

Perspective after the Renaissance

(and some interesting sidelights)

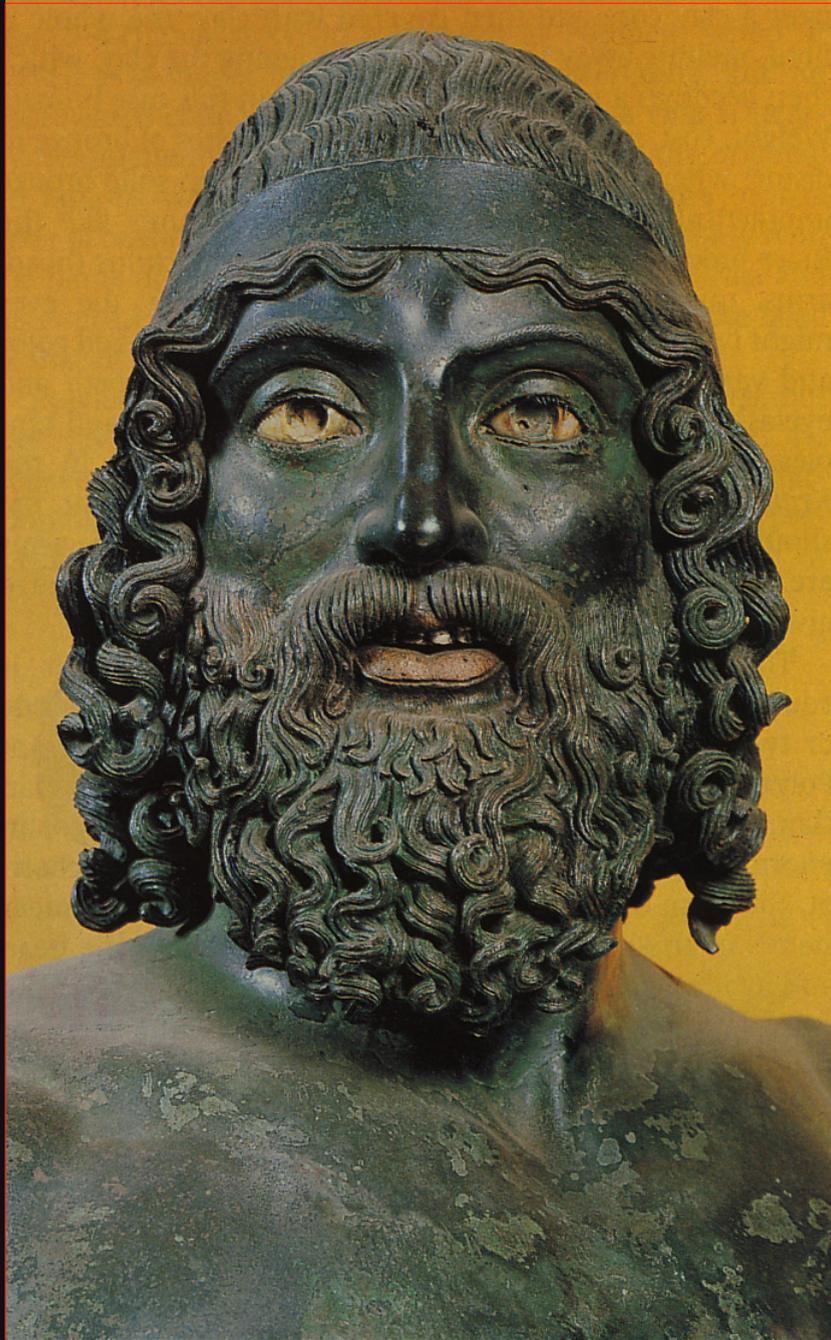
CS 48N, Winter 2011



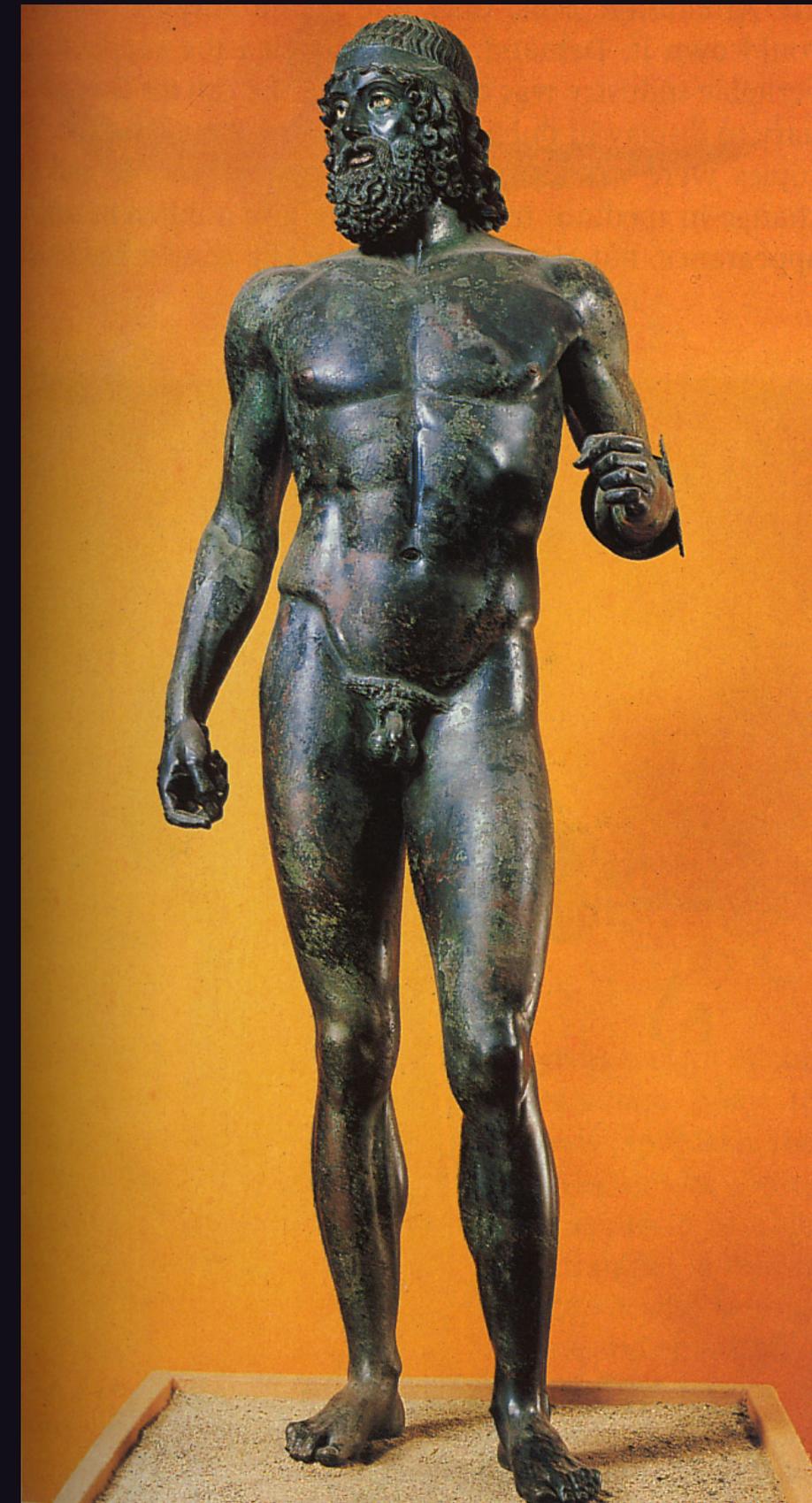
Marc Levoy
Computer Science Department
Stanford University

