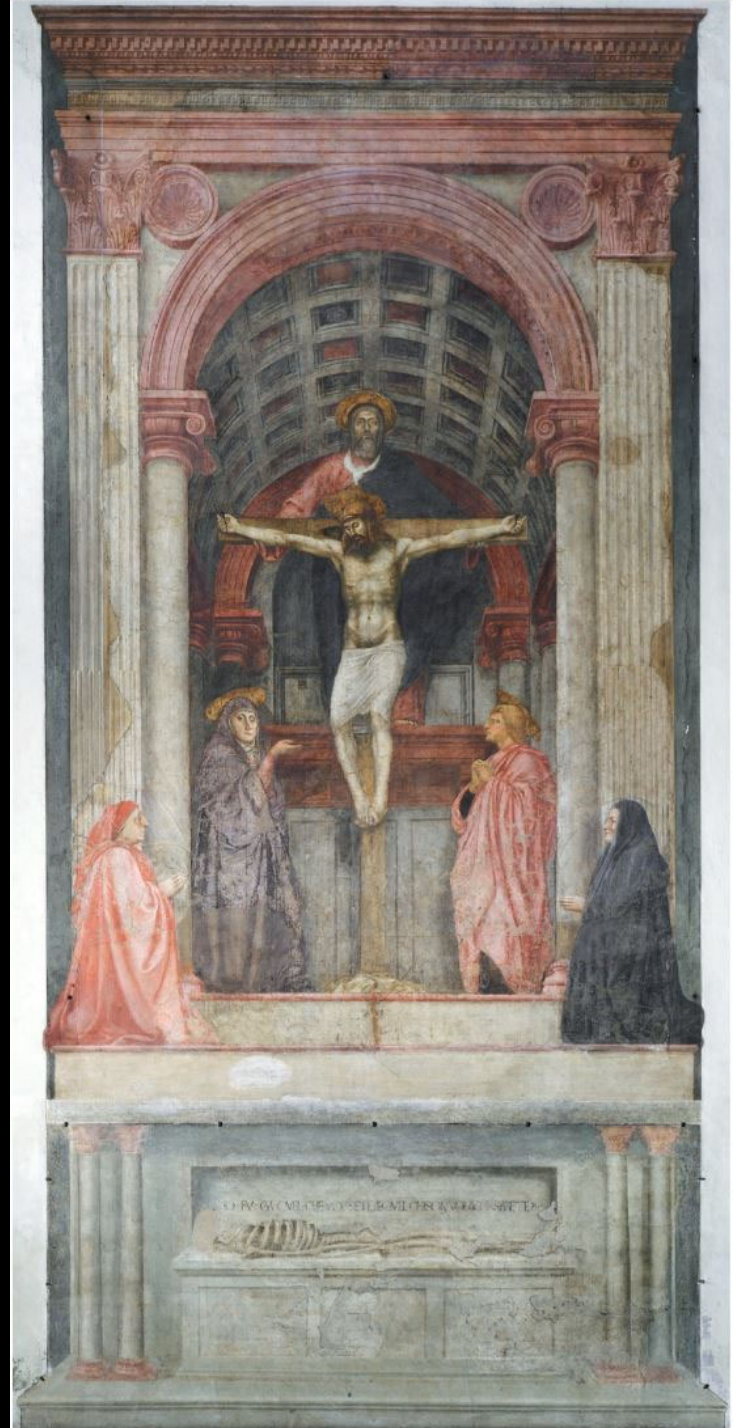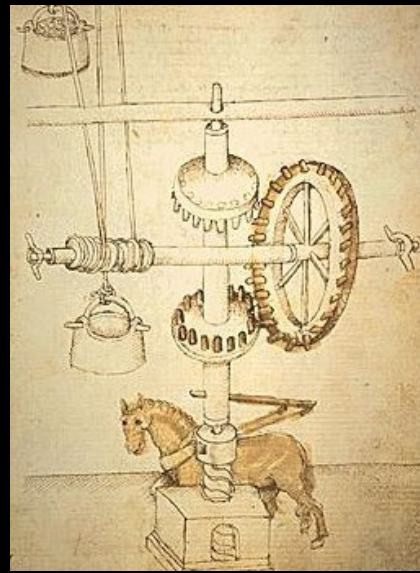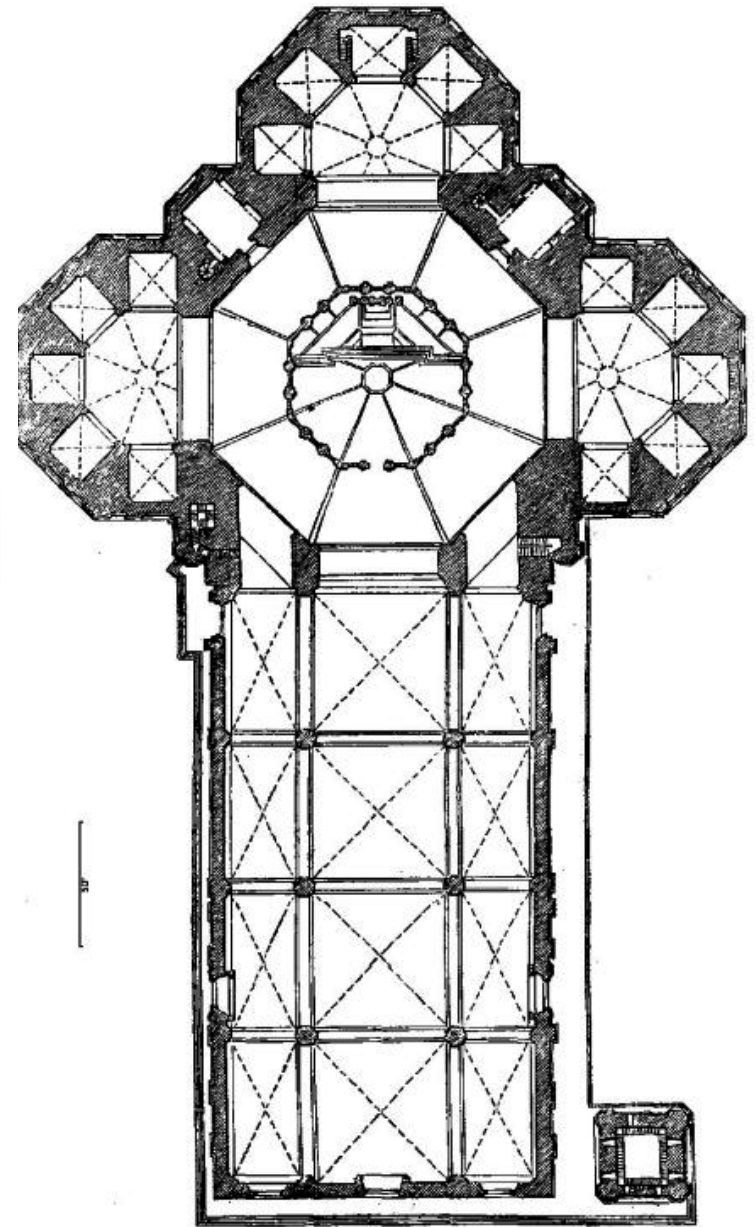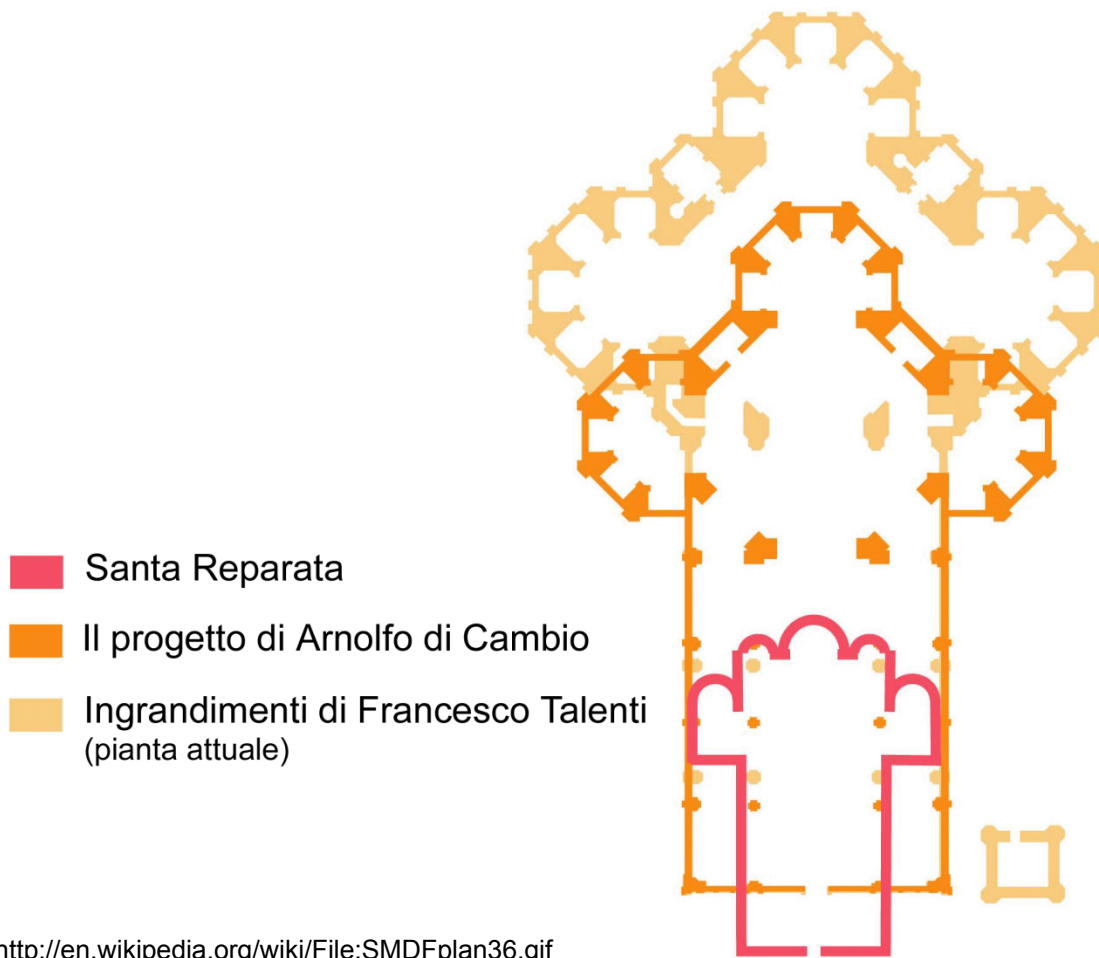
Filippo Brunelleschi 1377-1446

1412- Builder / Architect of the Dome of Florence Cathedral
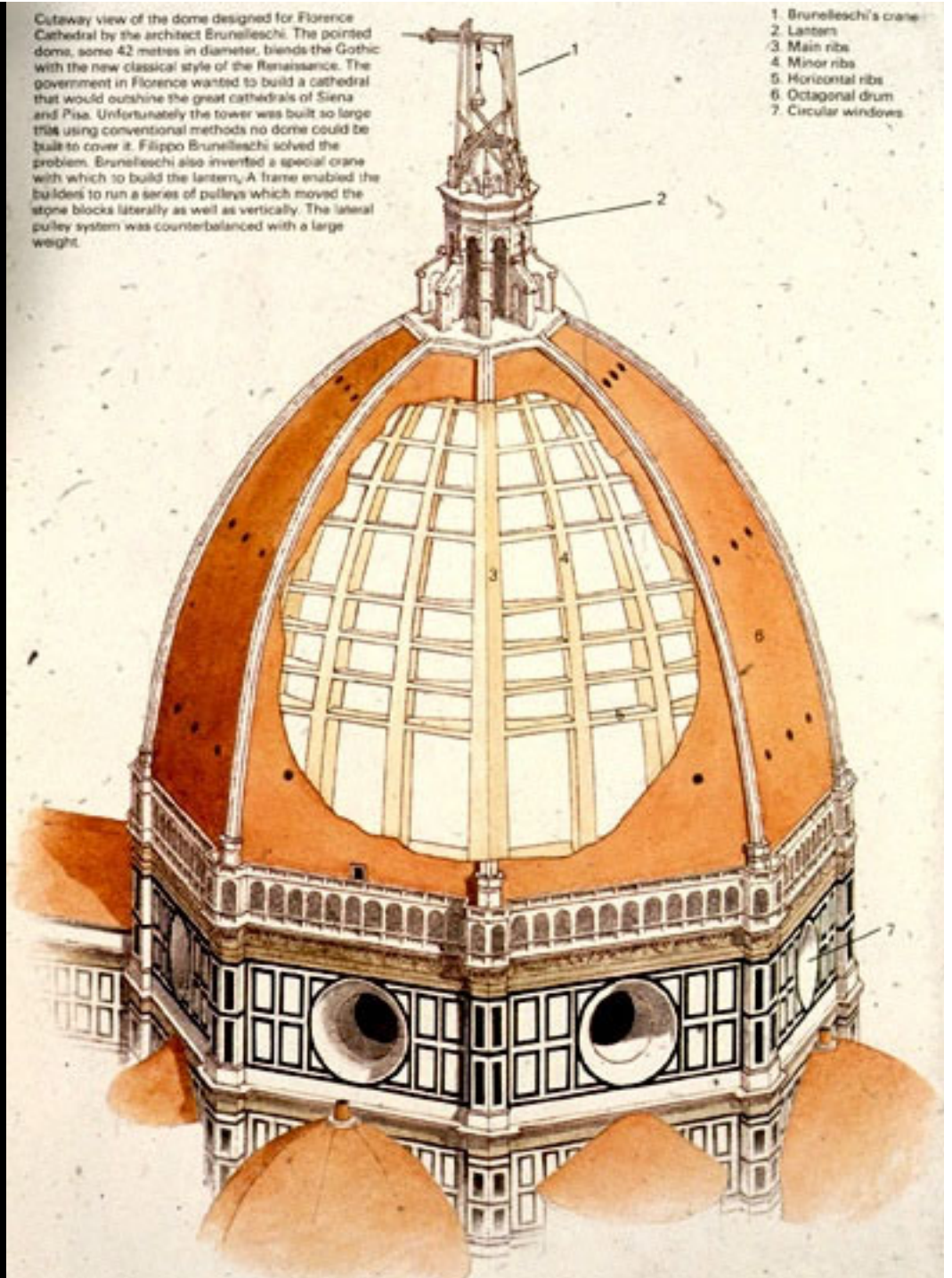
Plan of the Cathedral at Florence

(Santa Maria del Fiore)
Designed in 1296 in the Gothic style
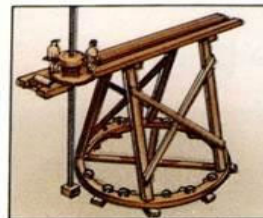the project lasted 170 years

Santa Reparata

Il progetto di Arnolfo di Cambio

Ingrandimenti di Francesco Talenti
(pianta attuale)

http://en.wikipedia.org/wiki/File:SMDFplan36.gif

James Fergusson: Illustrated Handbook of Architecture - Christian Architecture - Fig 626: Plan of the Cathedral at Florence [plan] (pg772)
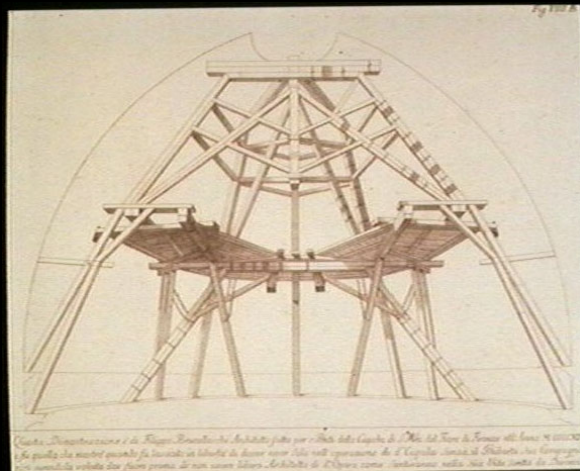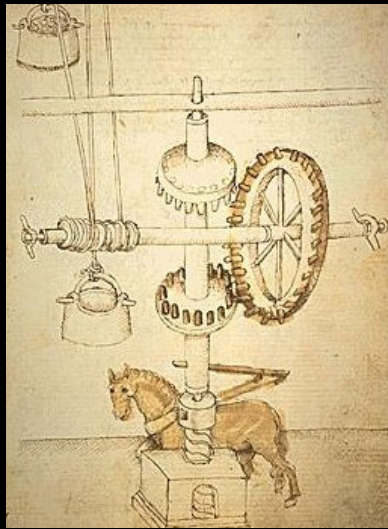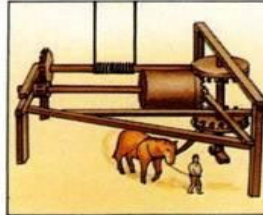
Dome of Florence Cathedral 1412

• Used a Gothic pointed arch to reduce outward thrust of the dome

• The dome had a double shell with <u>radial</u> and <u>concentric</u> ribs

• 8 sandstone ribs sprung, 1 from each corner of the octagonal drum, to the cupola

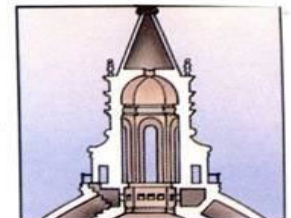• Inner and outer shells separated by horizontal sandstone rings

Cutaway view of the dome designed for Florence Cathedral by the architect Brunelleschi. The pointed dome, some 42 metres in diameter, blends the Gothic with the new classical style of the Renaissance. The government in Florence wanted to build a cathedral that would outshine the great cathedrals of Siena and Pisa. Unfortunately the tower was built so large that using conventional methods no dome could be built to cover it. Filippo Brunelleschi solved the problem. Brunelleschi also invented a special crane with which to build the lantern. A frame enabled the builders to run a series of pulleys which moved the stone blocks laterally as well as vertically. The lateral pulley system was counterbalanced with a large weight.

