Making of the Western Mind
Institute for the Study of Western Civilization
Week 20, Brunelleschi
1401-1402: The Political Crisis That Changes Everything
Gian Galeazzo Visconti
1351-September 3, 1402
Castello Visconteo (Sforza), Milan
June 1402: Milanese troops enter Bologna, Florence surrounded
September 3, 1402: Giangaleazzo Visconti died of plague.
In Florence, in leadership circles the Crisis was a sign. The meaning was visible in Gregorio Dati History of Florence: “...all the freedom of Italy lay in the hands of the Florentines alone... every other power deserted them.” Freedom won. Free Flo Republic won.
THE CRISIS OF THE EARLY ITALIAN RENAISSANCE

By Hans Baron

1900-1988
A NEW VIEW OF HISTORY EMERGES FLORENCE AS HEROIC REPUBLIC FREEDOM WINS: CULTURE POLITICS HISTORY

BY HANS BARON
1400-1405: Circle of scholars, politicians, businessmen

Salutati

Fra Luigi Marsili

Poggio Bracciolini

Palla Strozzi
Coluccio Salutati
Florentine Chancellor
1331-1406

Manuel Chrysoloras
1355-1415

COMES TO FLORENCE 1400 TO TEACH GREEK
Dante
1265-1321

Petrarch
1304-1374

Brunelleschi
1377-1446
THE RENAISSANCE AND FLORENCE
Brunelleschi's neighborhood
grew up in neighborhood at foot of the unfinished Cathedral
father a "notaio" ie accountant/lawyer
Brunelleschi Flo upper mid class good edu some Latin + Tuscan (Dante/Pet/Bocc)
c. 1395
Filippo joins the Arte della Seta the Silkmakers (Porta Rossa) guild which also includes goldwork “Master” 1398
c. 1395
Filippo joins the Arte della Seta, the Silkmakers guild which also includes goldwork. “Master” 1398
1401 Competition for the Baptistry Doors (Brun 23)
1401 Competition for the Baptistry Doors
North side, North Gate, Borgo San Lorenzo

Tuesday March 10, 2020
The Baptistry Doors
South Doors
Stories of John the Baptist
Andrea Pisano (1290-1348)
Project Superintendent: Giovanni Villani
QUATREFOIL

The word quatrefoil means "four leaves", from Latin *quattuor*, four, plus *folium*, a leaf) and applies to general four-lobed shapes in various contexts.
The North Doors, 28 panels
THE COMPETITION: 1401

A Civic Commission
Citizen members
Major art project
at time of war.
THE COMPETITION: 1401

A Civic Commission
Citizen members
Major art project
at time of war.
THE COMPETITION: 1401, Subject, Sacrifice of Isaac
Bronze panel
Finalists: Brunelleschi and Ghiberti
Bronze Casting: The Lost Wax Method
1. The first step in the process was to model the figure roughly in carefully seasoned clay. This will be clay core to whole structure.
2. Over which, once the clay had dried, a coating of wax was laid AND Carve more precise wax model. ....the shape of the desired statue or relief-work of extreme sculptural
3. New covering exterior layer was laid over it: a combination of clay, burned ox horn, iron filings, and cow dung was mixed together with water, worked into a paste, and spread over the wax-coated model with a brush of hog sables.
4. Several layers of soft clay were then applied, each of which was allowed to dry before its successor was overspread.
5. The result was a shapeless mass bound together with iron hoops—the lumpy chrysalis from which the bronze statue was to emerge.
6. KILN. This creation was placed in a kiln and baked until the clay hardened and the layer of wax, as it melted, oozed through small vent holes made for that purpose, usually at the base. (Called the "Lost Wax Method")
7. INTRO THE MOLTEN BRONZE. A hollow was thereby left into which bronze, melted in a furnace, was poured.
8. whole thing is left alone to cool for many days.
9. The final step in the process was to break away the shapeless husk of baked clay and expose the bronze figure, which could then be chiseled, engraved, polished, and, if necessary, gilded.
The Sacrifice of Isaac, competition panels for north doors, Baptistry of Florence Cathedral, Florence, Italy, 1401–1402, 1’ 9” x 1’ 5”, Museo Nazionale del Bargello, Florence.