Warrior, uncovered in
Riace (circa 450 BC)

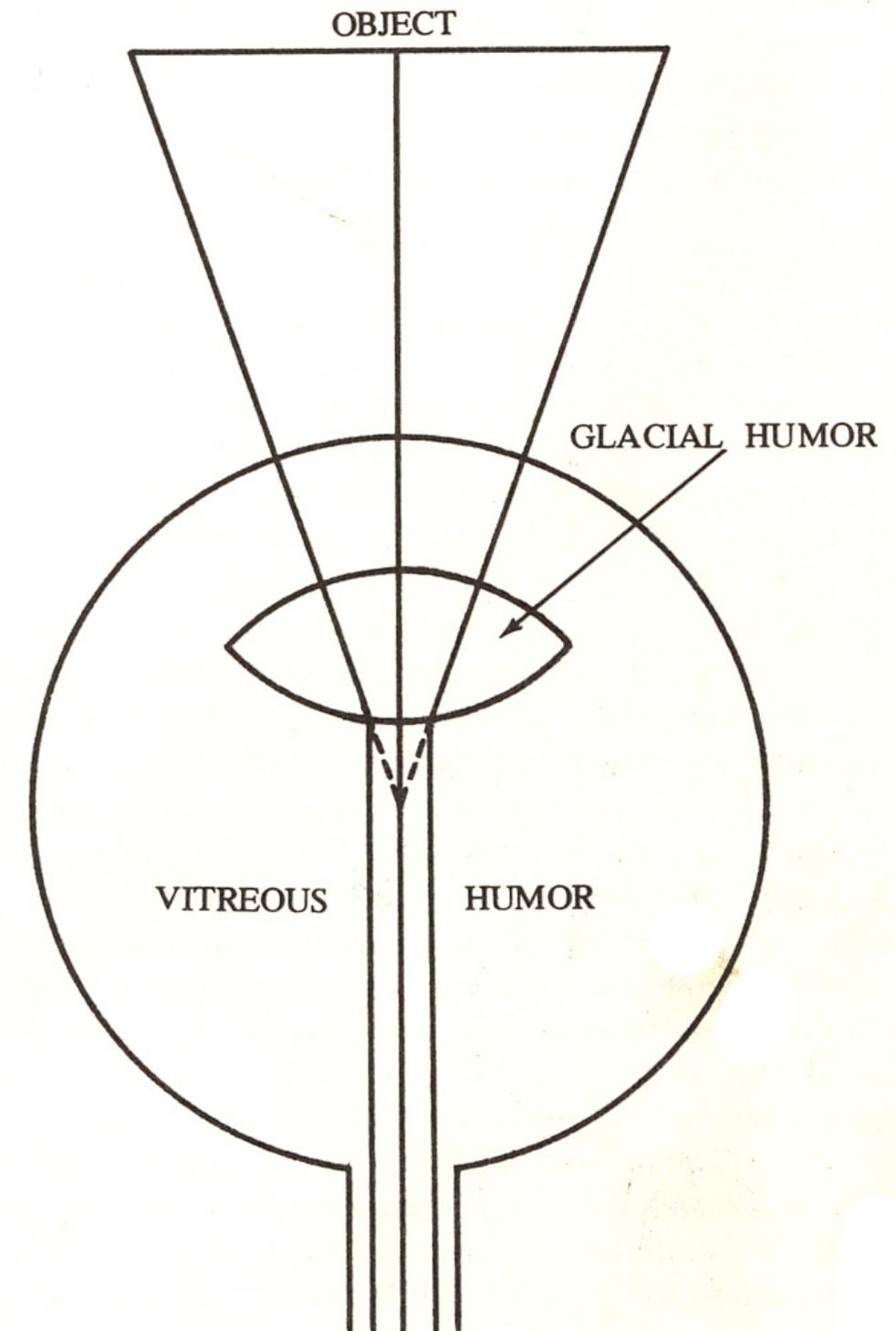




Warrior, uncovered in
Riace (circa 450 BC)