1. Brunelleschi's crane
2. Lantern
3. Main ribs
4. Minor ribs
5. Horizontal ribs
6. Octagonal drum
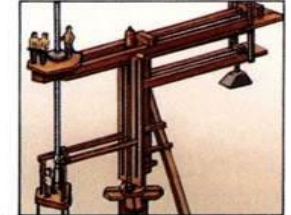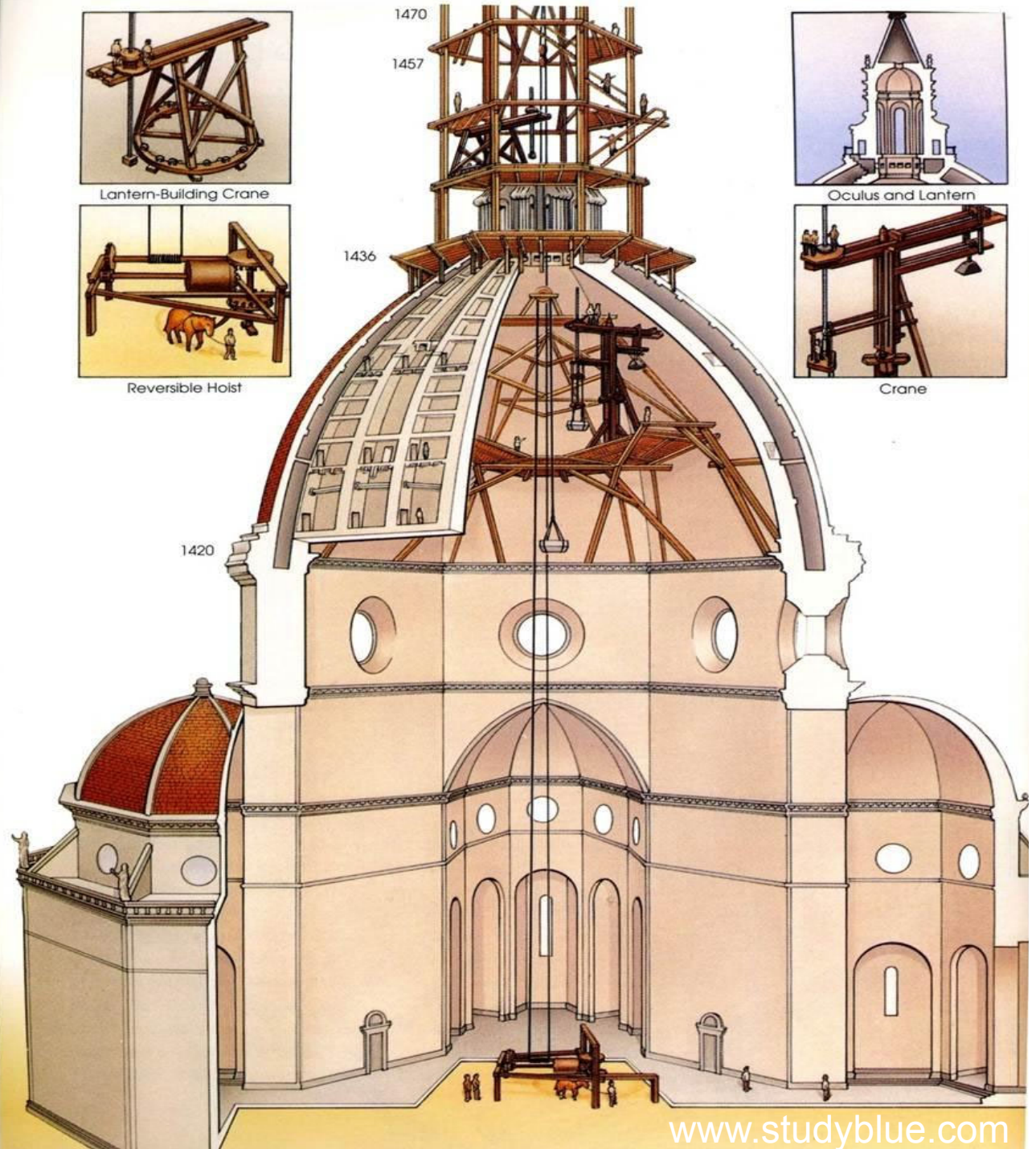7. Circular windows

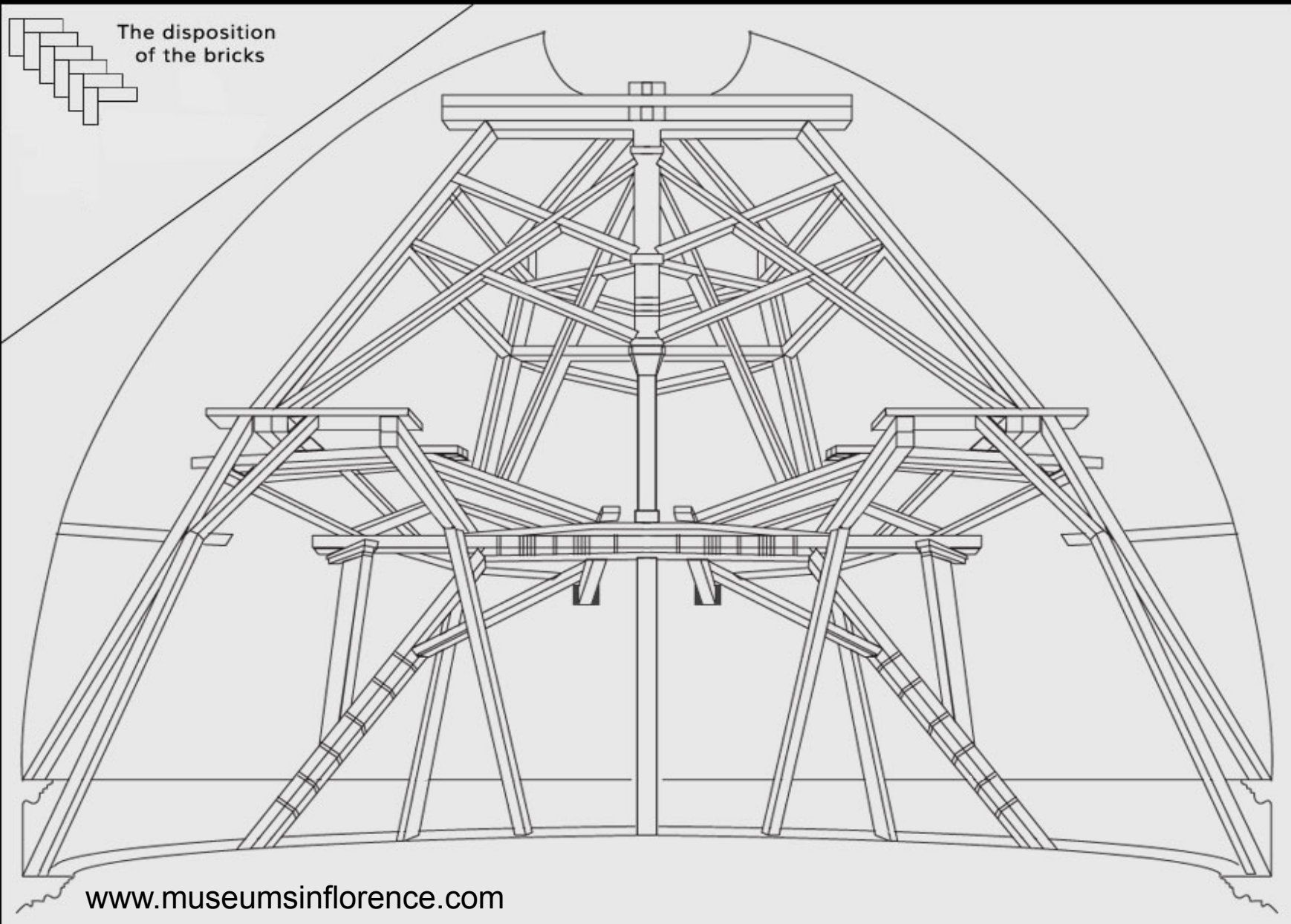Florence Cathedral Construction

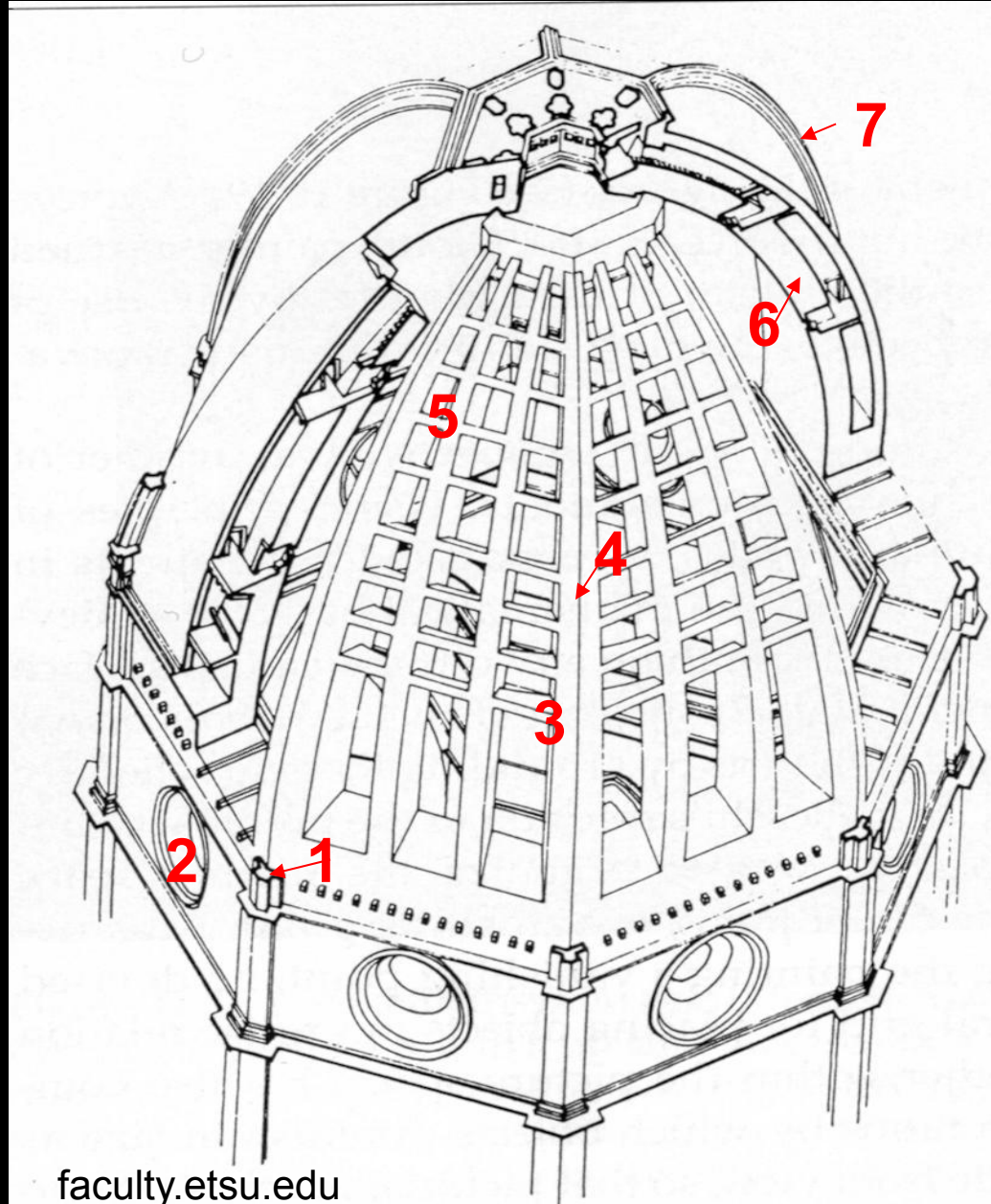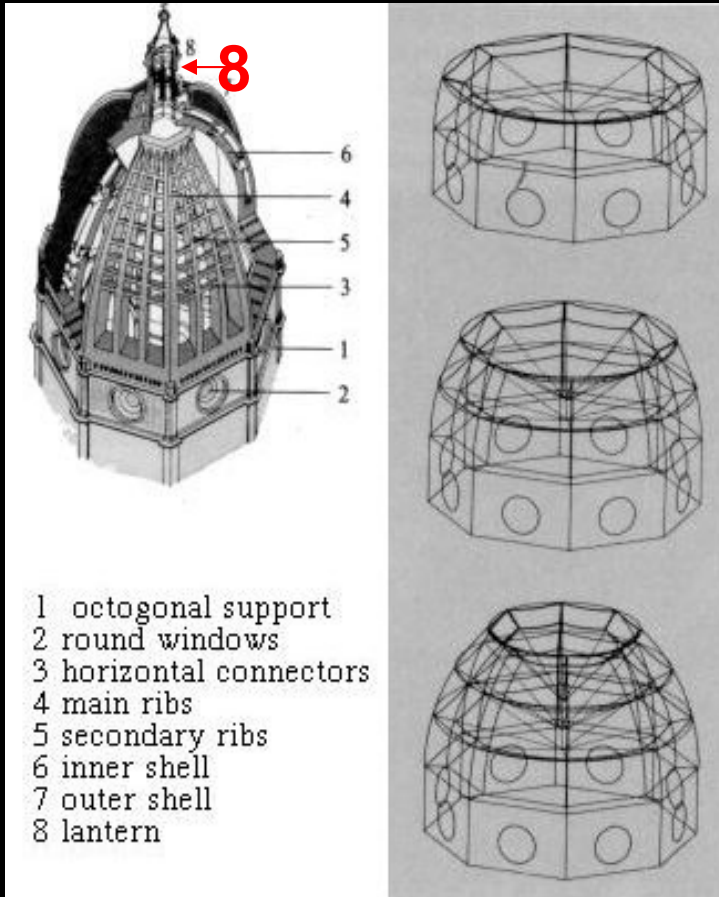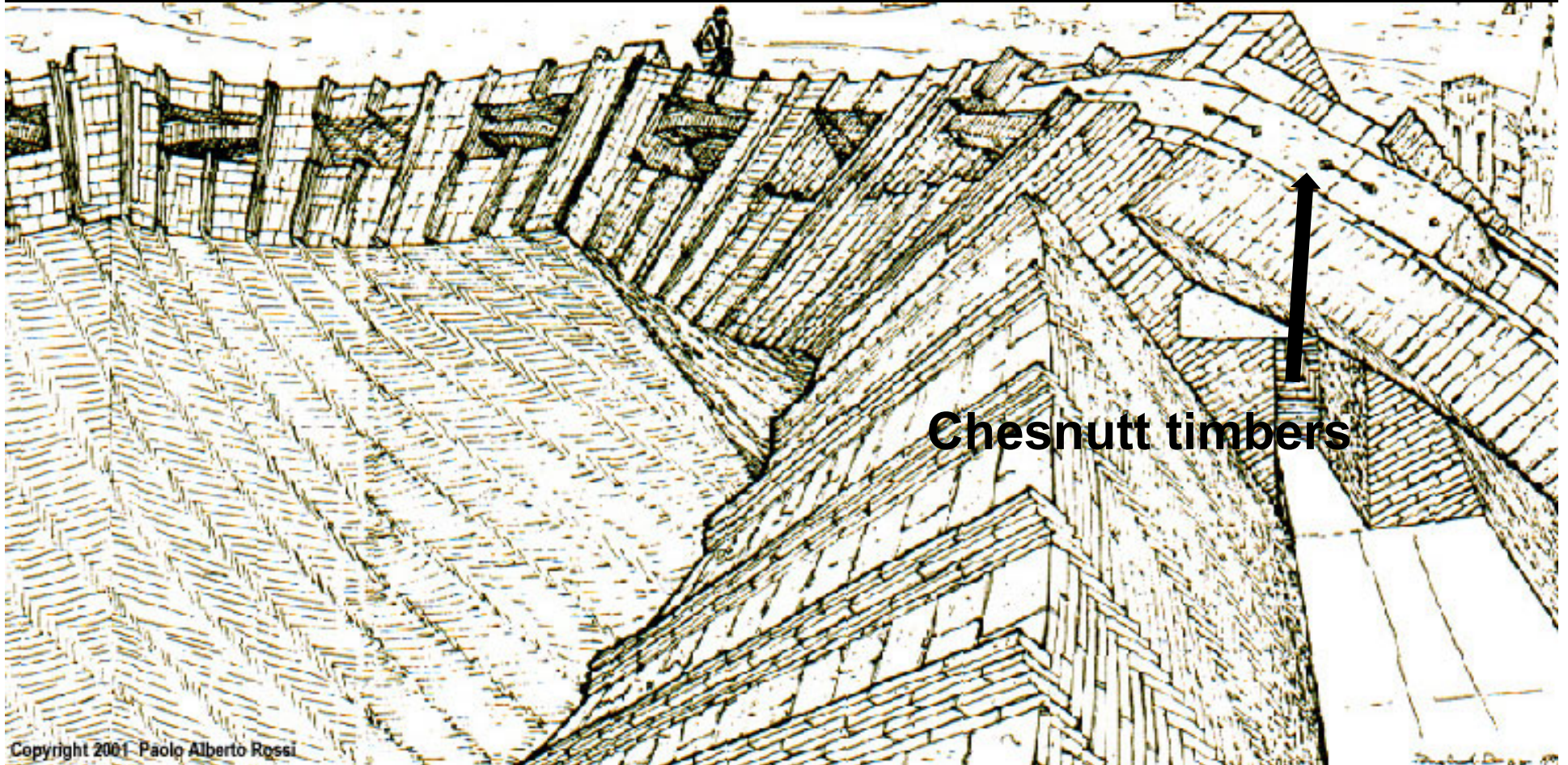Lantern-Building Crane

Reversible Hoist

Oculus and Lantern

Crane

1470

1457

1436

1420

www.studyblue.com

Florence Cathedral Scaffolding
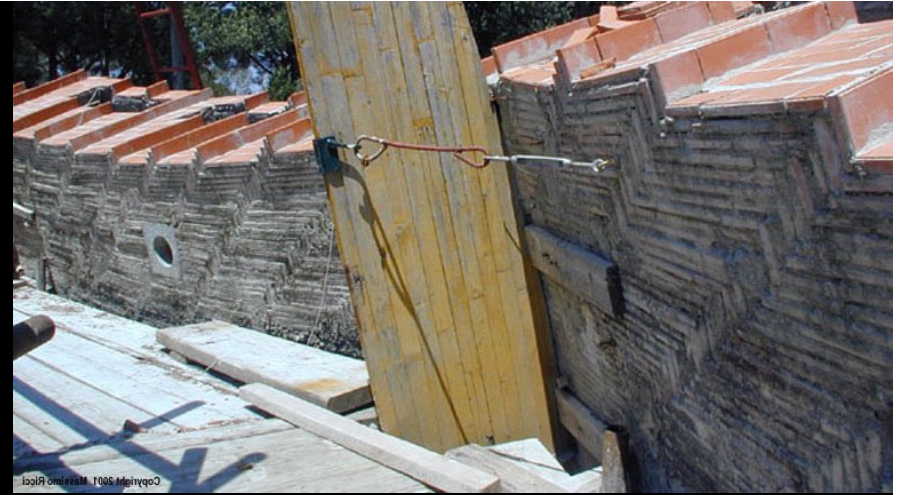
The disposition of the bricks

www.museumsinflorence.com

Dome- Florence Cathedral Construction

1 octogonal support
2 round windows
3 horizontal connectors
4 main ribs
5 secondary ribs
6 inner shell
7 outer shell
8 lantern