The body
Lorenzo Ghiberti, 1378-1455
Lorenzo Ghiberti, The North Doors, 28 panels
Lorenzo Ghiberti, 1378-1455
INTERMISSION

Tuesday March 10, 2020
Donatello and Brunelleschi to Rome, 1405-15
Brunelleschi and Donatello come to Rome, dig, draw
Searching for the Past
BACK IN FLORENCE BY 1415: COMPETITION FOR DOME
1415
State of the arts in Florence
1415
1. competition panels advances, experiment

2. Rome archaeology new finds

3. new manuscripts Poggio finds Vitruvius in Switzerland
1415 BRUNELLESCHI RETURNS TO A FLORENCE WITH NEW DOCUMENTS POGGIO HAS FOUND VITRUVIUS
1414:
Poggio comes here to the Abbey of St Gall in the city of St Gallen Switzerland, founded by Carolingians in 747
Vitruvius, De Architectura, Bk X
St Gall manuscript on parchment (Vellum)
Dated: 750-987
Poggio’s handwriting
Vitruvius, *De Architectura*, Bk X
St Gall manuscript on parchment
Dated: 750-987

1415: Poggio Brings Vitruvius to Florence
Brunelleschi reads Vitruvius
A - SHOWING COLUMNS WITH COLUMN DIAMETER 'D'
B - SHOWING COLUMNS AT UNIFORM SCALE OF GREEK FEET

VITRUVIUS' RULE FOR A FRIEZE WITHOUT SCULPTURE.

TEMPLE OF VESTA VIRILIS AT ROME
TEMPLE AT PRILENE
THEATRE OF MARCELLUS
FROM VIGNOLA
Vitruvius Presents His Book on Architecture to the young Emperor Augustus, 20 BC
De architectura – Ten Books on Architecture

1. Town planning, architecture or civil engineering in general, and the qualifications required of an architect (Education)
2. Building materials
3. Temples and the orders of architecture
4. 'continuation of book IV'
5. Civil buildings
6. Domestic buildings
7. Pavements and decorative plasterwork (FRESCO)
8. Water supplies and aqueducts
9. Sciences influencing architecture – geometry, measurement, astronomy, sundial
10. Use and construction of machines - Roman siege engines, water mills, drainage machines, Roman technology, hoisting,
Vitruvius is famous for asserting in his book *De architectura* that a structure must exhibit the three qualities of *firmitas, utilitas, venustas* – that is, it must be solid, useful, beautiful.
Architecture
The Body and the Order of the Universe: The Cosmos
Man and the city, the civilization
Greeks, Romans, Brunelleschi, Alberti
What Vitruvius Gave Brunelleschi
1. Greek idea of order
2. Arch mirrors that order
3. “Orders”
4. Edu of arch.
5. Role of arch = someone special (= all artists)
6. Brunelleschi Becomes the civic art role Vitruvius imagined
7. Hoists etc
Chronology: History of Linear Perspective

300 B.C.  Euclid's Optica
first written application of the laws of geometry
to problems of how people see
Definition of the rectilinear "visual ray" and the "visual cone"

25  Vitruvius' De architectura, reference to antique stage designs
which implies understanding of the "vanishing point" notion of
linear perspective in ancient Roman art

140 A.D.  Ptolemy's Optica, application to Euclid's Optica of the geometric
laws of refraction. Definition of the unrefracted and therefore
crucial "centric" visual ray.
Ptolemy's Geographia, application of the laws of optics to the
projection of the spherical form of the earth onto a two-
dimensional surface.
EARLIEST KNOWN LINEAR PERSPECTIVE CONSTRUCTION
(for drawing a map of the world).