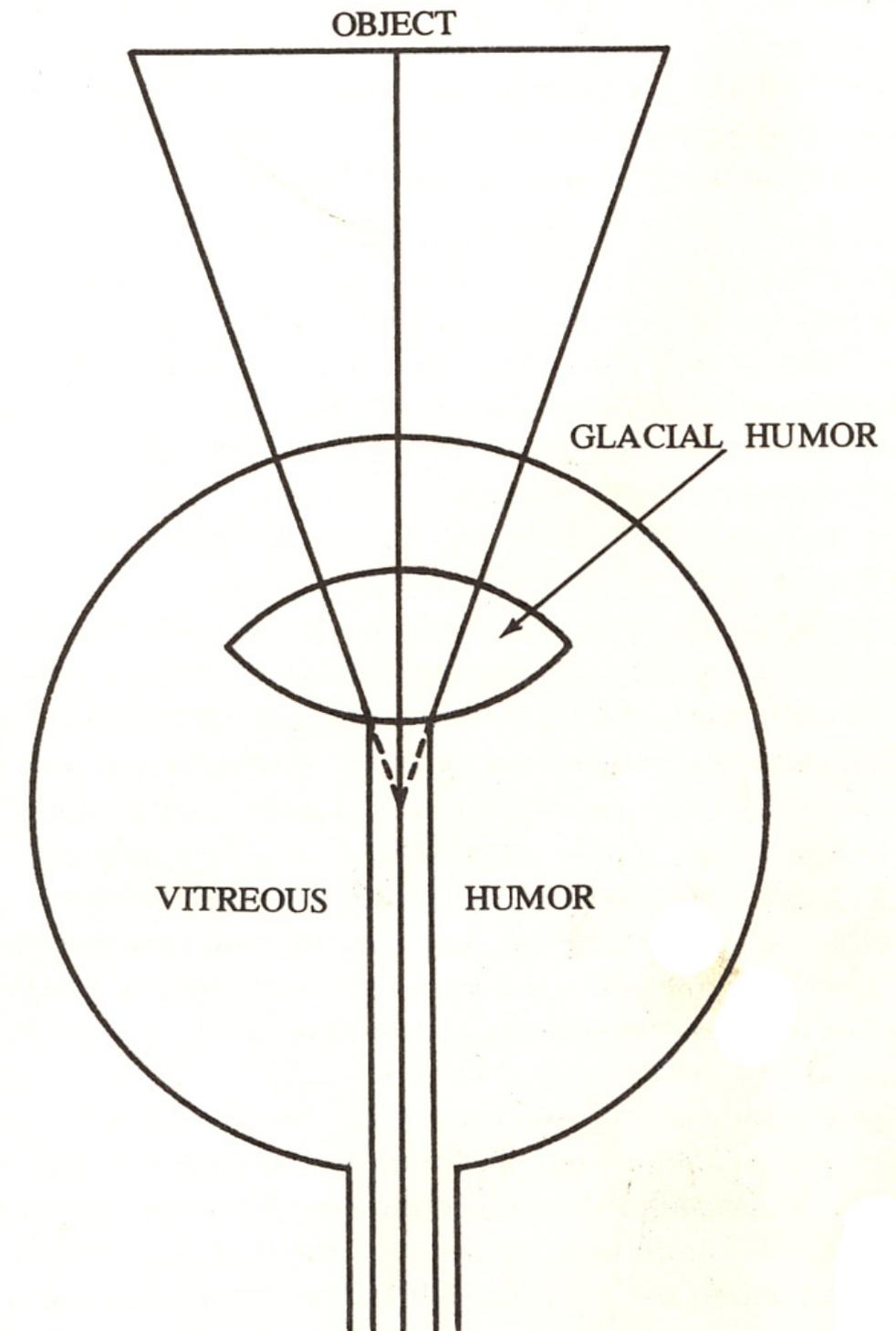
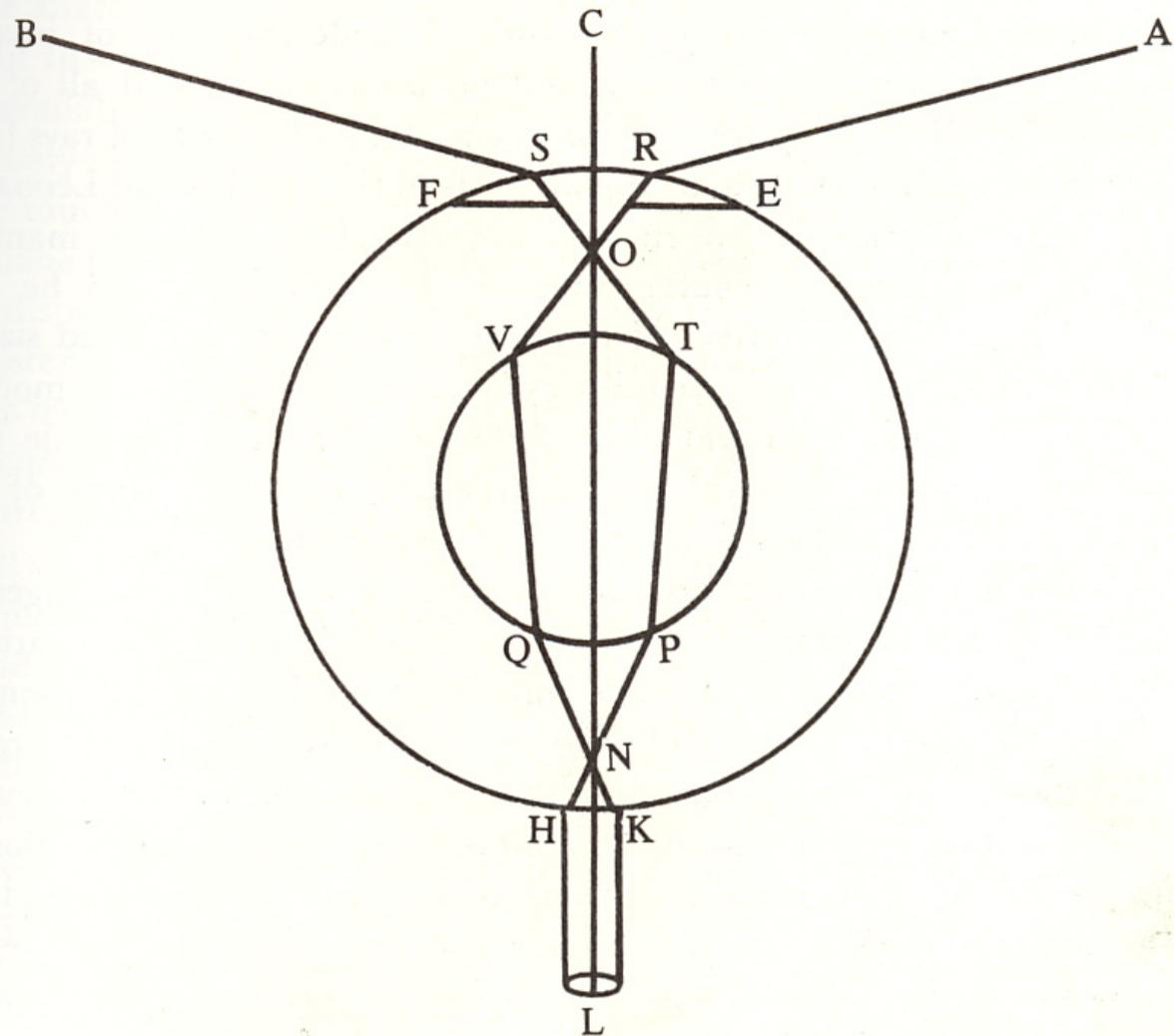
Operation of the eye
according to Alhazen
(c. 1039)



(drawing from D.C. Lindberg)

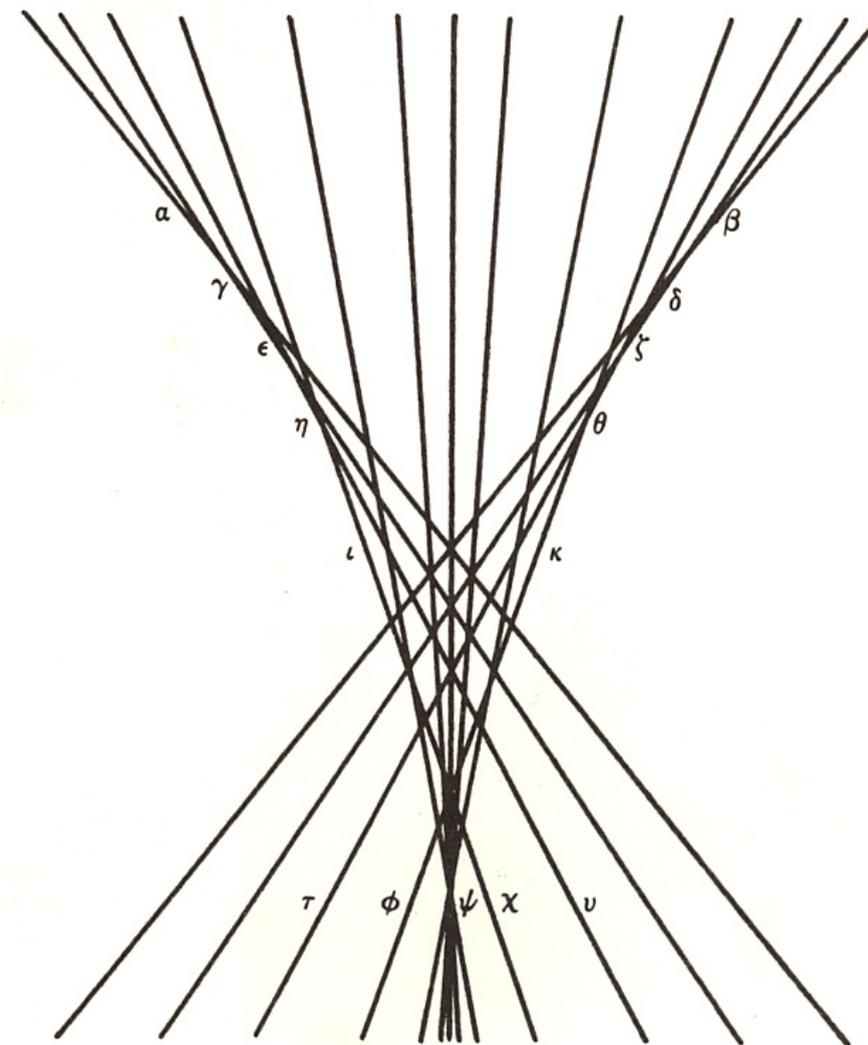
Operation of the eye
according to Alhazen
(c. 1039)