faculty.etsu.edu

Florence Cathedral Dome- 1412

Chesnutt timbers

Copyright 2001 Paolo Alberto Rossi

Three Great Domes—Rome to the Renaissance
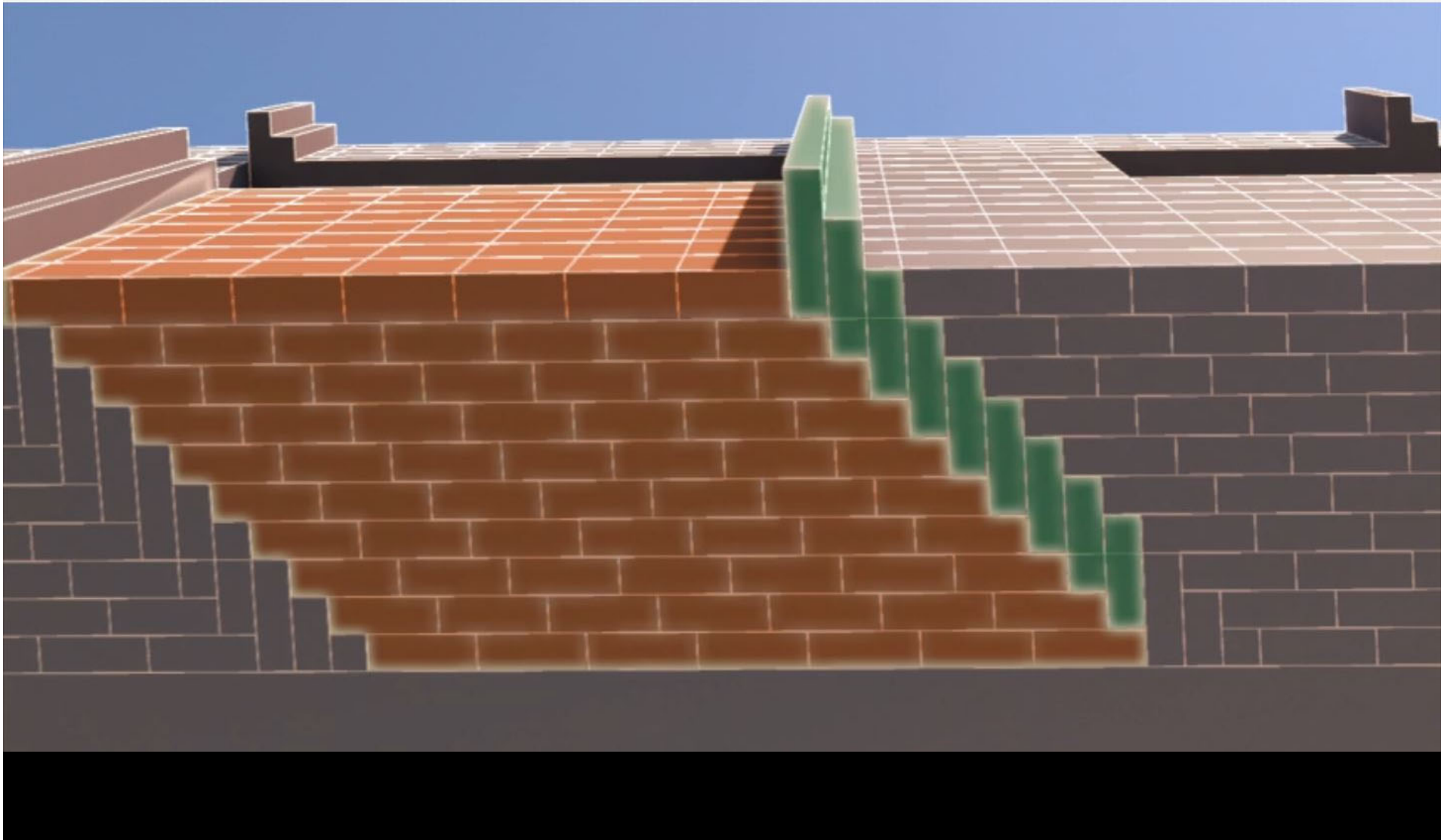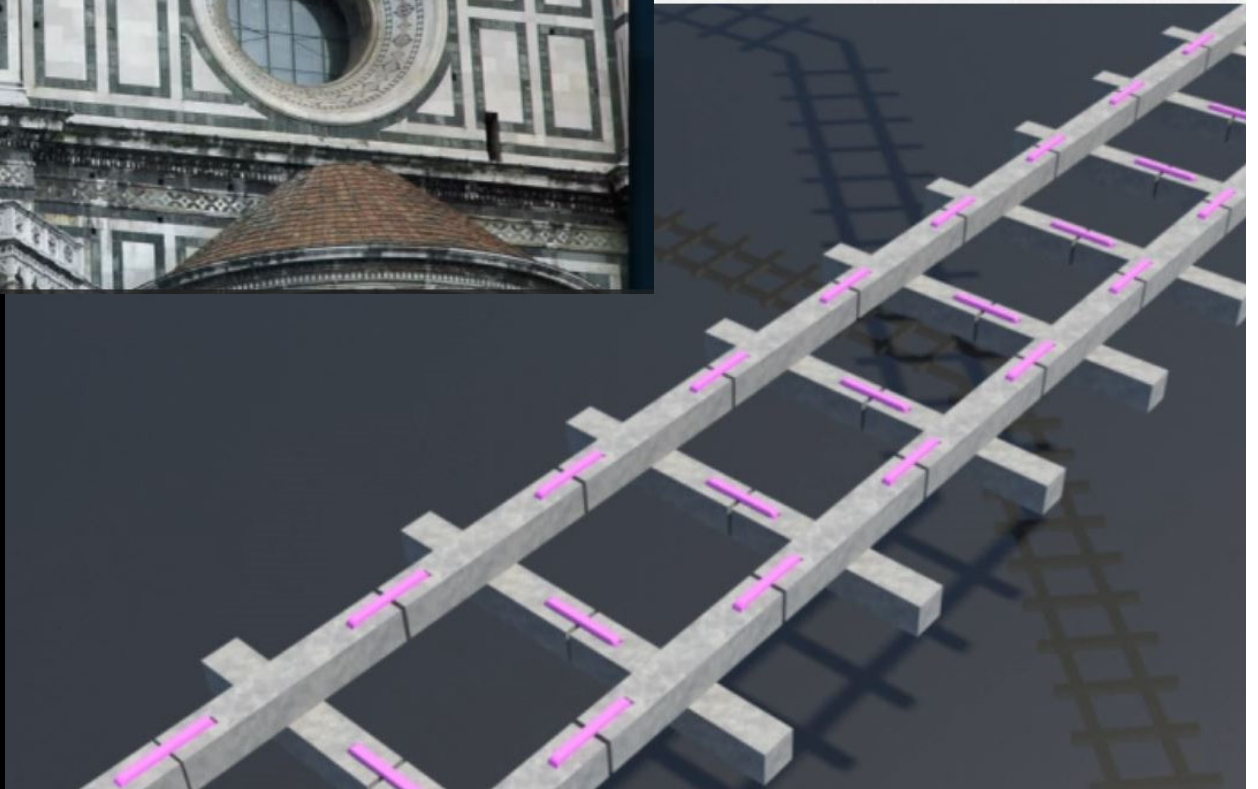
Lecture no. 13 from the course: Understanding the World's Greatest Structures

Three Great Domes—Rome to the Renaissance
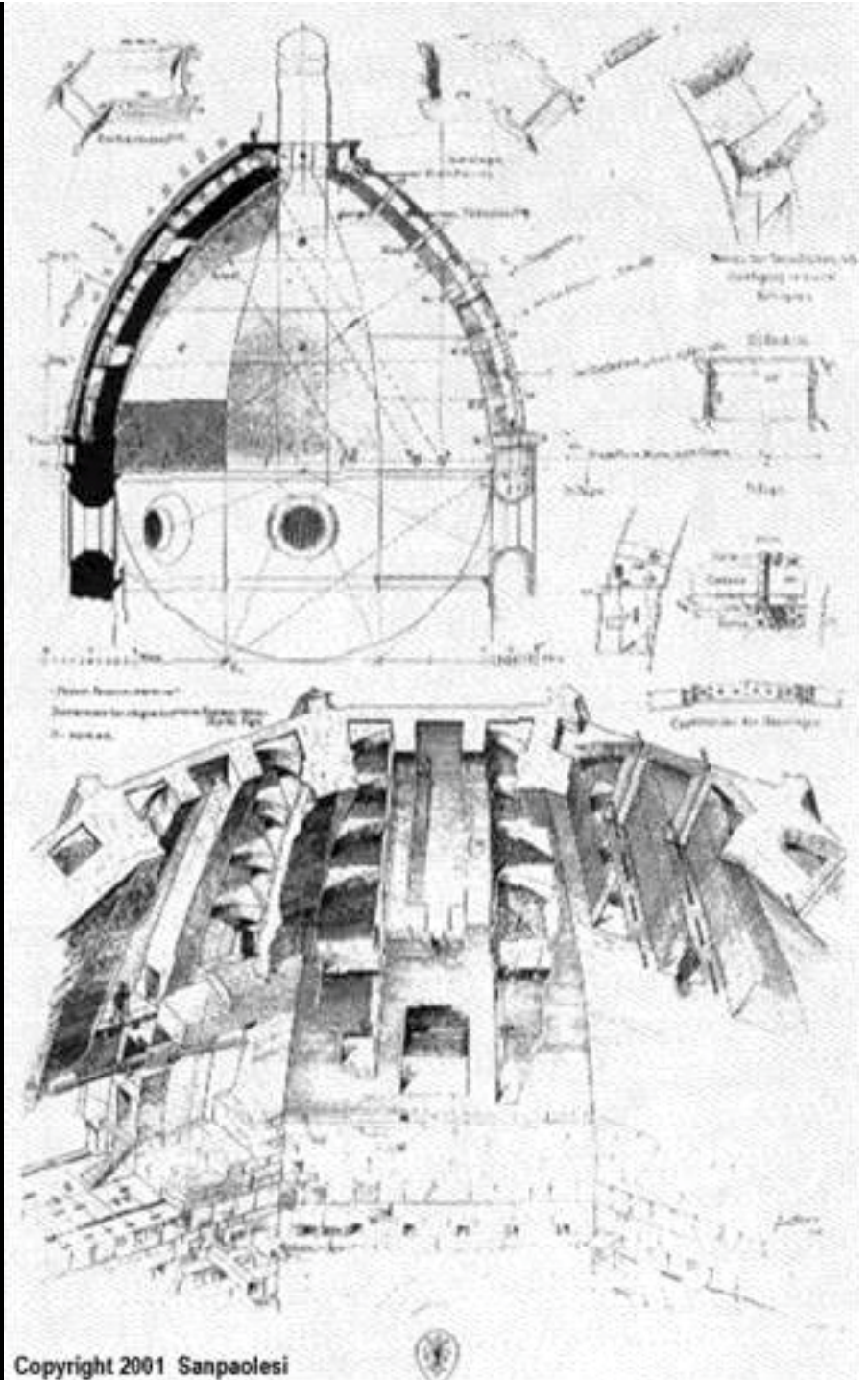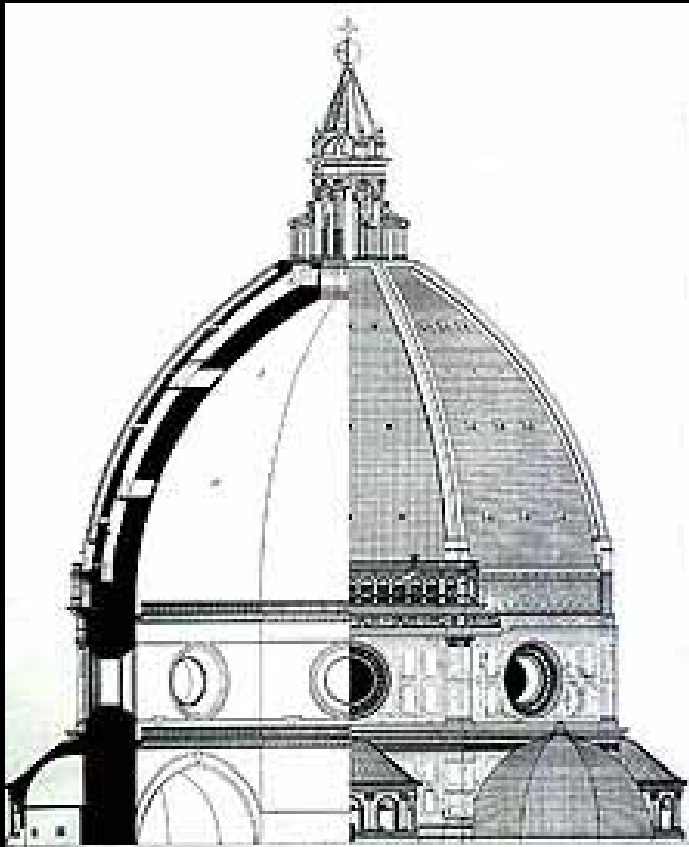**Lecture no. 13 from the course: Understanding the World's Greatest Structures**

Florence Cathedral Dome 1412

Lantern acts as a capstone to hold the dome together and prevent spread
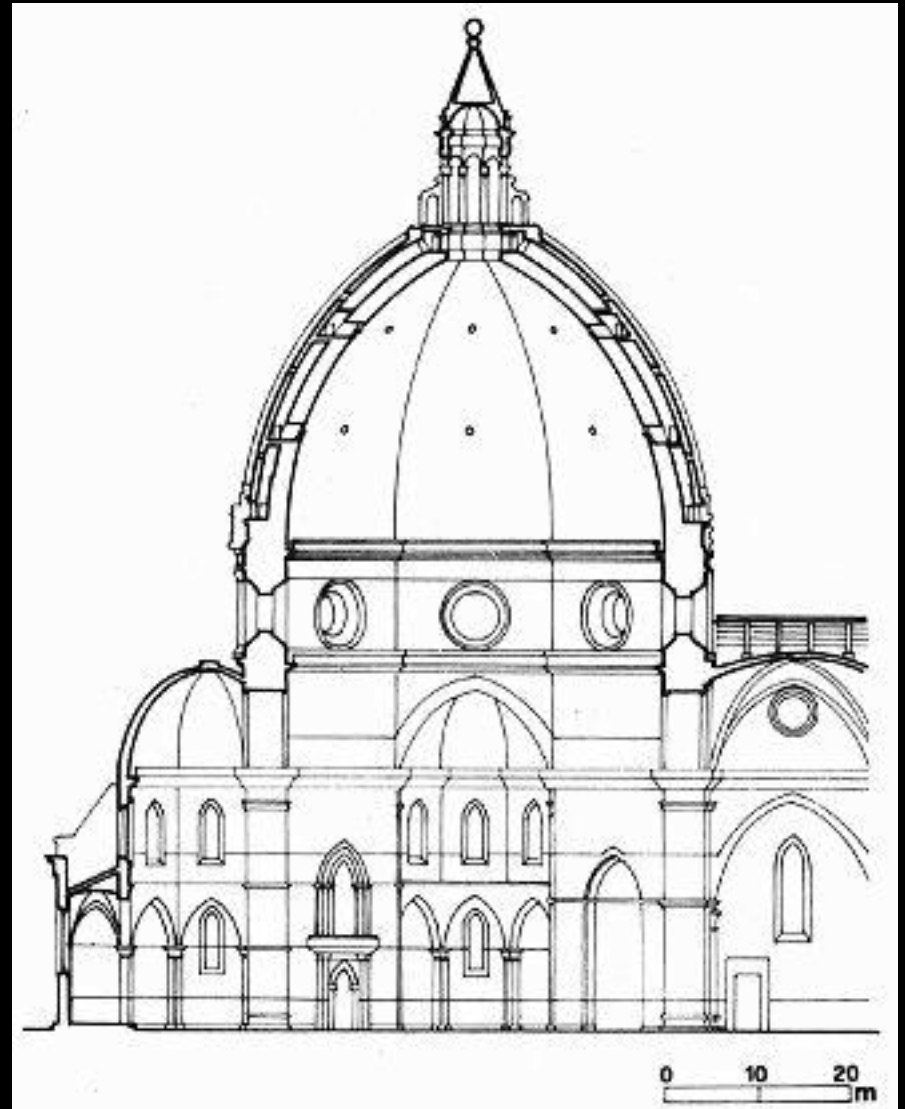

Copyright 2001 Sanpaolesi
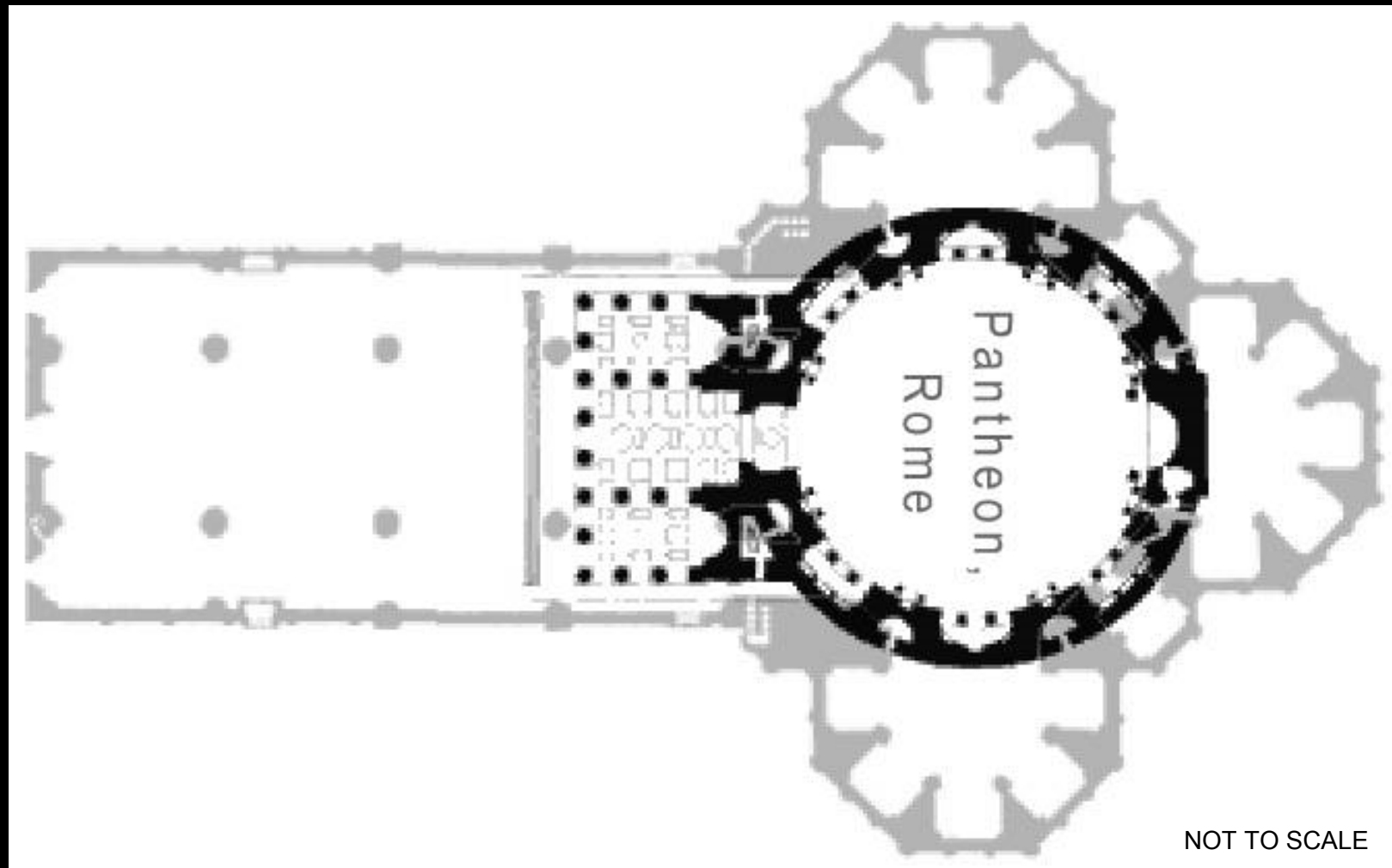
Dome of Florence Cathedral 1412

Dome of Florence Cathedral -1412

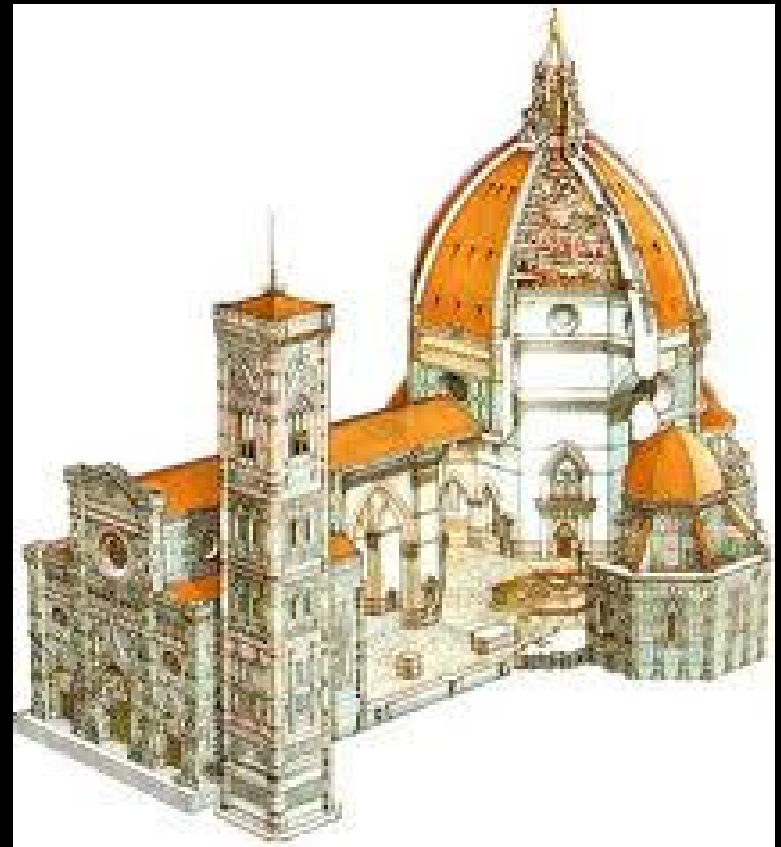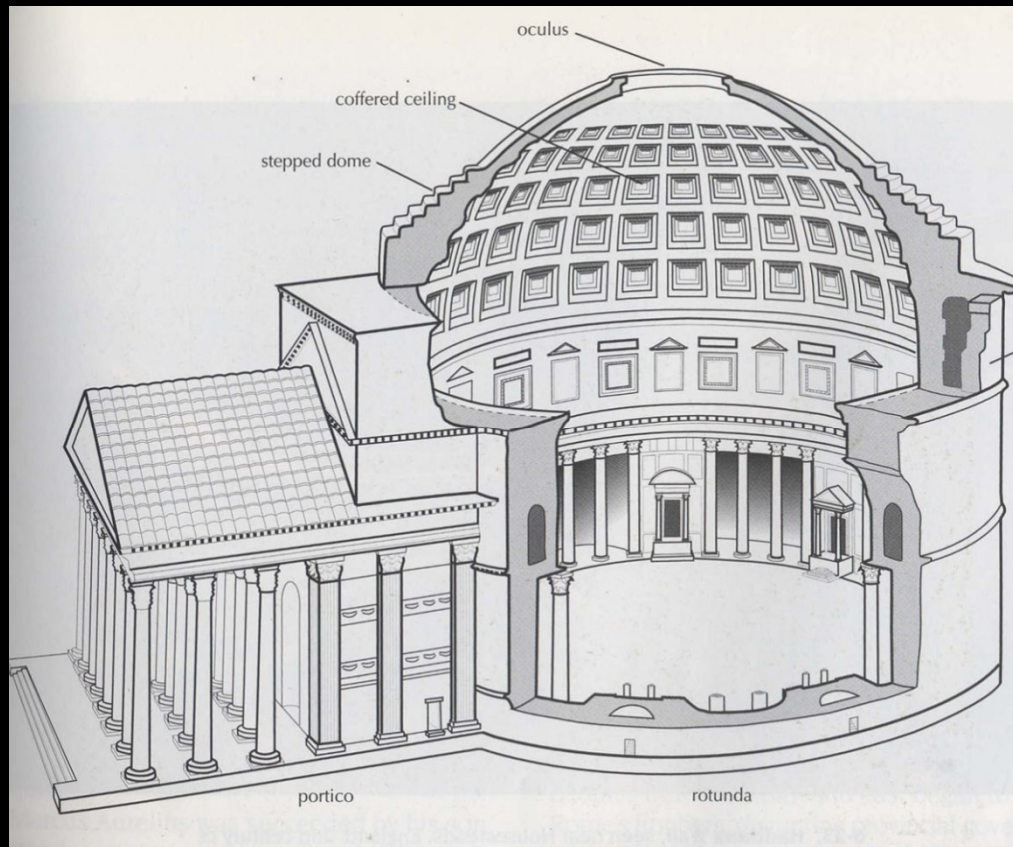Weighs 37,000 tons and contains over 4 million bricks