175  Galen's De usu partium, early effort to define the physiological
structure of the eye.
1415

Brunelleschi returns to Florence
return to Florence of Paolo dal Pozzo Toscanelli
medical doctor, mathematician, geographer
possible author of treatise on optics
close friend and teacher of math to Brunelleschi

1424

Brunelleschi with possible help of Toscanelli makes first
linear perspective paintings since classical antiquity
now-lost panel of Baptistery which he demonstrates with mirror.

1428

Masaccio paints Trinity, Santa Maria Novella, Florence
first surviving picture painted with clear-cut linear perspective
ideas

1434

Leon Battista Alberti (1404-1472) comes home to Florence after
family's long exile from city due to old political alliances.

1435

Alberti writes On Painting writing down Brunelleschi's ideas
and dedicating it to Filippo (Brunelleschi) and Masaccio,
Donatello, Ghiberti, and Luca della Robbia.
FIRST DOCUMENT EVER IN ALL OF HUMAN HISTORY TO
RELATE THE MATHEMATICAL PRINCIPLES OF LINEAR
PERSPECTIVE TO THE ART OF PAINTING.
THIS IMAGINATIVE LEAP OF 1425-1435 OF BRUNELLESCHI-
ALBERTI IS AT THE CENTER OF THE ACHIEVEMENT OF THE
RENAISSANCE IN ITALY· CREATES NEW VISION FOR WEST
"Look here, men, shouldn't that be the other way around?"

Illustration 1-4: "Look here, men, shouldn’t that be the other way around?"
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third dimension, is by no means unique to the Studenica painting. There are innumerable examples of it in pictures from all over the
Brunelleschi’s experiment with his panel painting of the Baptistry. The observer holds the painting in one hand and looks out through a hole in it. In the other hand he holds a mirror. With the mirror down (A) he looks directly at the Baptistry; with the mirror up (B) he sees a reflection of his painting of the building.

credible when applying it to the more frequent situation of angular or oblique vision demonstrated in the second panel.
232. Design of Alberti’s Perspective Construction, according to recent discoveries
a. height of human being  b. base line  c. vanishing point  d. orthogonals
e. “little space”  f. distance point  g. vertical intersection  h. transversals

unelleschi’s perspective theory provided no system projecting imaginary spaces and their contents within the field. Alberti’s formula, however questionable, a modern scientific standpoint, produced a result that was aesthetically attractive and visually convincing across to the first. These horizontal lines would become the desired transversals in the first construction, and form trapezoids in conjunction with its orthogonals. The results can be easily counterproved by drawing diagonals through the corners of the trapezoids. These diagonals
Masaccio
The Trinity
Santa Maria Novella
Florence
1425
232. Design of Alberti’s Perspective Construction, according to recent discoveries

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1415-1420
Competition for Dome project
1415-1420
Competition for Dome project

- Surpass the Ancient World
  - Surpass the Pantheon

The meaning Of the Dome Project
The meaning Of the Dome Project

2. The new Globe
The world Looking Out at the Whole World

1415-1420
Competition for Dome project

Tuesday March 10, 2020
1415-1420 Competition for Dome project

The meaning Of the Dome Project

3. Ren Florence Among the Giants Of Civilization
Brunelleschi's solution: two domes.
Brunelleschi’s Dome

Dome after loading

Dome before loading

Outward motion

Hoop stress. The dotted line shows how the dome is deformed by weight at the top.
The nine horizontal circles within the dome.
Dimostrazione Giusta, et Interna Della Cupola
BUILDING IT HERE FROM FLOOR OF CATHEDRAL
Brunelleschi invents a brilliant pulley mechanism that can reverse direction without unhooking oxen and turning them around.
BUILDING IT HERE FROM FLOOR OF CATHEDRAL
From floor to top of dome:
375 feet
37 stories
Empire state building stands 103 stories tall
(1,250 feet to top floor)
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