Operation of the eye according
to Leonardo (1452-1519)

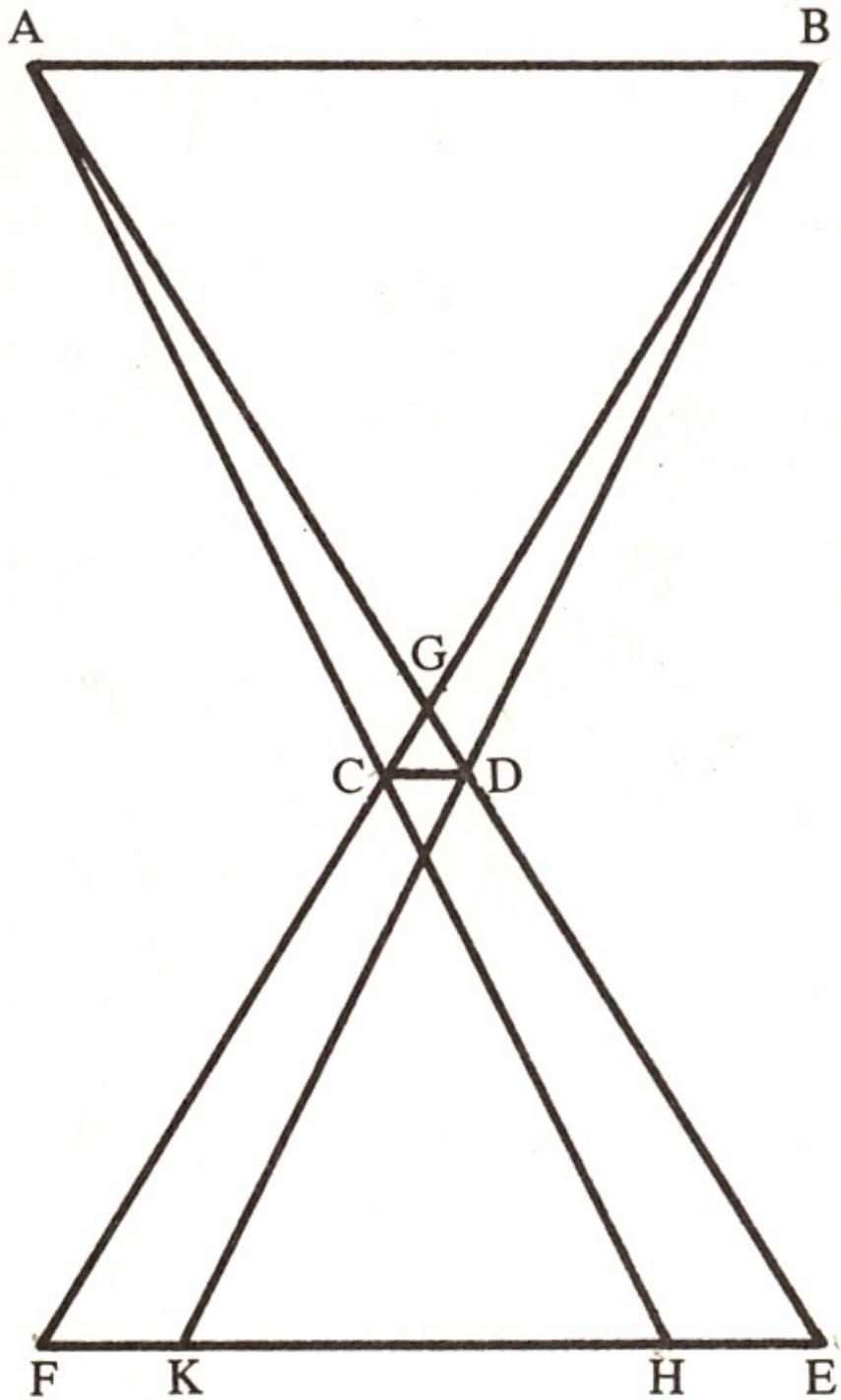


(drawings from D.C. Lindberg)

Kepler (1571-1630),
study of aberrations
produced by a burning
glass (a glass sphere)

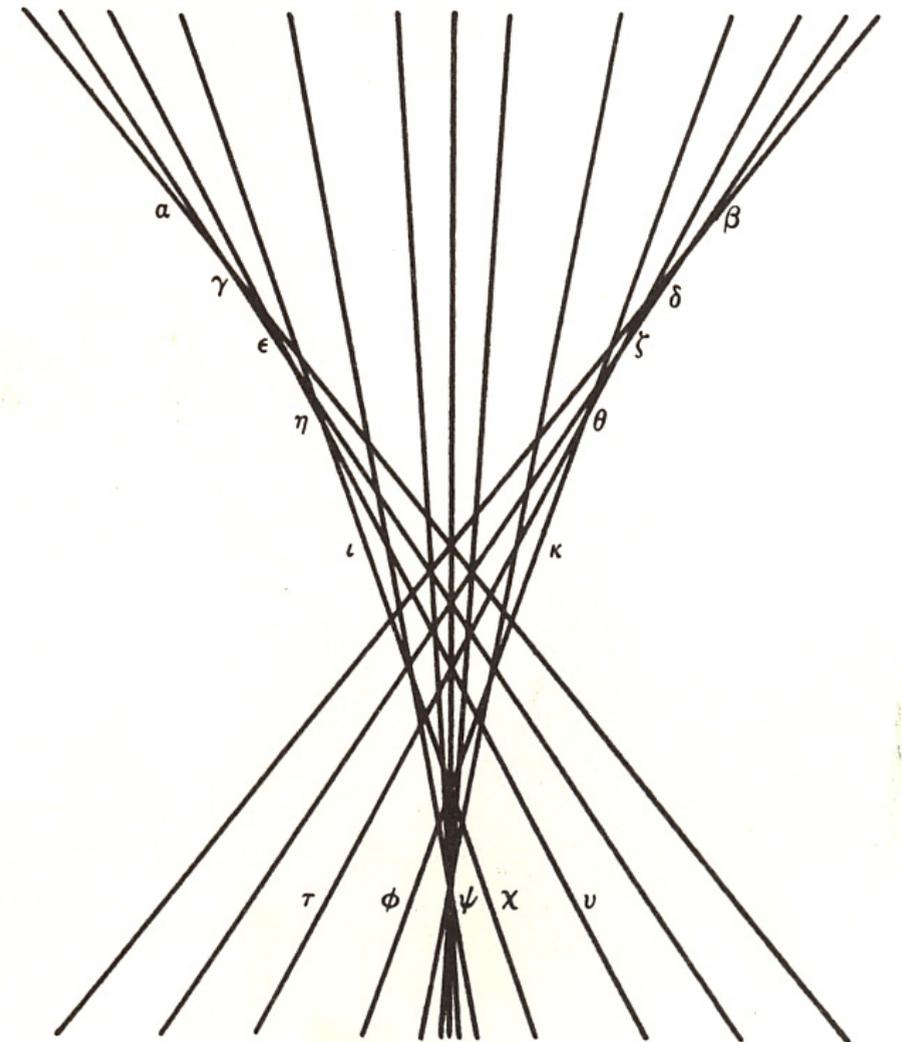


(drawings from D.C. Lindberg)