Dome of Florence Cathedral 1412

Brunelleschi referred to the Pantheon when trying to resolve the dome; the double shell concept is similar in plan

Pantheon, Rome

NOT TO SCALE

…In isometric/ section

oculus

coffered ceiling

stepped dome

portico

rotunda

cs.oberlin.edu

…And on the interior

Foundling Hospital 1419-24 Brunelleschi
1st true Renaissance building
Horizontal emphasis & clear mathematical proportions

Foundling Hospital 1419-24 Brunelleschi

Columns of Loggia (porch created by arcade) are spaced as far apart as they are tall

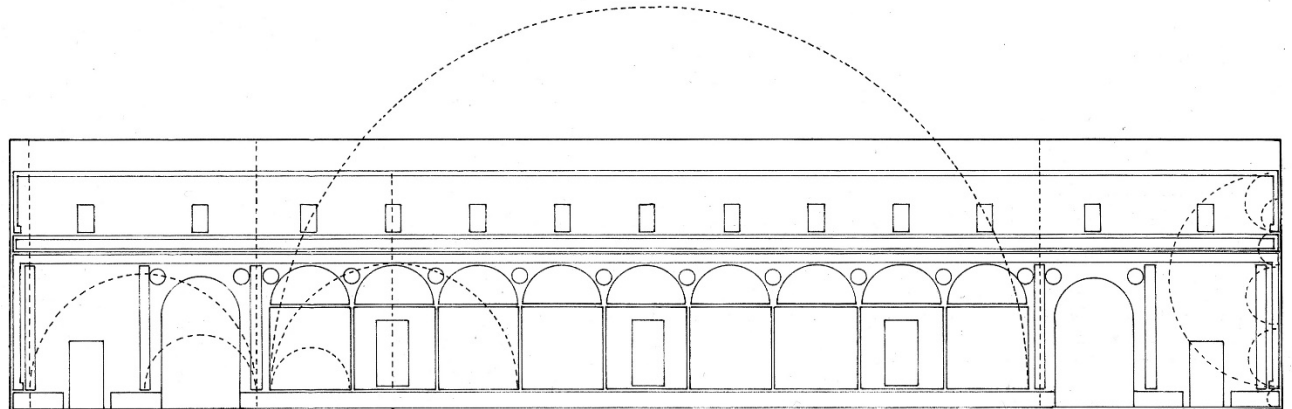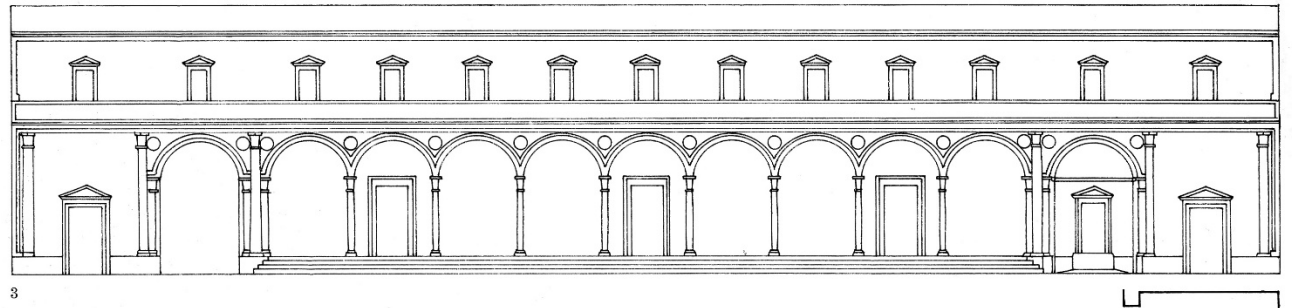Arch is half as tall as column – dome forms cube

www.geocities.co.jp

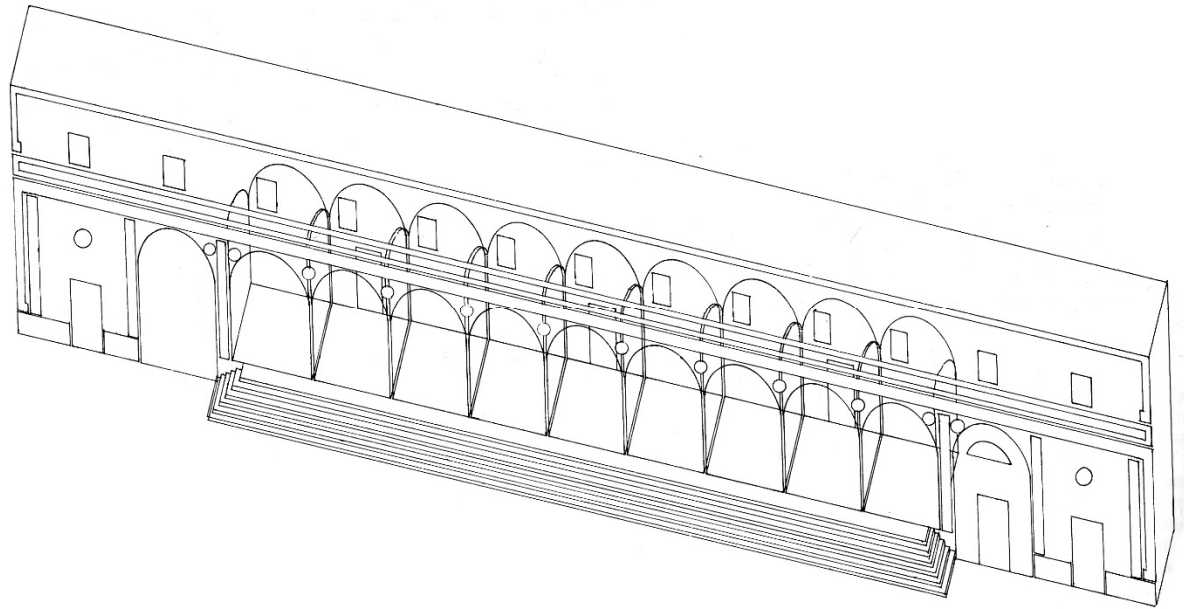# Foundling Hospital 1419-24 Brunelleschi

Rational modules and classicalism

Foundling Hospital 1419-24 Brunelleschi

Basilica of San Lorenzo, Florence Italy 1421-1459
Brunelleschi

- Large Monastic Complex

- Rigorous geometrical and modular system

- Use of classical proportions

- Major spaces organized around a square cloister

commons.wikimedia.org by Richardfabi

- Nave and Aisle same as the Romanesque and Gothic Church Architecture in Florence

- Substituted Classical elements for medieval ones

commons.wikimedia.org by Stefan Bauer

Leon Battista Alberti 1404-1472

• Painter, mathematician and scientist, studied Greek, Latin and law

• Designed buildings and left the construction to others

• Wrote the 10 books of Architecture - 1452 (Vitruvius wrote the Ten Books on Architecture)

An example of a Renaissance man:

"that reasoned harmony of all parts achieved in such a manner that nothing could be taken away or altered except for the worse."

Santa Maria Novella 1456-1470 Leon Battista Alberti

Challenge: Takes the plan of an existing basilica church and renovate the façade to reflect Renaissance ideals

Solution: Creates a balance between Gothic attributes (pointed arches, rose window) and a new mathematical approach based on geometric shapes and proportions; integrates the upper and lower part of the façade with scroll elements
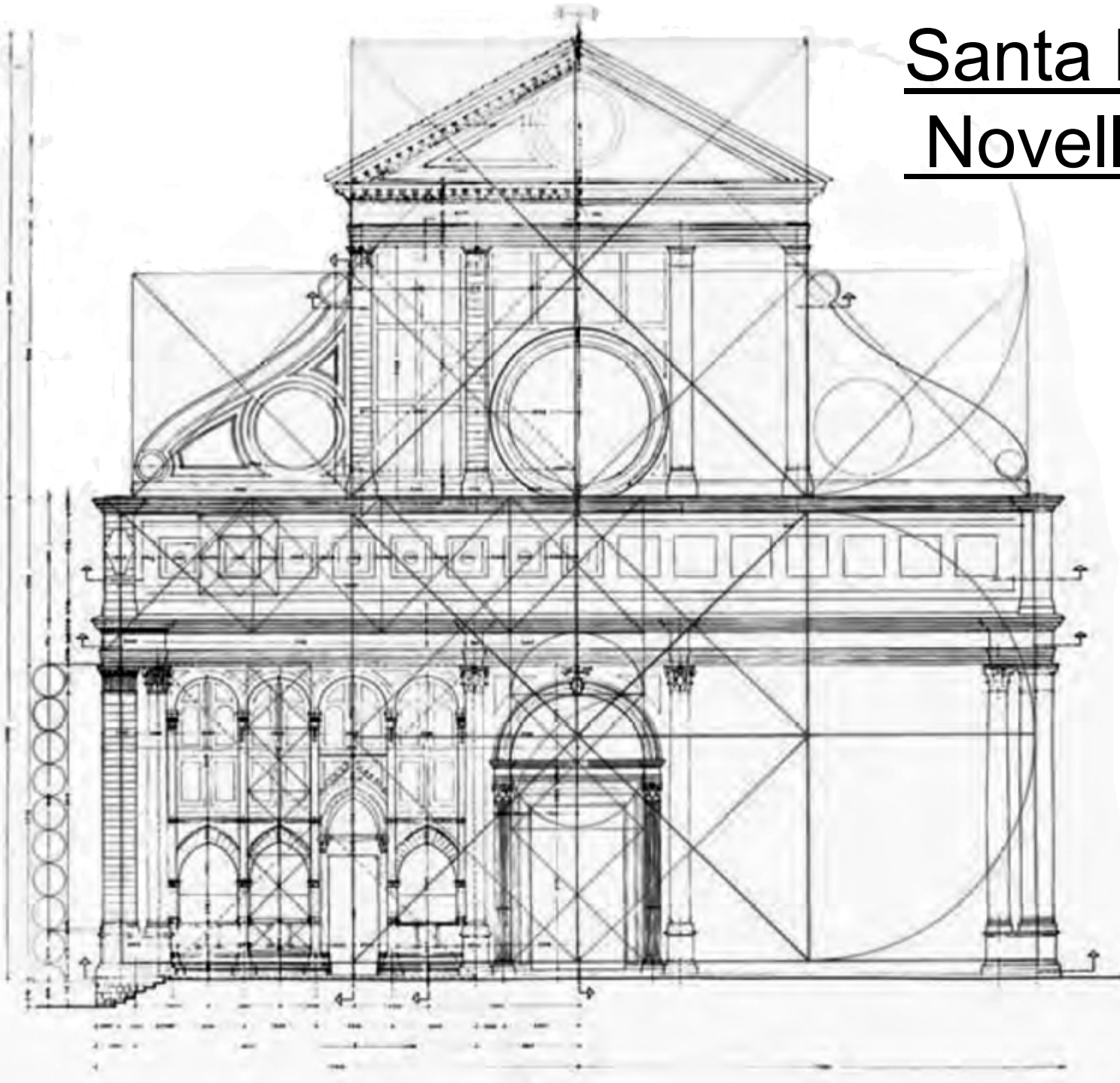

www.flickr.com

Santa Maria - 1458 Leon Battista Alberti

Lower level is composed of two squares

Upper level = lower level in height and width

Santa Maria
Novella- 1458

www.filrouge.it

Basilica of San Andrea, Mantua 1472 Leon Battista Alberti
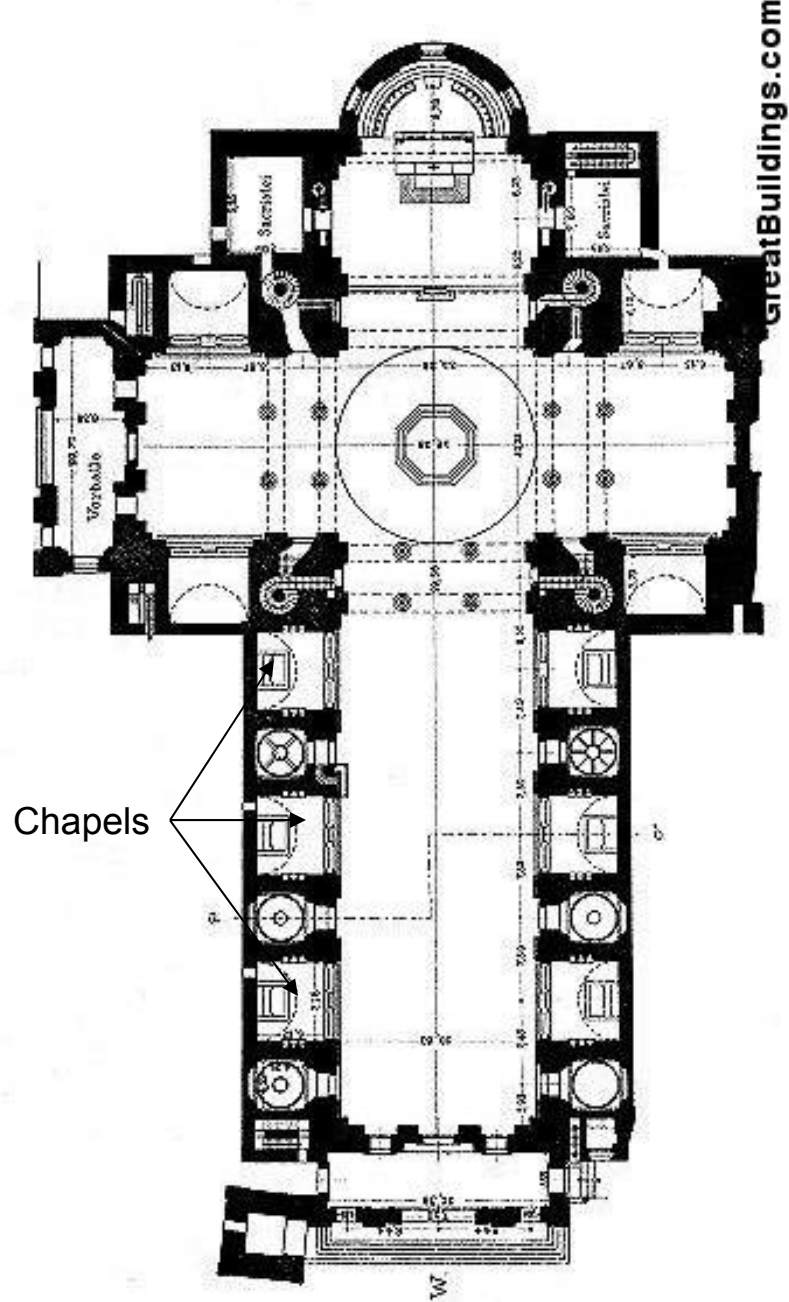# Combination of triumphal arch and temple front