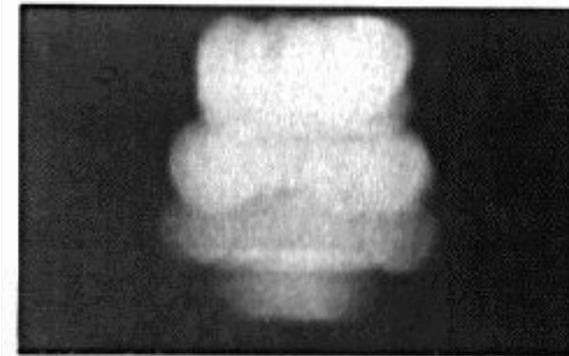
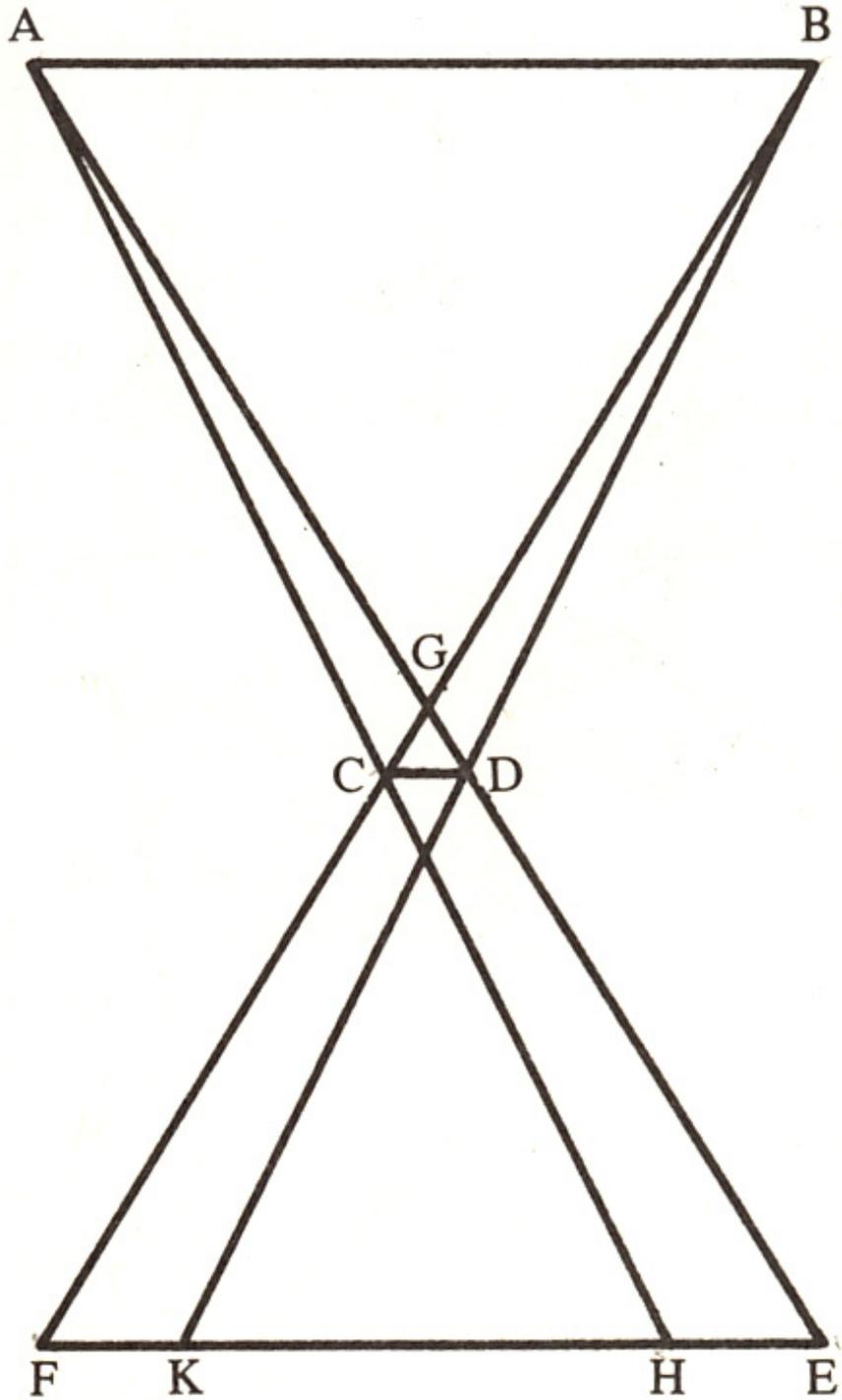
study of the blurred image produced by a finite-sized aperture

Kepler (1571-1630), study of aberrations produced by a burning glass (a glass sphere)

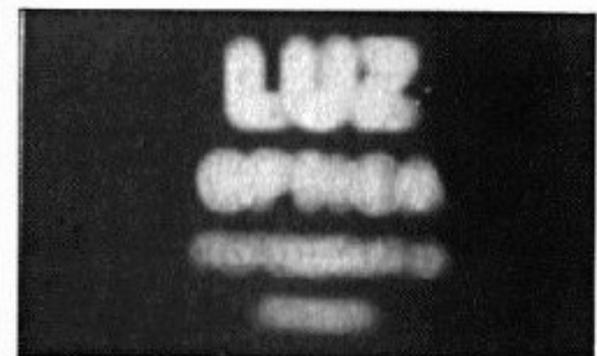


study of the blurred image produced by a finite-sized aperture

(from Hecht)



2 mm



1 mm



0.6mm



0.35 mm

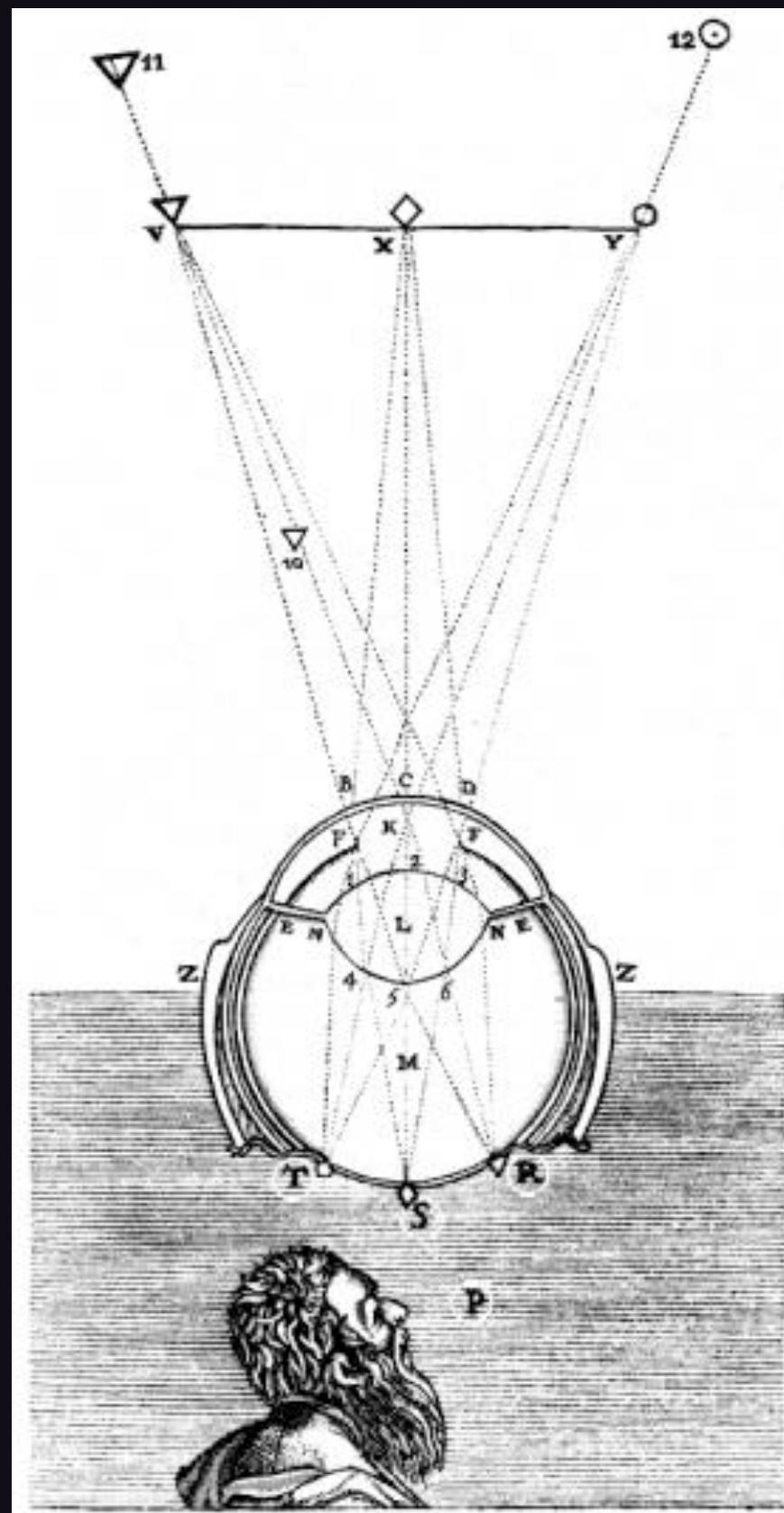


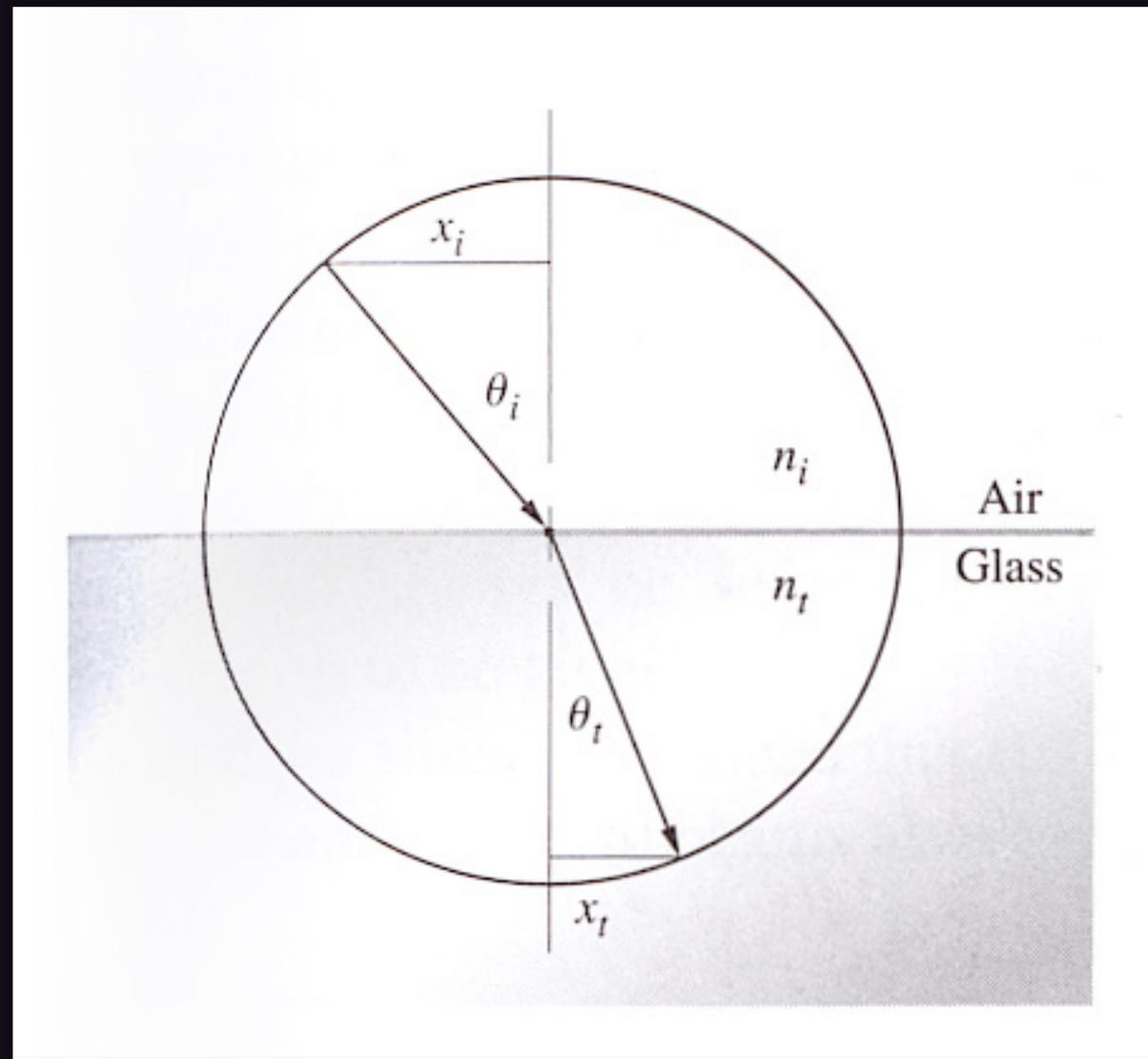
0.15 mm



0.07 mm

Descarte's drawing of
Kepler's experiment
looking through the
back of the eye of an ox