Triumphal Arch of Septimius Severus 203 CE

Basilica of San Andrea

Chapels

Painted coffers at main vault

Latin cross plan without side aisles

San Andrea, Mantua 1472 Leon Battista Alberti

Coffered barrel vault – sense of inner space

Basilica of Saint Andrea- looking west ➡

Palatial Homes

Renewed interest in design of private homes for the rich and noble in urban and rural environments, particularly the forms of the <u>insula</u> and <u>villa</u>
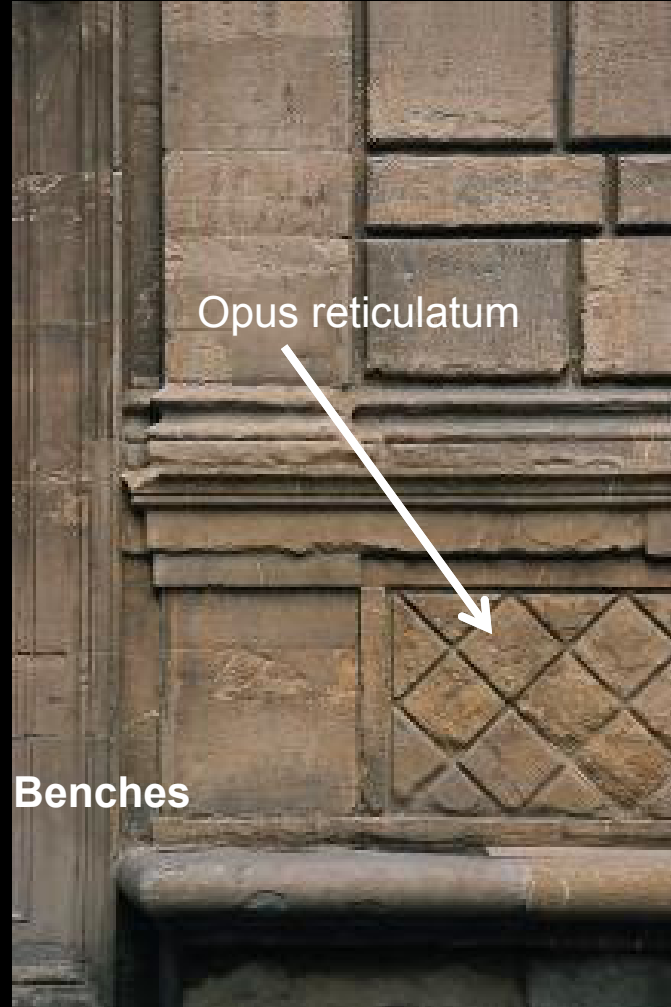

www.wikimedia.org

Palazzo Rucellai, 1452-60 Leon Battista Alberti

Built around an inner courtyard surrounded by arched arcades

Service shops on ground floor, 2nd = family, 3rd = servants
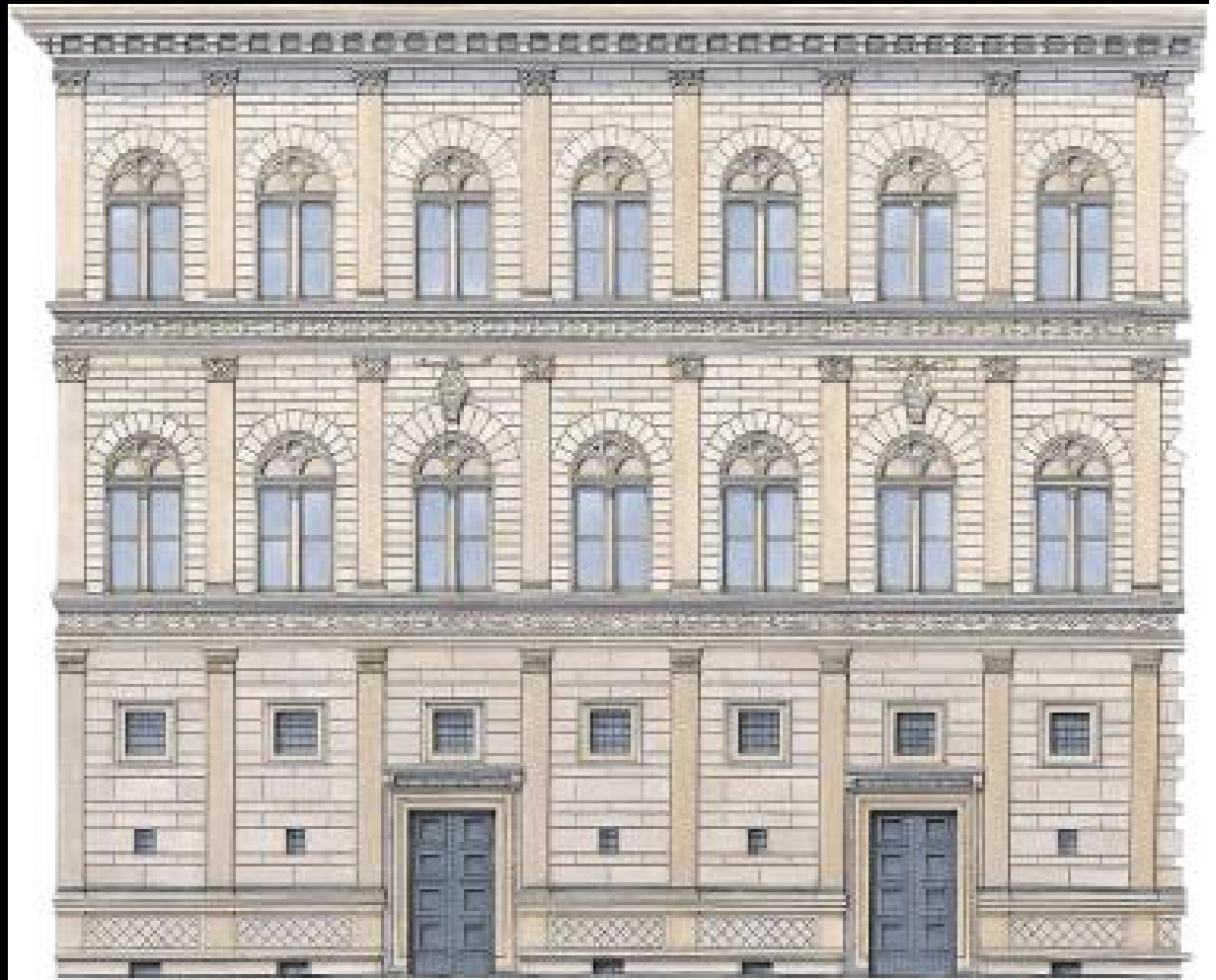
www.studyblue.com

Opus reticulatum

Benches

Palazzo Rucellai, 1452-60 Leon Battista Alberti

3 superimposed orders of Pilasters on each floor on the façade

Became basic form for urban blocks throughout Europe

After 1500:
- Renaissance movement went to Rome
- The city was in ruins due to many invasions
- Rome's revival was due to Pope Julius II (1503-13)

Donato Bramante - 1444-1514

- Trained as an artist

- Moved from Milan to Rome after 14[...] monuments of Ancient Rome
- Developed plan for St Peter's Basilica
- Tempietto = beginning of High Renaissance in Rome

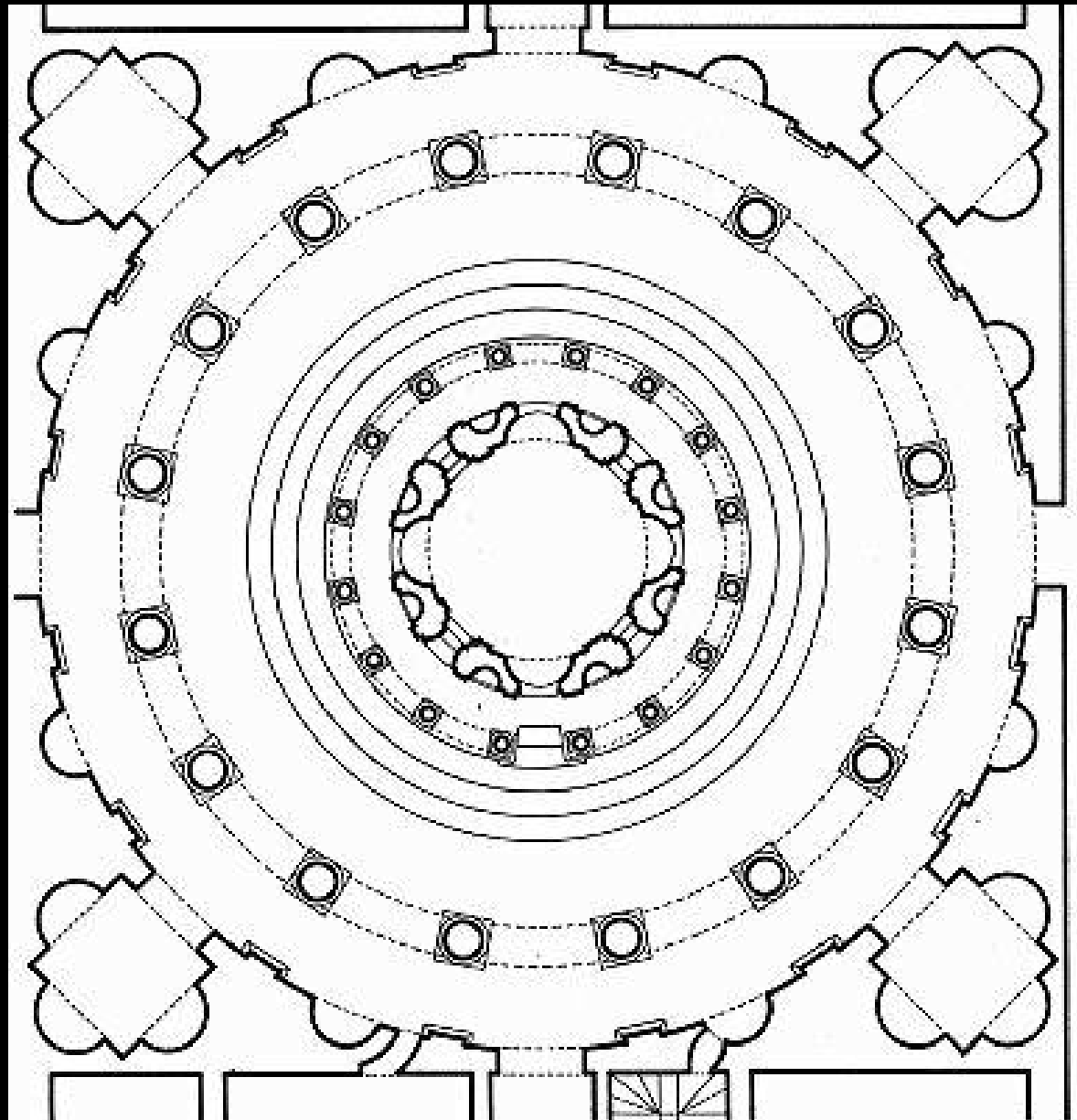# Tempietto, Rome, Begun 1502, Donato Bramante

Monument to St. Peter on supposed site of where he was martyred

Reflects design of early martyria's circular form

Doric peristyle and steps surrounding a two-story cylinder capped by hemispherical dome
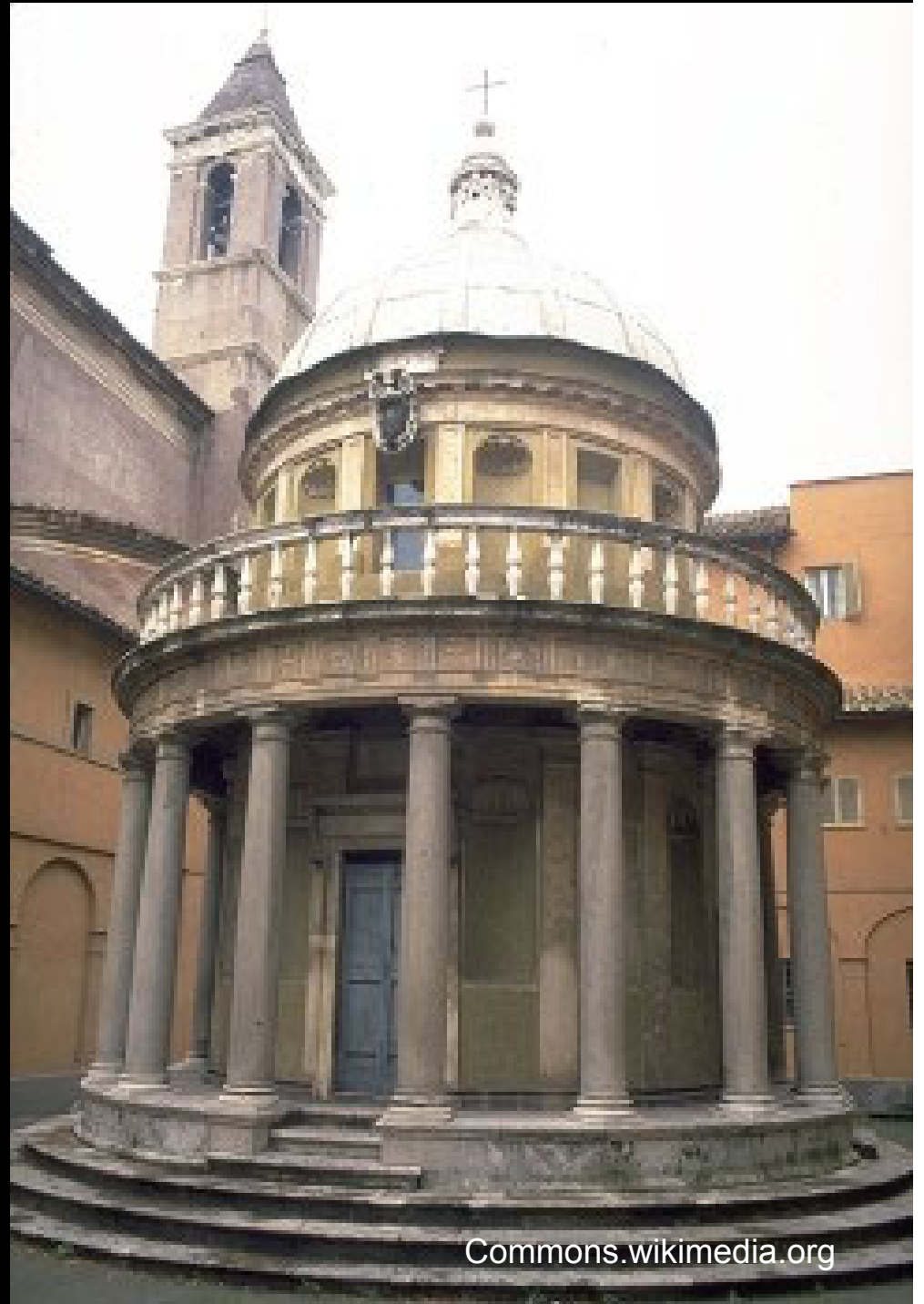
15' diameter

Height = width

Tempietto, Rome, 1502
Donato Bramante

GreatBuildings.com

Tempietto, Rome 1502
Donato Bramante

commons.wikimedia.org03

Commons.wikimedia.org

Shift from High Renaissance to Late Renaissance

• The shift from <u>Early Renaissance</u> to <u>High Renaissance</u> parallels the shift in emphasis from Florence to Rome (transition occurs after 1499)

• The shift from High Renaissance to Late Renaissance begins when a group of artists and architects start to react against the strict rules of mathematical proportions and geometry established in the beginning of the Renaissance.

• The Late Renaissance becomes known as Mannerism, which starts in the 1520s; connotated virtuosity, refinement, grace.

• Emphasizes more personal interpretations of classical design, and even makes playful criticism of classical design; favored tension, dynamism, even disharmony, unresolved conflict.
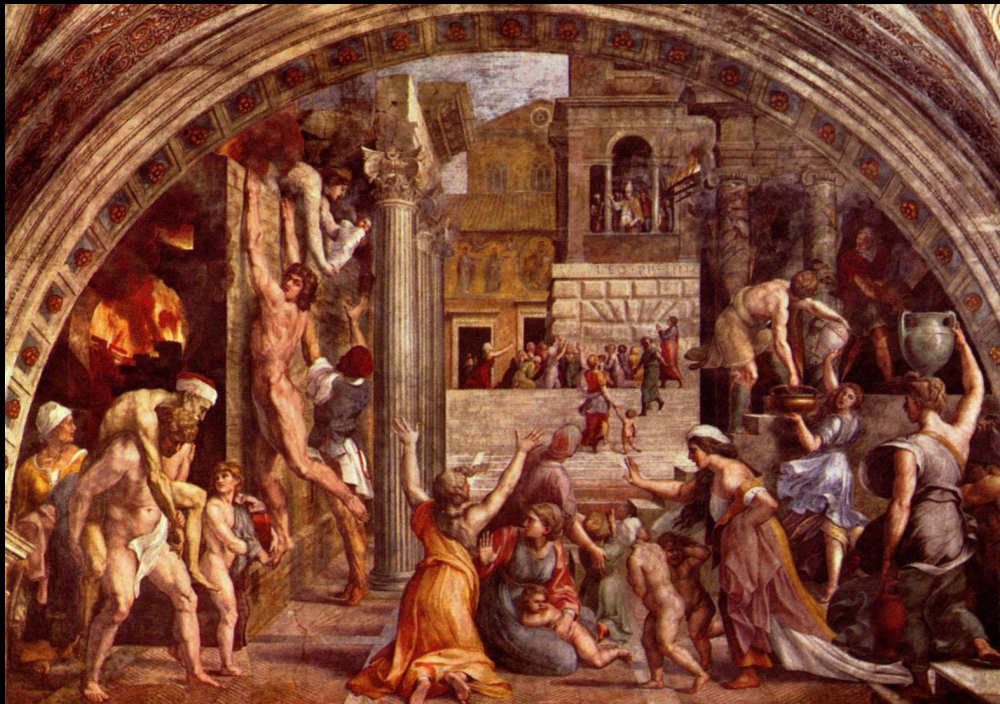
Raphael 1483-1520

Renaissance Painter

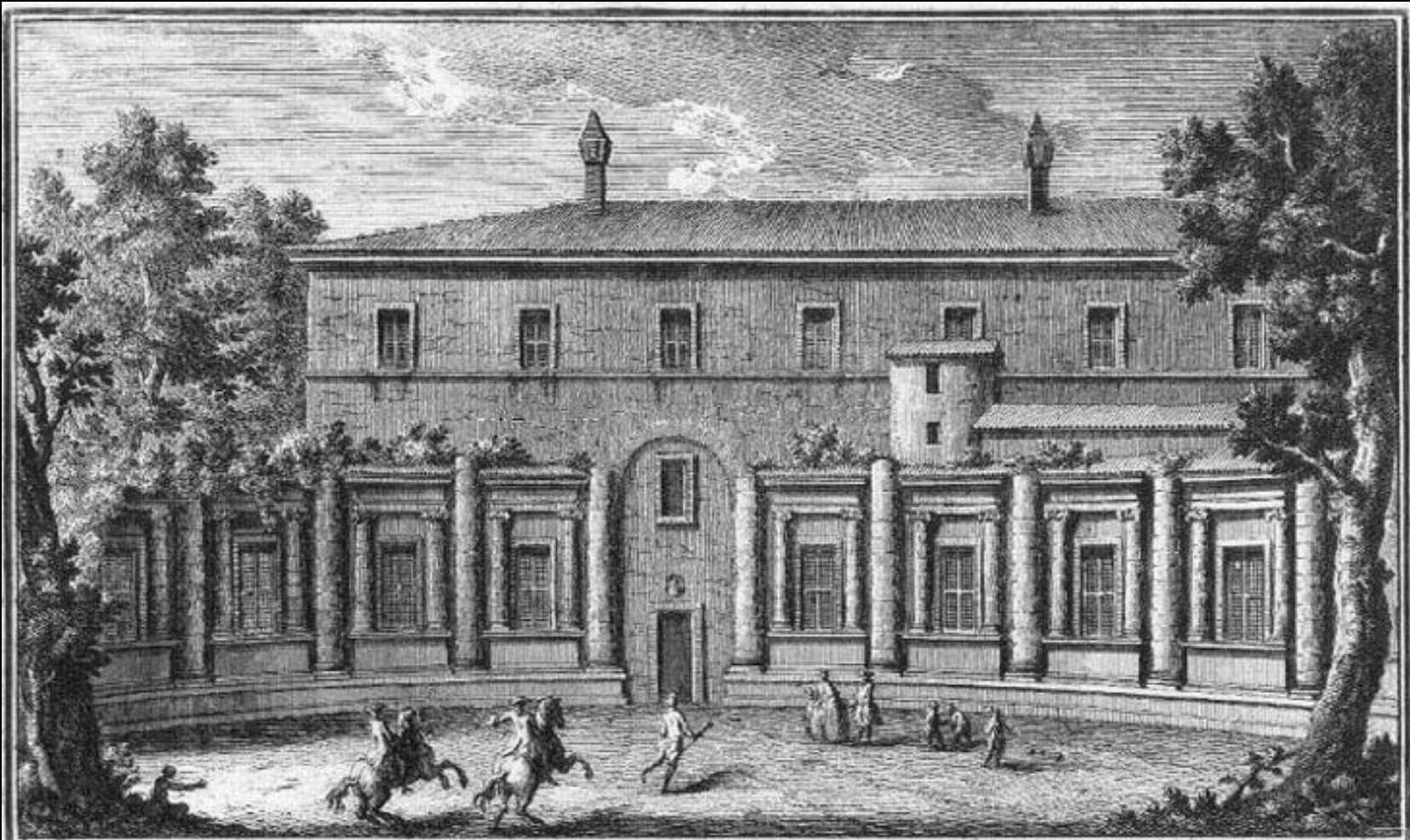Architect the last six years of his life
Designed: 3 palaces, 1 chapel
and 1 villa

Romans started escaping the city
to the country

Villa Madama, 1517 <u>Raphael</u>- Modeled after Nero's Golden House.
Mannerist Architecture- Compositional tension & instability rather than balance and clarity www.pinterest.com

Villa Madama fuori Porta Angelica
1. Casino principale, disegno di Raffaele da Vrbino, poi condotto da Giulio Romano suo Allievo, 2. Cortile circolare rimasto imperfetto, 3. Fianco verso il Monte