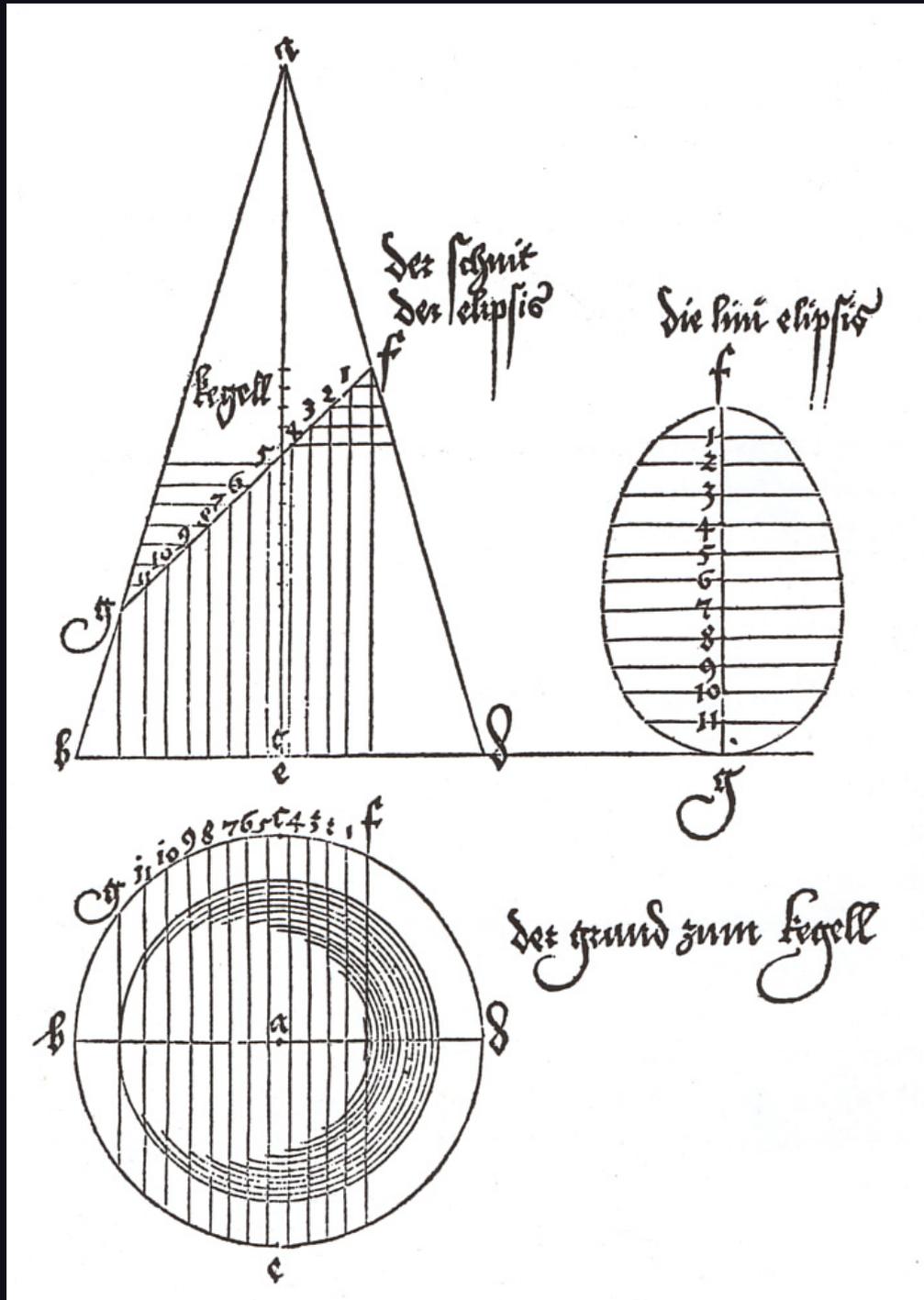




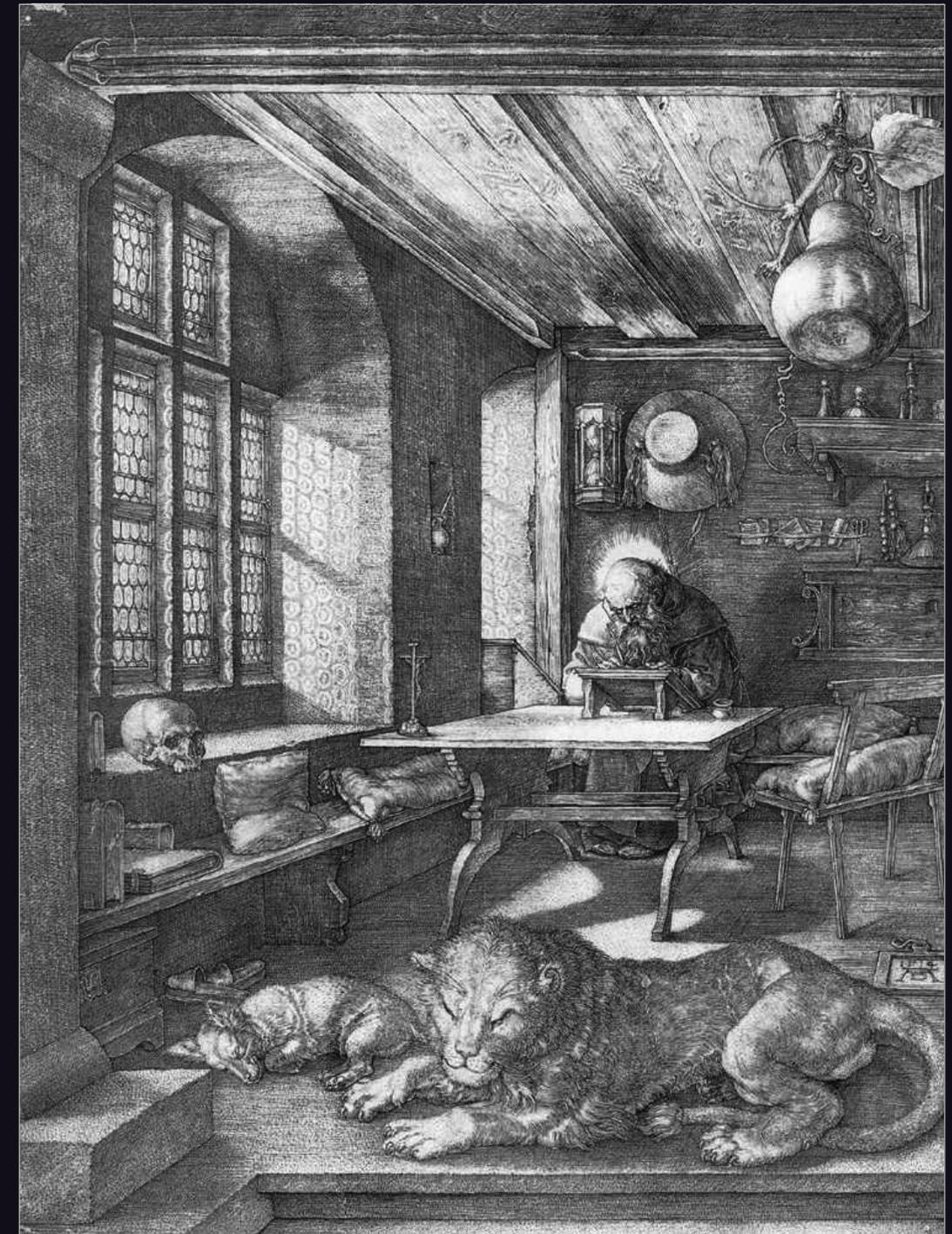
$$\frac{x_i}{x_t} = \frac{\sin \theta_i}{\sin \theta_t} = \frac{n_t}{n_i}$$

Snell's law of refraction (1621)

Study of conic sections (1525)