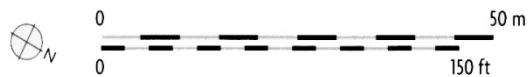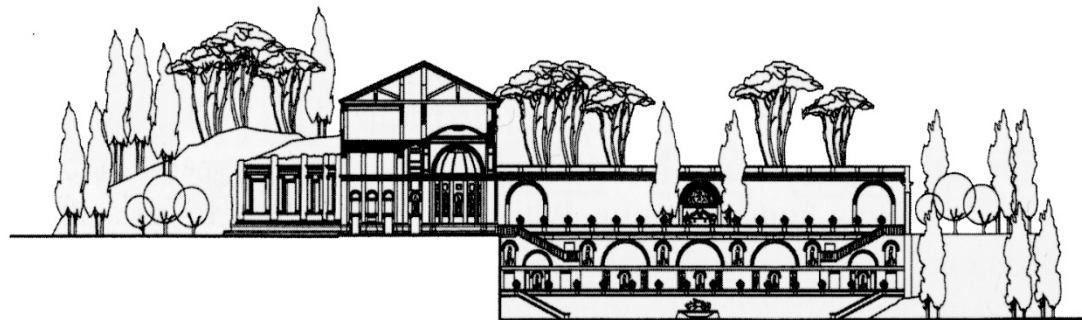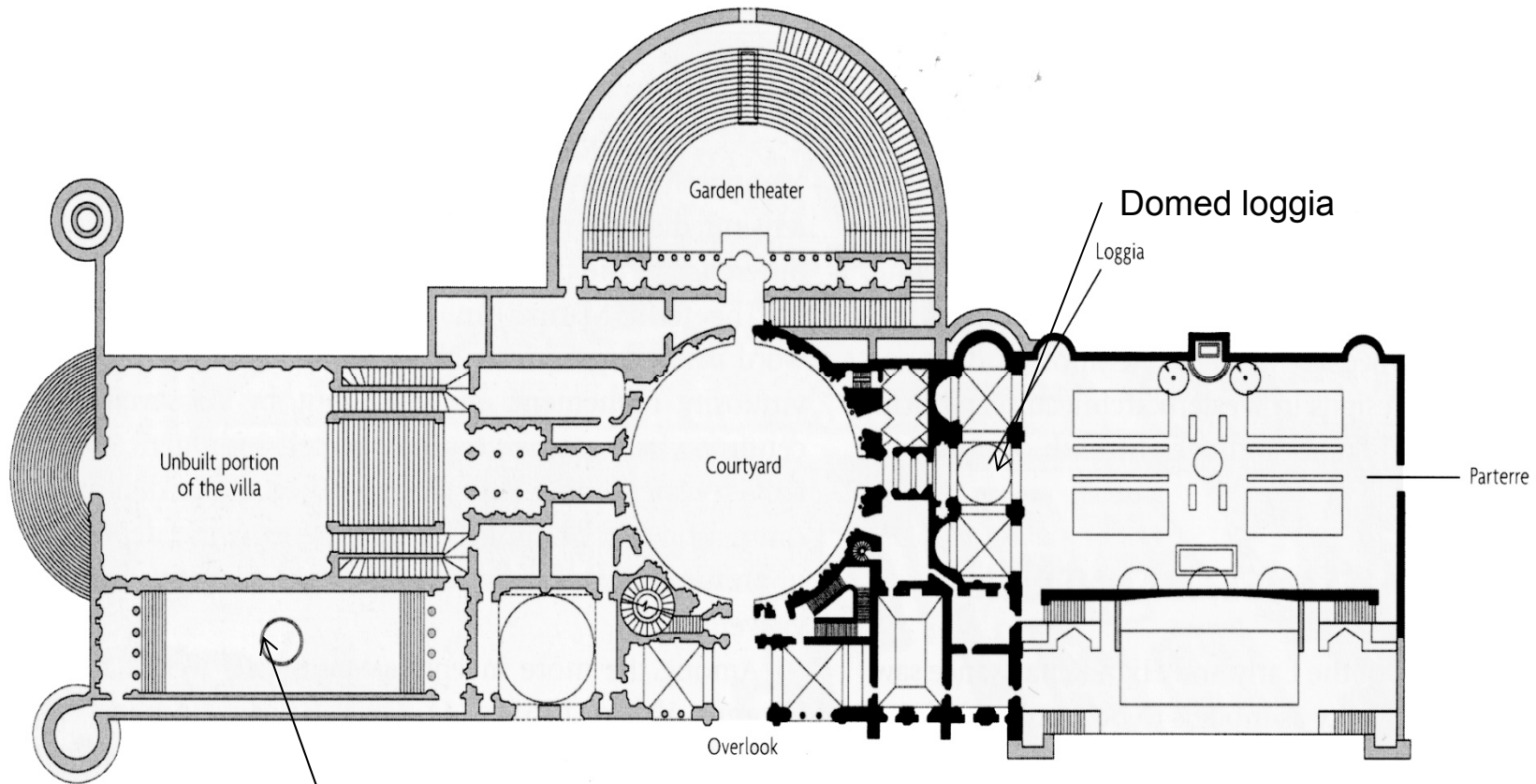# Villa Madama, 1517 , Raphael

- Set in rural Rome Raphael died before completion
- Terraced gardens, theater, domed bay loggia
- Circular Courtyard

www.flickr.com by antmoose

Moffett –
A world history of architecture

Villa Madama- Raphael 1517 www.pinterest.com

Garden theater

Domed loggia

Loggia

Unbuilt portion
of the villa

Courtyard

Parterre

Pool

Overlook

0 — 50 m

0 — 150 ft

N

Villa Madama, 1517 Raphael

Wealth of niches, pilasters and swags
Painted stucco in the vaults of the loggia
Soaring dome on pendentives

www.pinterest.com

Palazzo del Te 1525-1534 Mantua, Italy, Guilio Romano

• Designed as a honeymoon villa

• Rooms centered around a large courtyard

• While still using proportional relationships between columns, arches, and porticos, creates tricks on the façade that make the building *appear* like an ancient ruin

Buonarroti Michelangelo
1475-1564 , Sculptor

• Architect at the age of 70

• Approached architecture as an ensemble of buildings as a mass of sculptural solids and voids

• Designed in the Mannerism style: protested the sterile rationalism and classical order
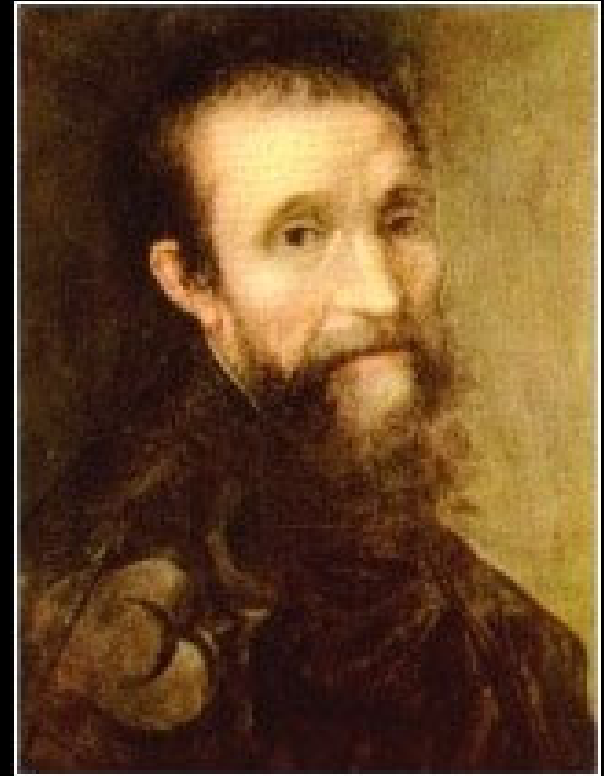
Michelangelo Buonarroti 1475-1564

entertainment.howstuffworks.com

David

gardenofpraise.com

La Pieta

Buonarroti Michelangelo- 1475-1564
Sculptor – Architect at the age of 70
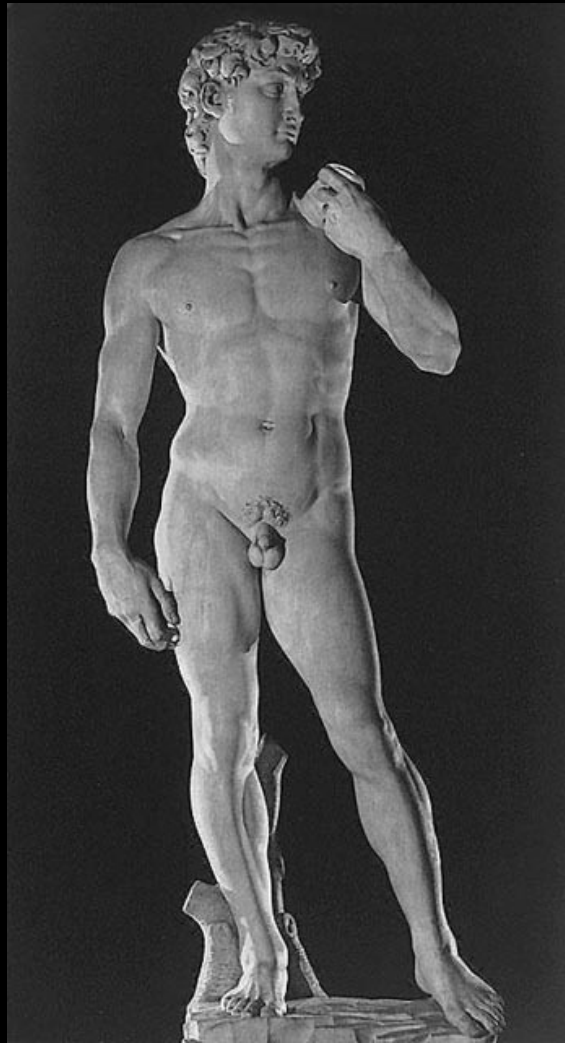
Sculpture of David

Sistine Chapel ceiling- last judgement

Laurentian Library, 1524 Buonarroti Michelangelo

- Disregards renaissance ideas of balance and proportion

- Treated walls as motion

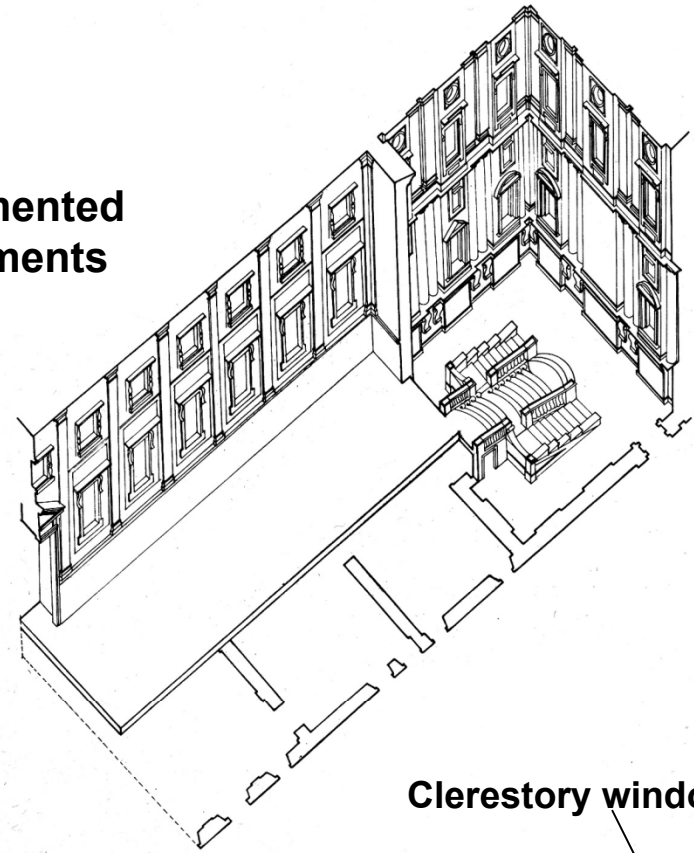- Triple staircase occupying 1/2 of the vestibule

Convex steps

Murray - Renaissance Architecture

Laurentian Library, 1524

Segmented pediments

Clerestory windows
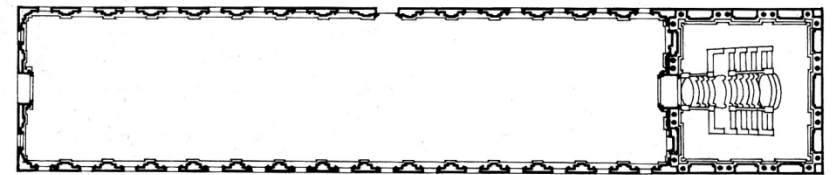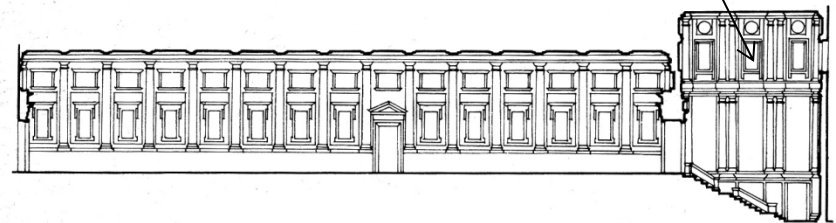
Murray - Renaissance Architecture

0   5 m

Laurentian Library- Bounarroti Michelangelo 1524

Campodoglio, Begun 1537, Rome, Michelangelo Buonarroti

• Ancient seat of government on Capitoline Hill, major civic space for the city

• Trapezoidal plaza, stair-ramp, and construction of new building help to balance the space between the Palace of Senators and Palace of the Conservators around statue of Marcus Aurelius
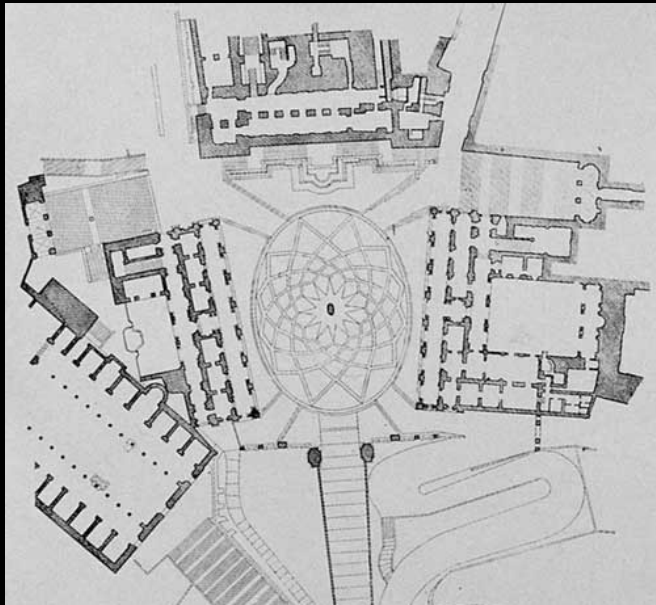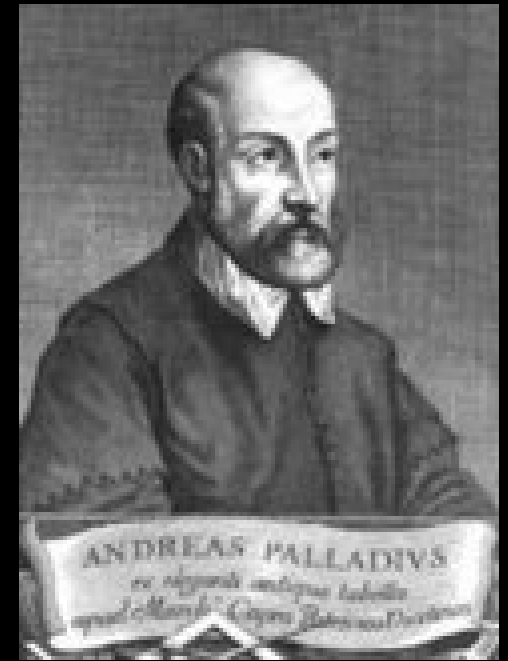
Andrea Palladio 1508-1580

Trained as a stone mason and influenced by Vitruvius

Went to Rome to measure ruins, study math, music and Latin

Wrote the Four Books of Architecture

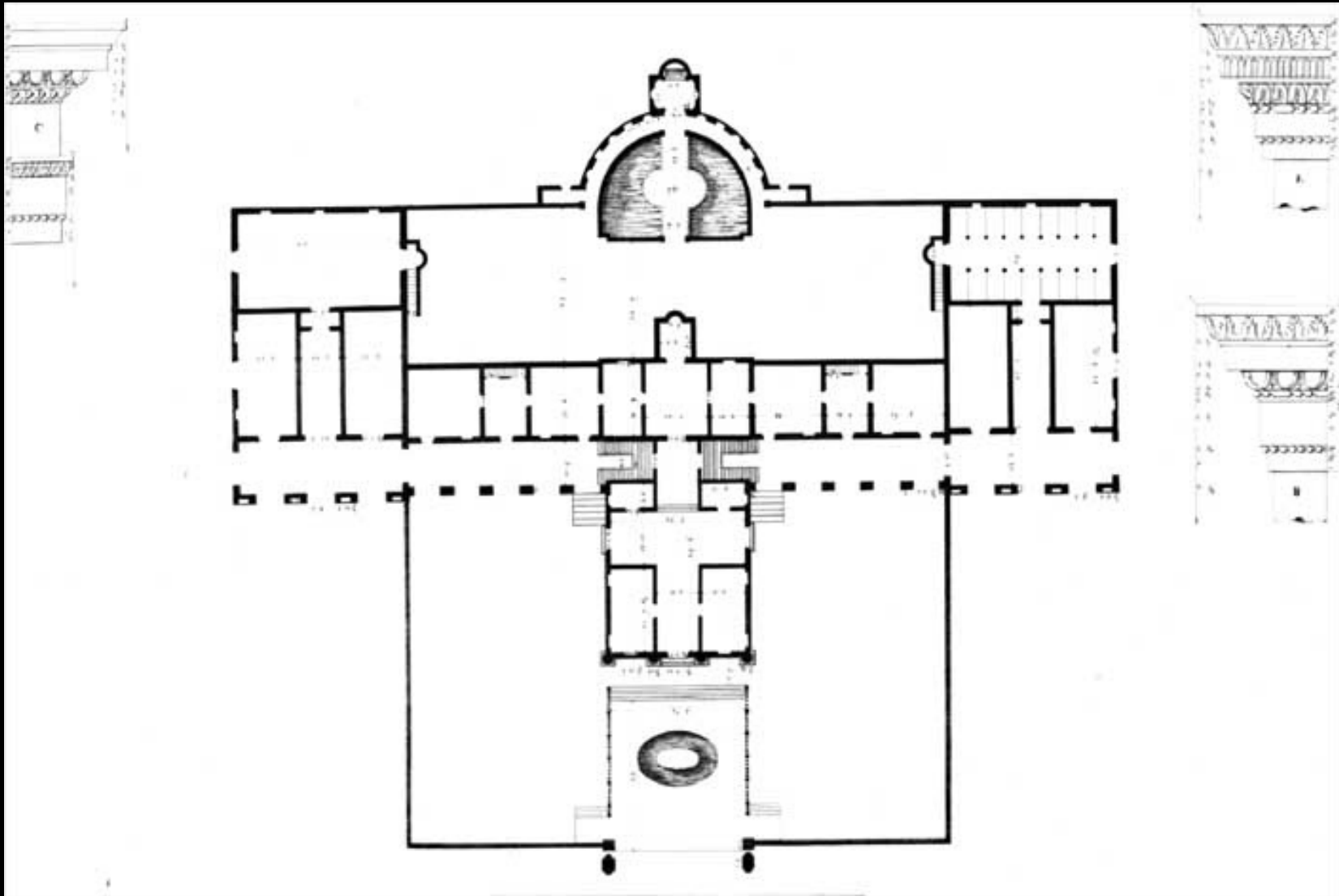Used as the universal prototype throughout Europe and America

Did not use expensive materials primarily brick and stucco

Villa Barbaro, Maser: 1557-1558 Andrea Palladio

Sta. Maria Novella?

commons.wikimedia.org by Marcok

commons.wikimedia.org by Stefan Bauer

Villa Barbaro, Andrea Palladio

Villa Barbaro, Maser: 1557-1558 Andrea Palladio

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Villa Rotunda, 1560 Andrea Palladio

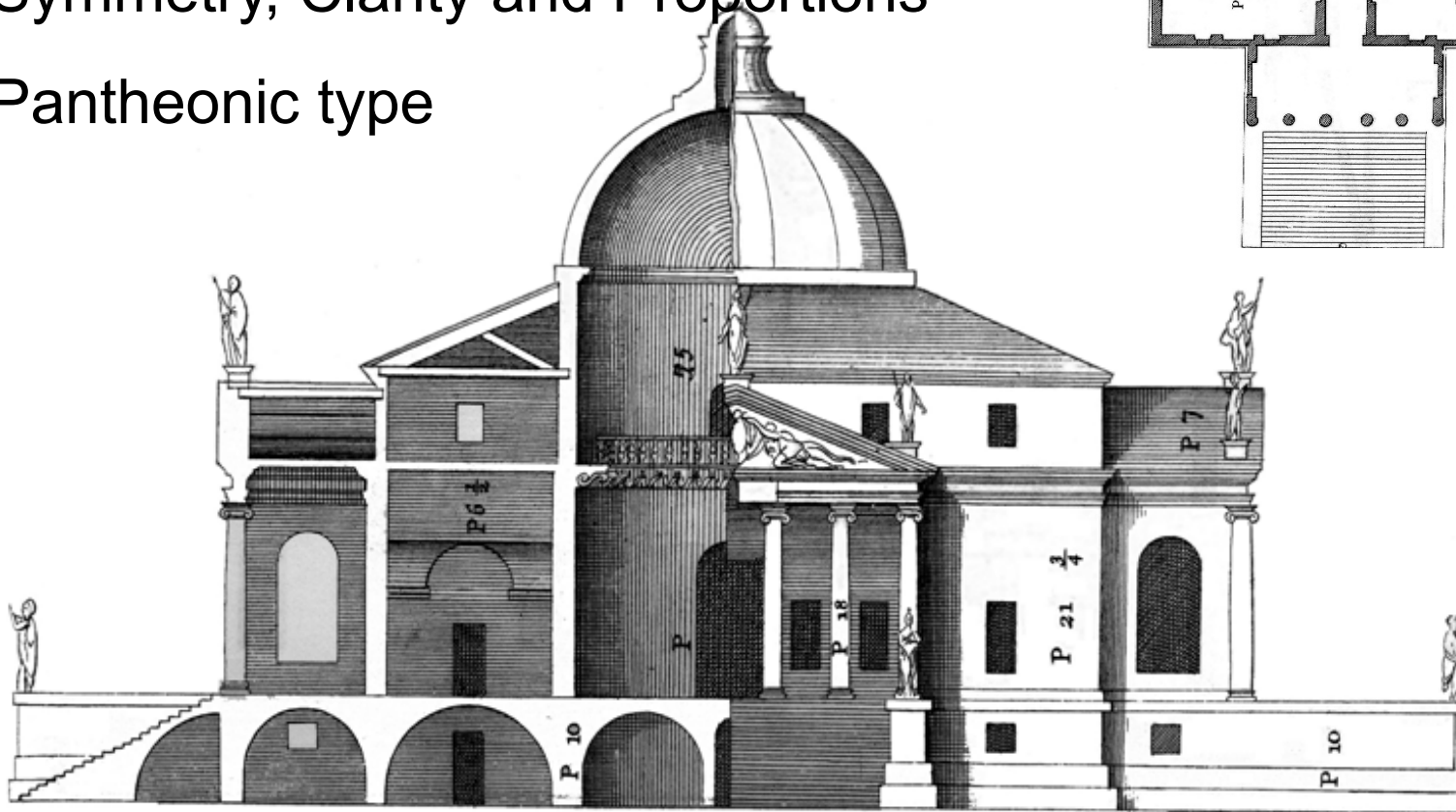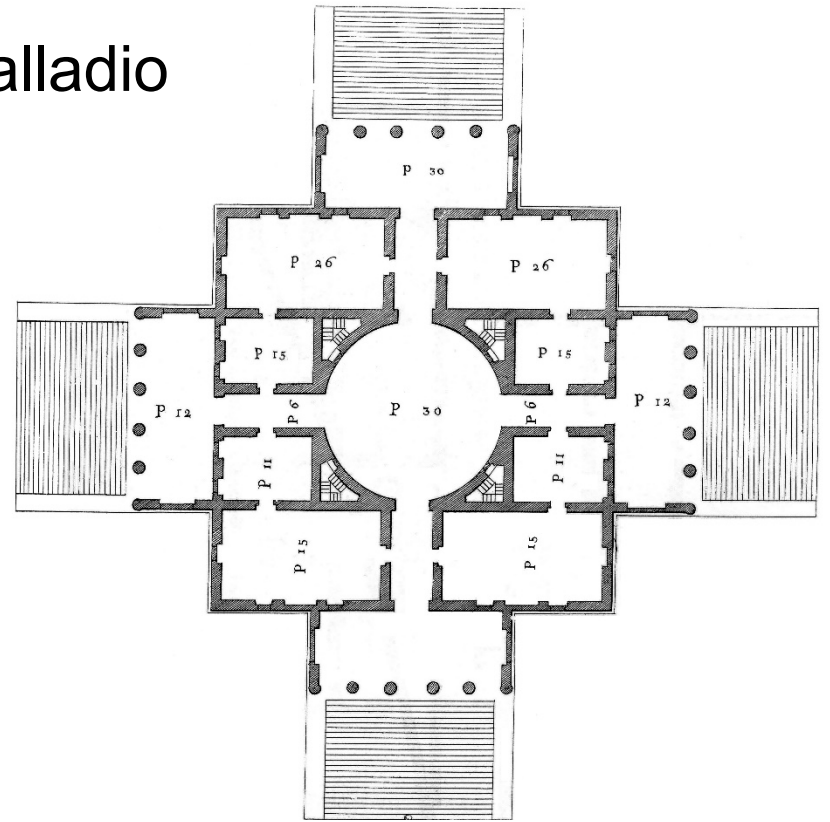## Top of hill with views from all rooms – Site Planning

Villa Rotunda, 1560 Andrea Palladio
Top of hill with views from all rooms – Site Planning

Villa Rotunda, 1560 Andrea Palladio

- Identical temple porticos face all 4 sides of the building

- Principal room is the center: lit by dome

- Symmetry, Clarity and Proportions

- Pantheonic type

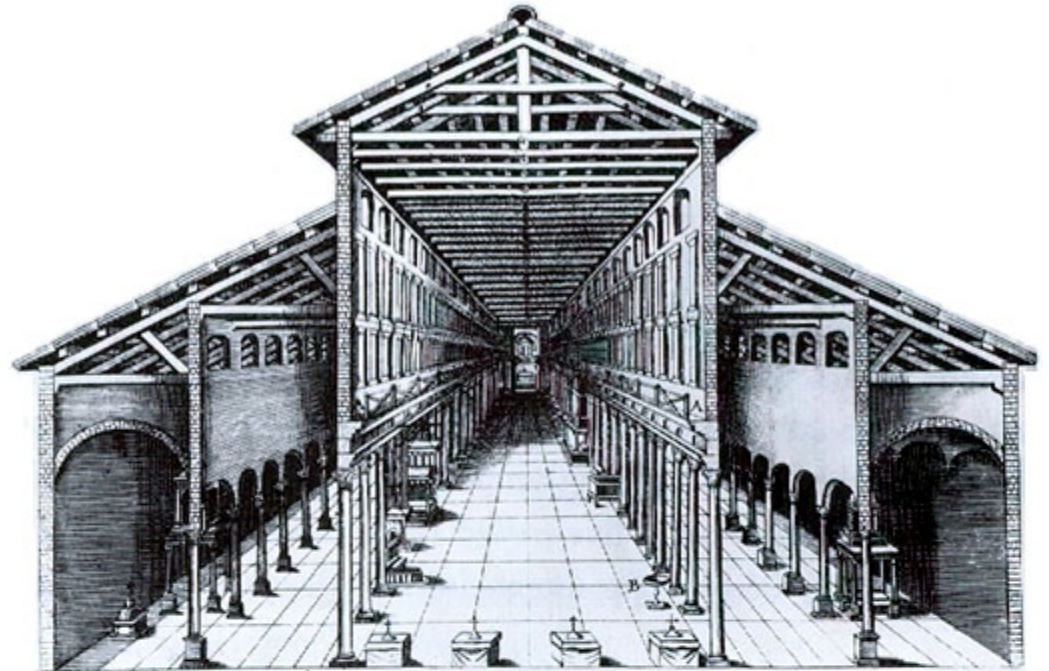# Villa Rotunda, 1560 Andrea Palladio

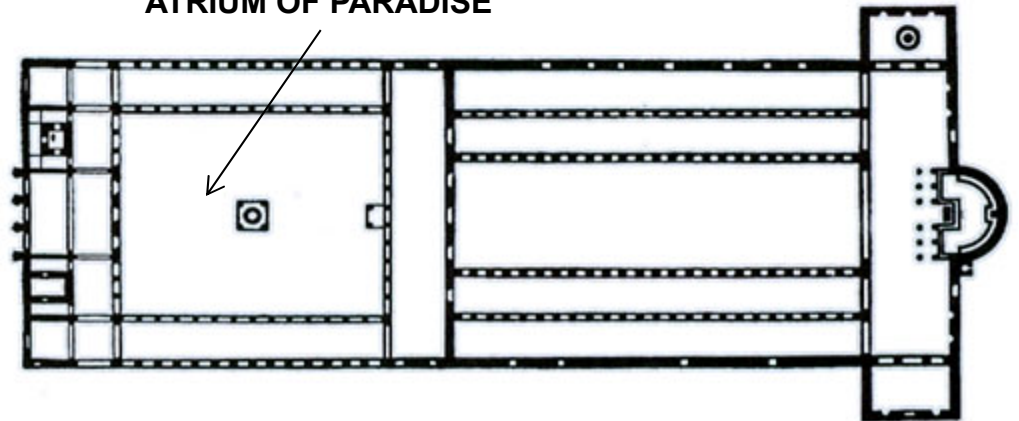Principal room is the center –
lit by dome

Old St. Peters 326CE

200' long nave, timber roof, rows of closely spaced columns

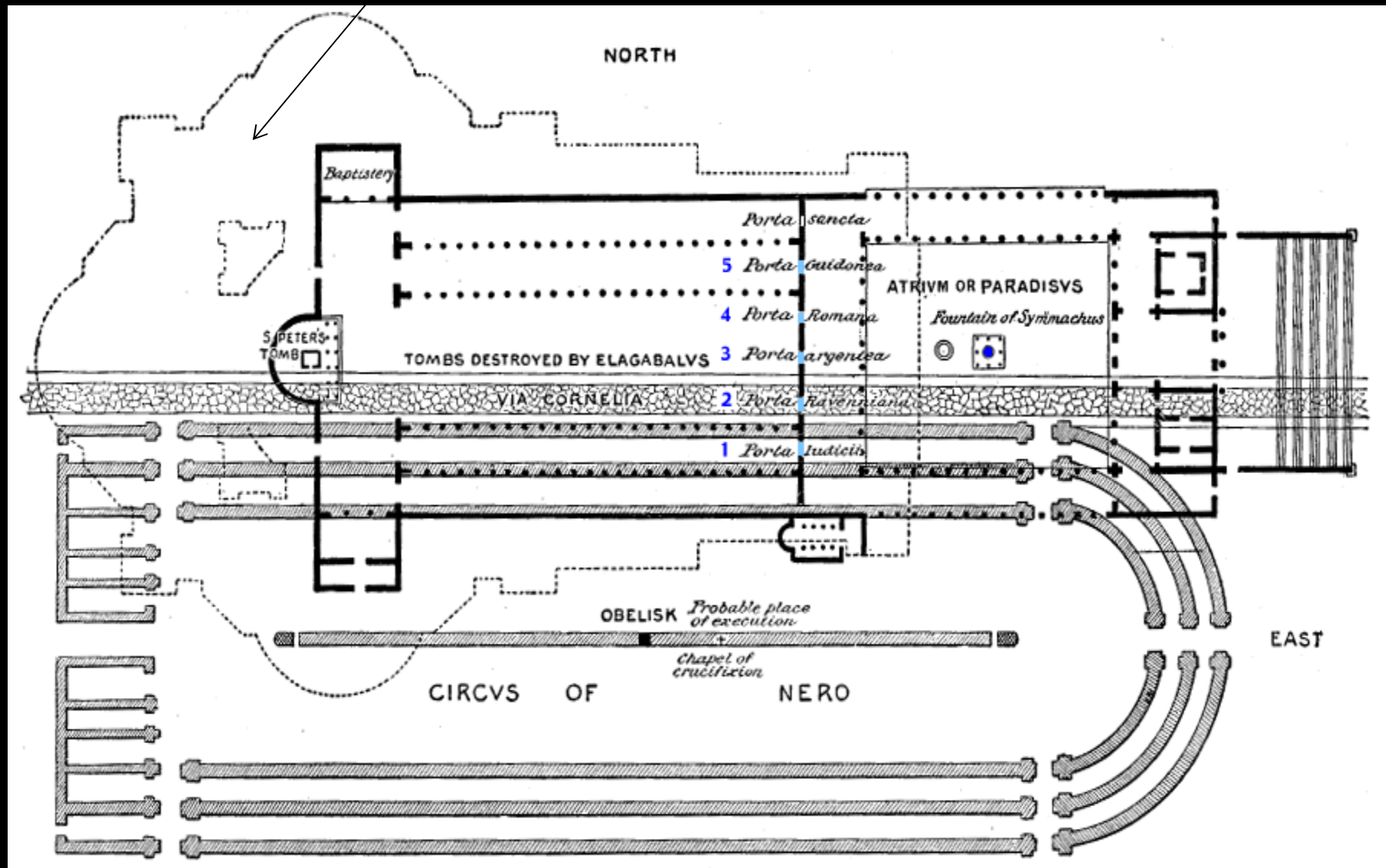Old St. Peter's. Rome. Begun c. 333. (Drawing by J. Ciampini, 1693)

Plan, Old St. Peter's

ATRIUM OF PARADISE
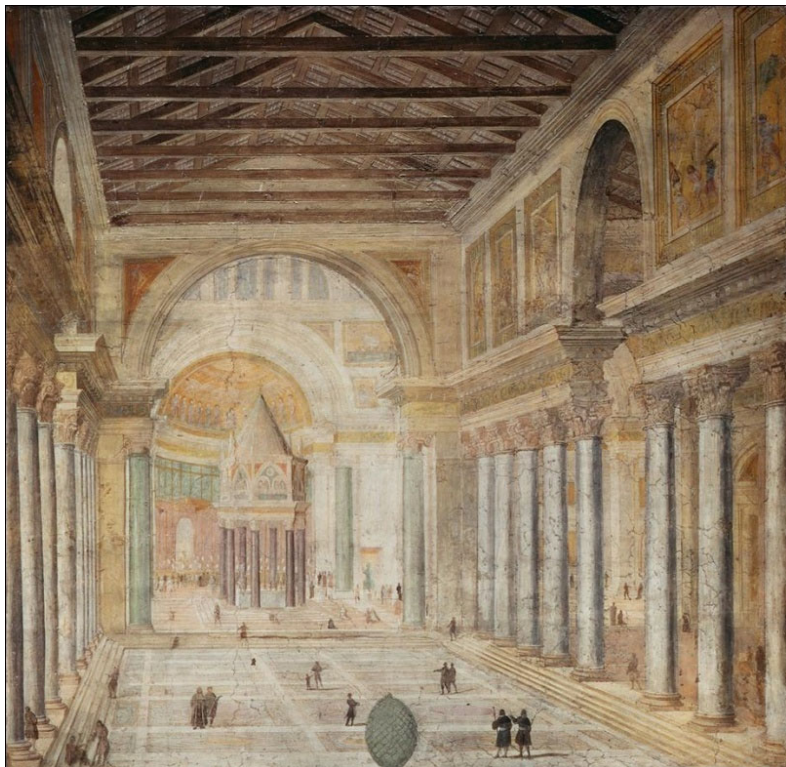
ARTstor - painting, Filippo Gagliardi

Old St. Peters – built on Circus of Nero and later replaced by St. Peter's Basilica
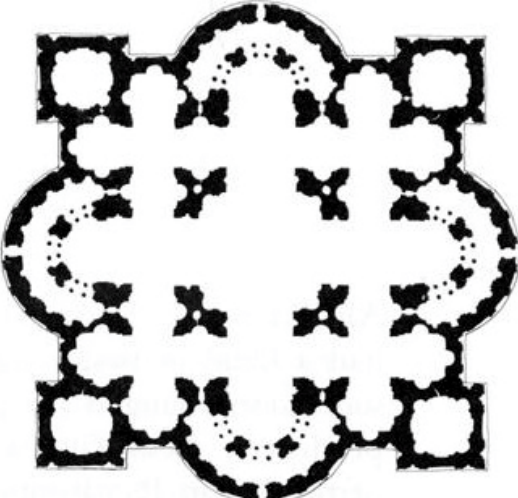
St. Peters Basilica- 1546-64

- 1st plan drawn by Bramante
In 1506
- Can hold 60,000 people

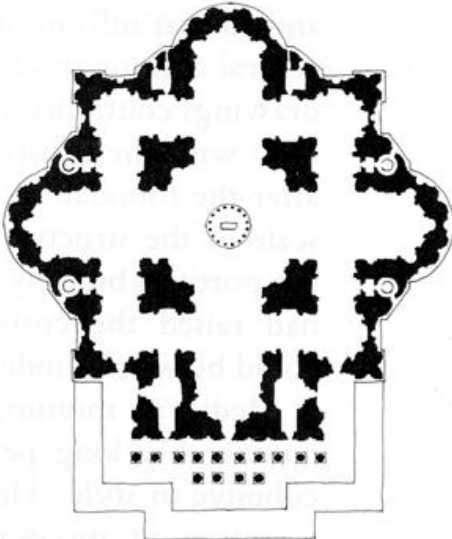- The role of the Orders:

1st - Purely decorative
By Bramante

2nd structural by
Raphael &
Michelangelo

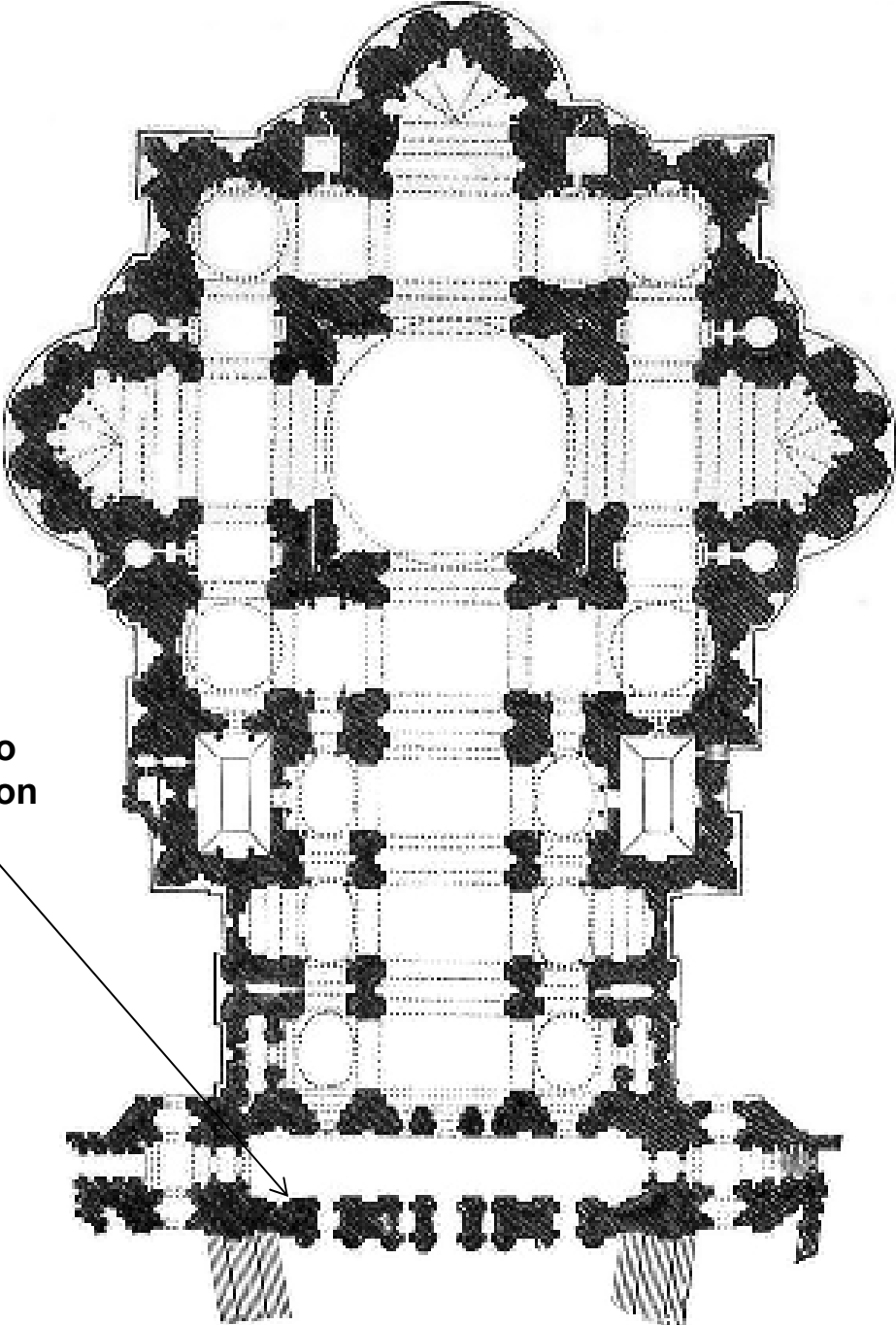

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St.PetersBasilica-1546-64

b. Bramante-Peruzzi, before 1513
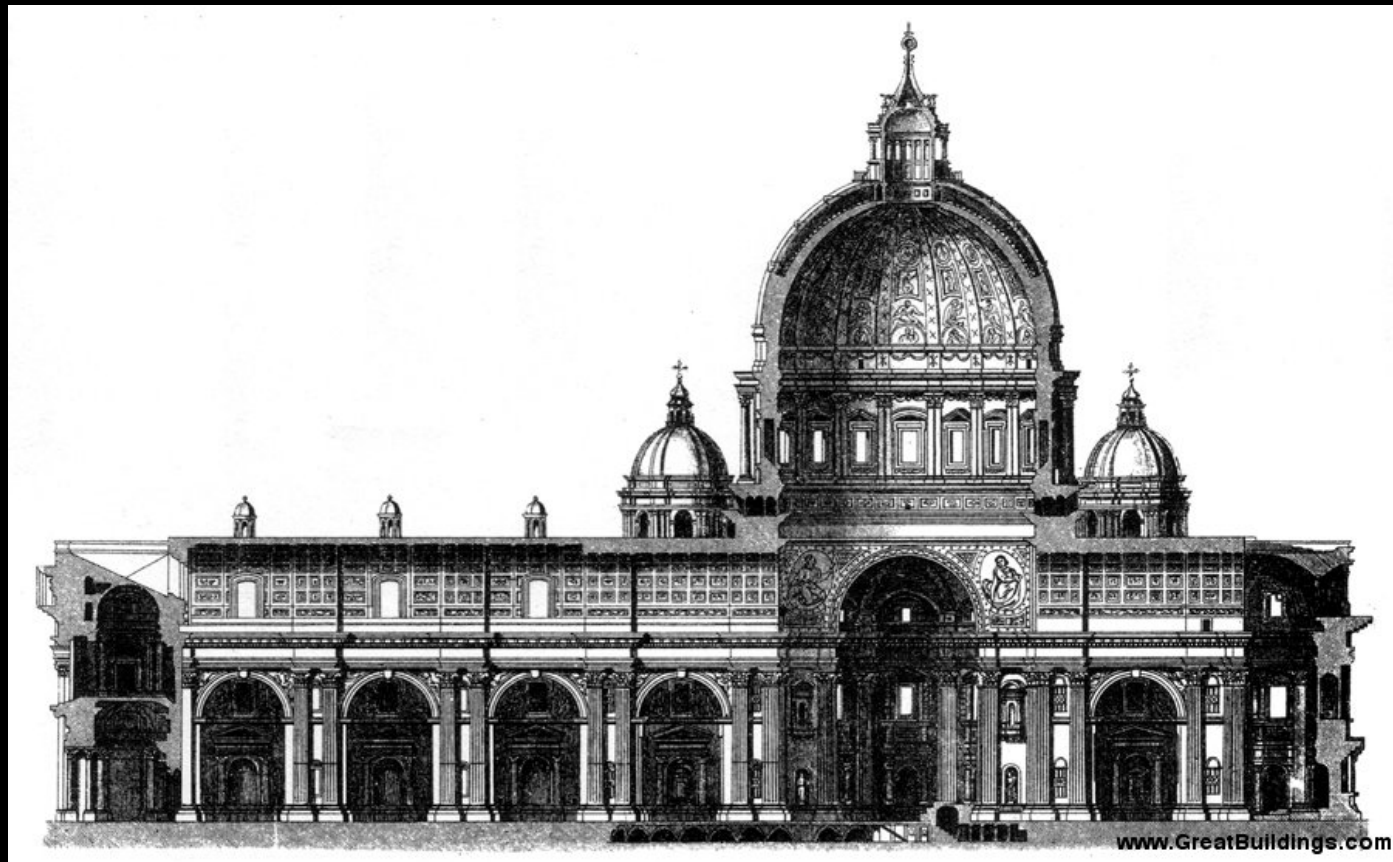
d. Michelangelo, 1546-64
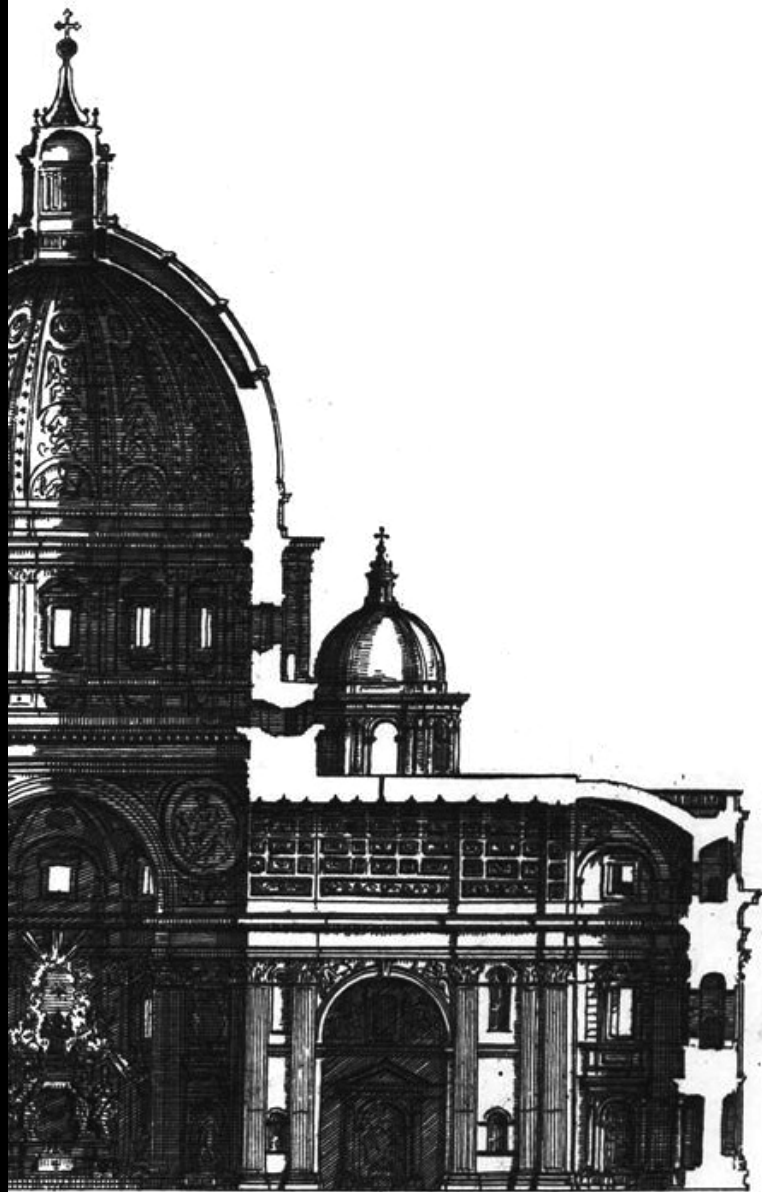
**Carlo Maderno
Façade addition
17th century**

St. Peters Basilica, 1546-64

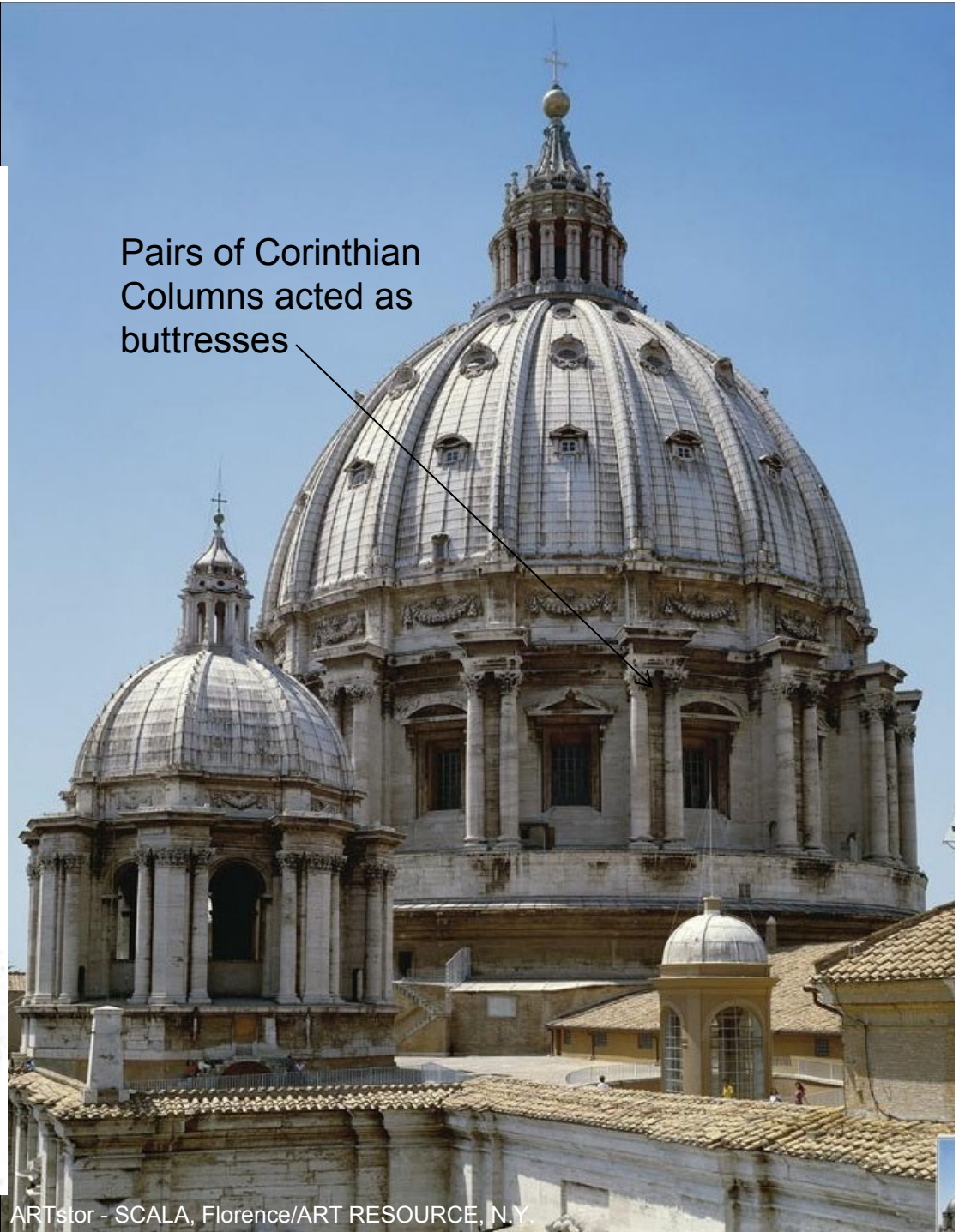The dome, first with a single masonry shell (Bramante), then a double one (Sangallo, Michelangelo).

The piers intended to support the dome, were too slender in Bramante's plan, they were reinforced.

www.GreatBuildings.com

St. Peters, 1546-64

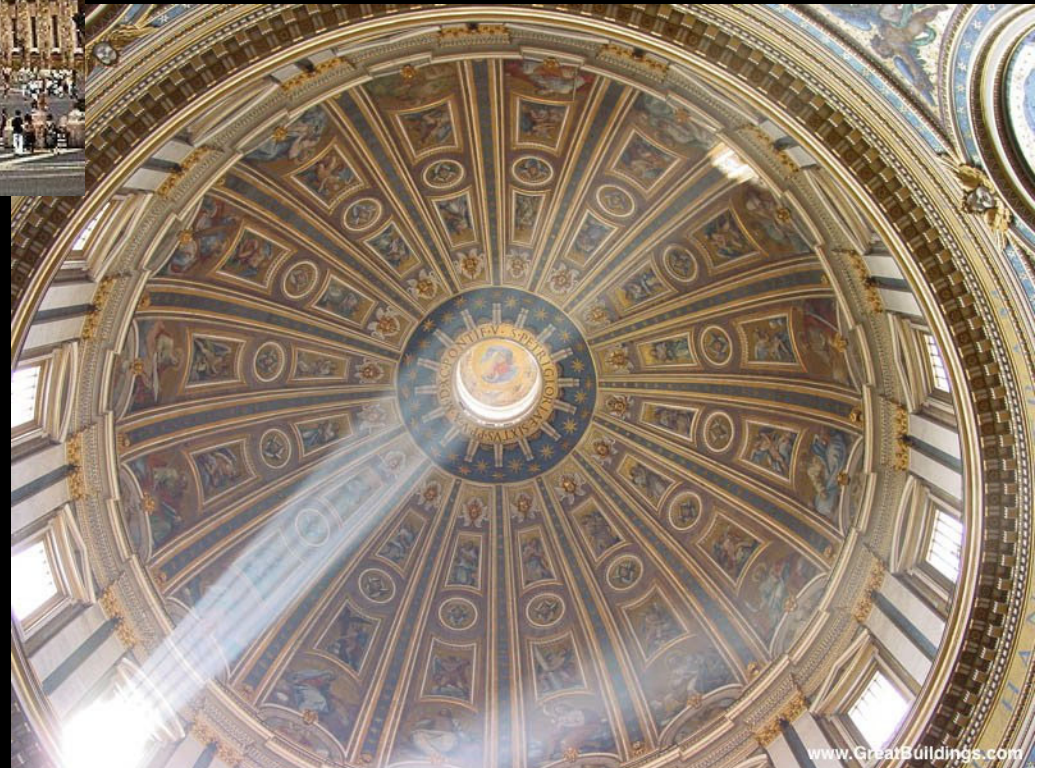Pairs of Corinthian Columns acted as buttresses

St. Peters Basilica, 1546-64

Façade is 376' wide 149' high

Egg shaped dome exerts
Less outward thrust than
a hemispheric one

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St. Peters Basilica, 1546-64

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Domenico de Cortona, Chateau, Chambord, 1517-47
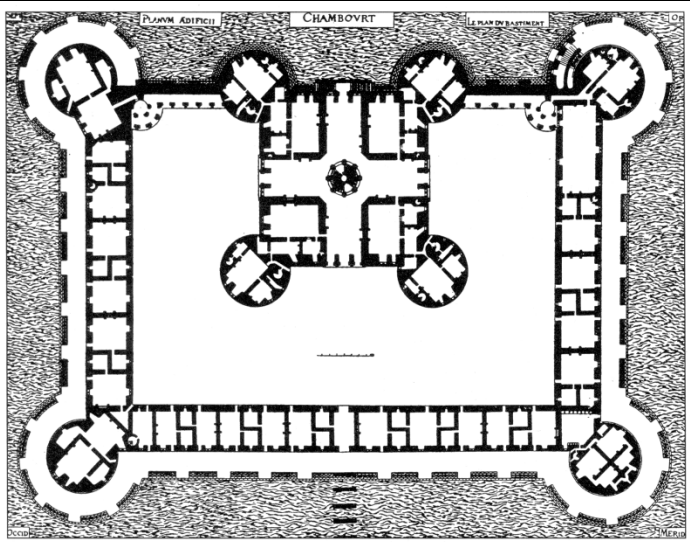
440 rooms & 365 fireplaces
13 great staircases
Sits on a park 22' in circumference
Took 1800 men to build

Domenico de Cortona, Chateau, Chambord, 1517-47

Place Royale

(Place des Vosges), Paris, 1605-12
Paris' oldest square built by
Henry IV – First program of Royal
City Planning

SQUARE

web by Michael Poisson

Access to square

Place Royale (Place des Vosges), Paris, 1605-12

ARCADES

Wikipedia Commons by Gryffindor

Wikipedia Commons by Thierry Bézecourt

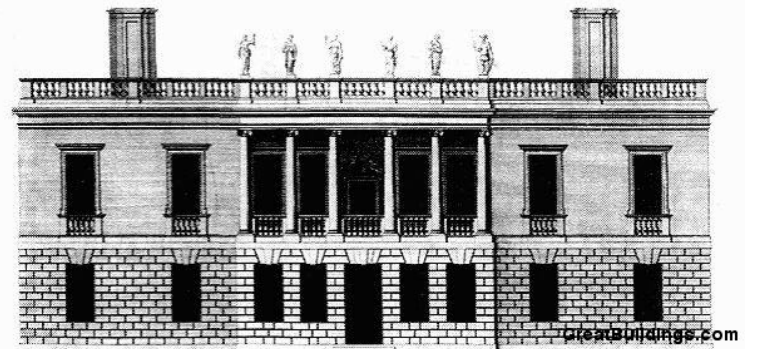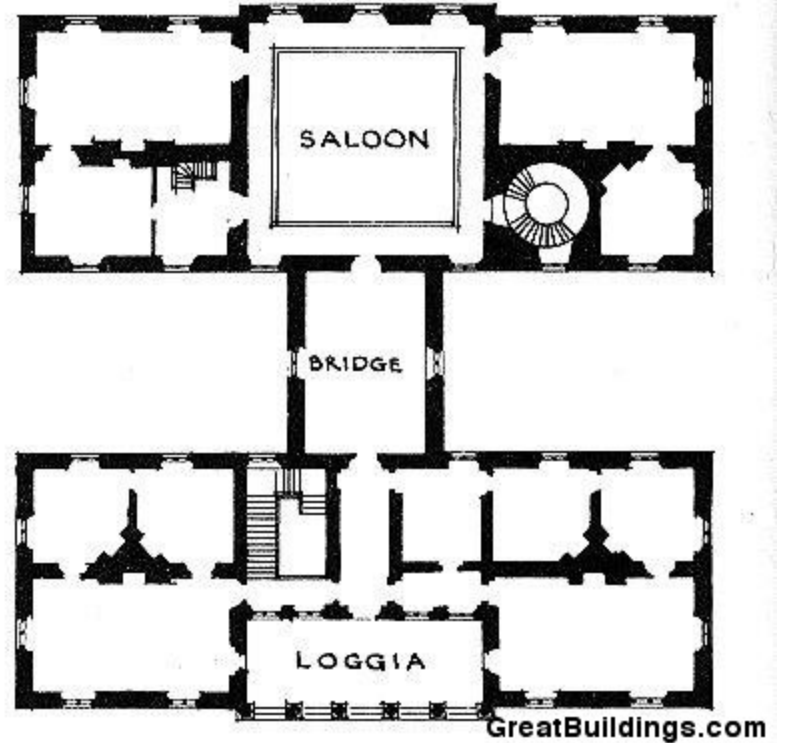Queen's House, Greenwich; 1616- by Inigo Jones

Bridge over public road

Webb's bridge addition

Wikipedia Commons by ChrisO

Queen's House, Greenwich; 1616- by Inigo Jones

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SALOON

BRIDGE

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Pietro Perugino, fresco, in Sistine Chapel, Rome: (1481–82)