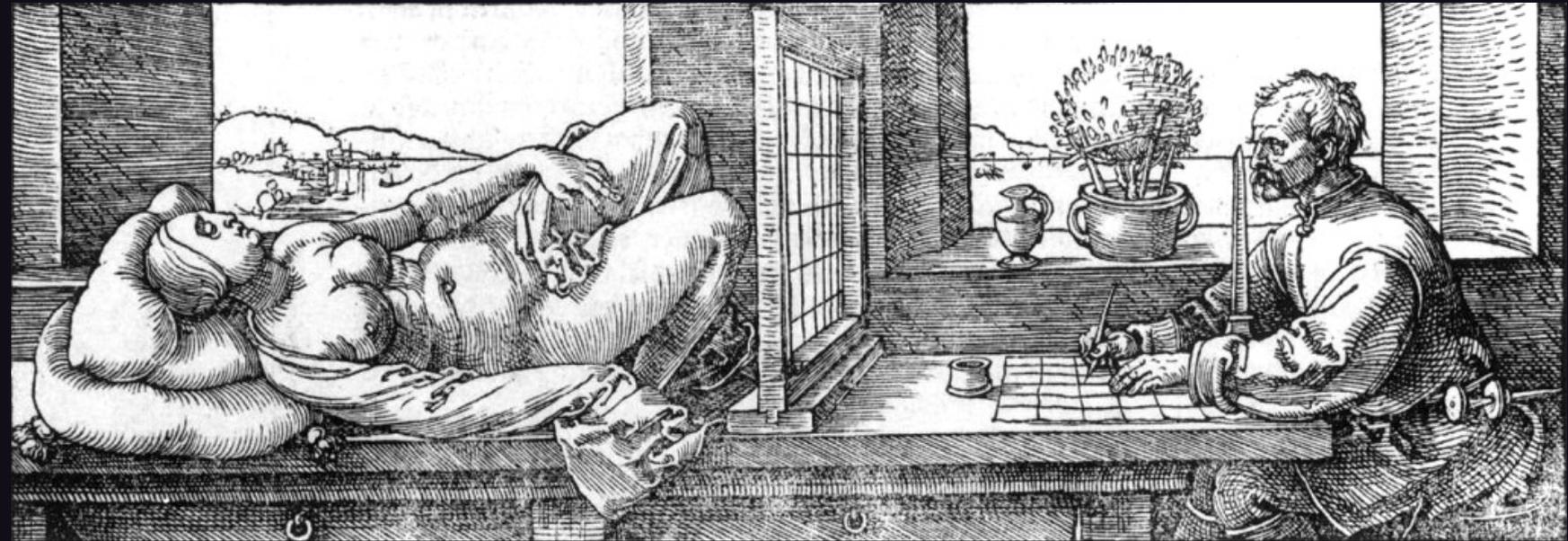


St. Jerome in his Study (1525)

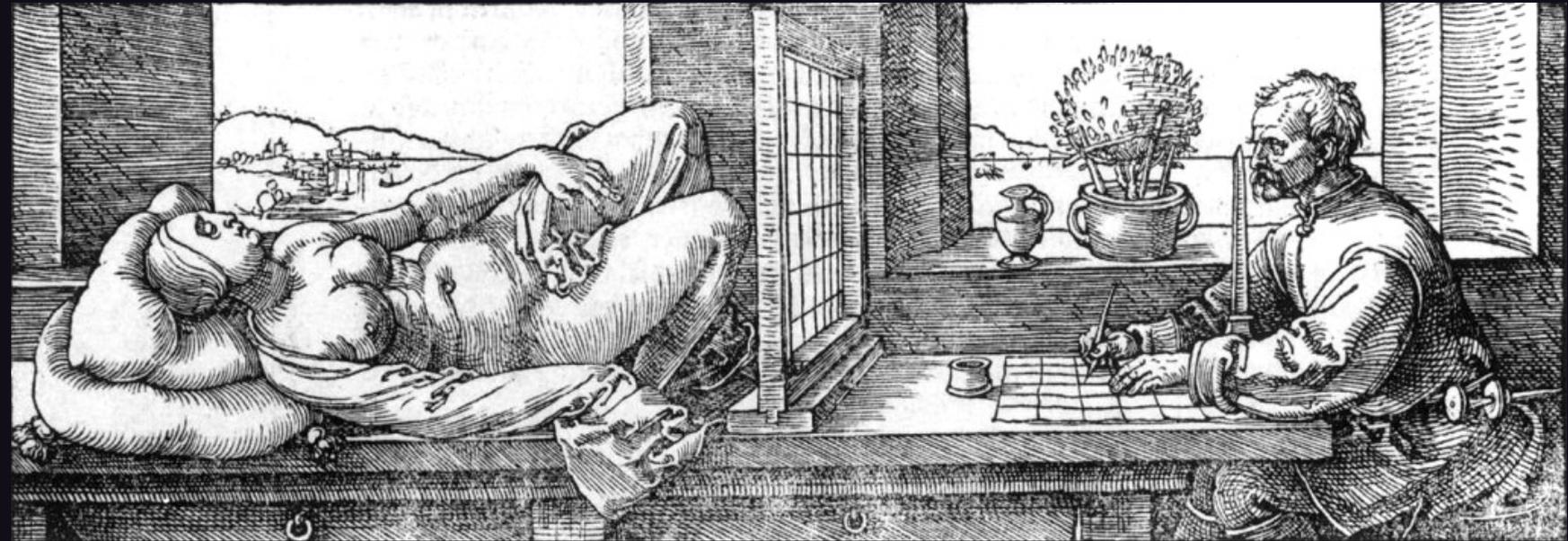


Albrecht Dürer (1471 - 1528)

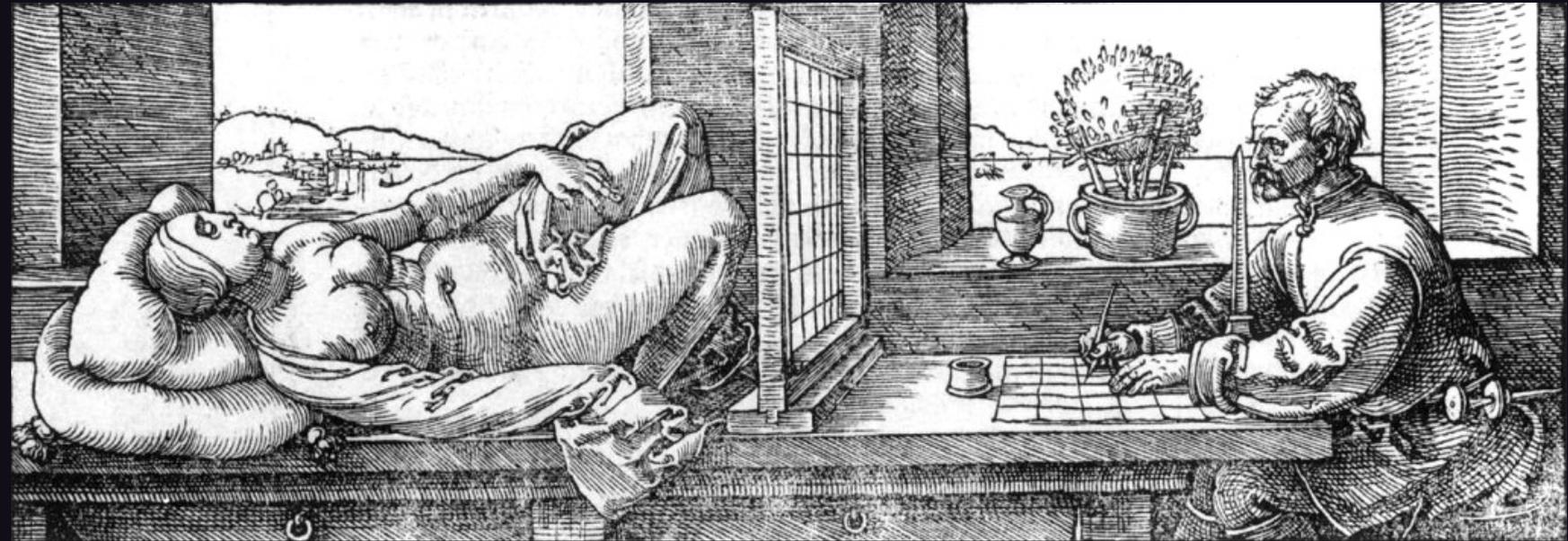
Dürer, draftsman's net



Dürer, draftsman's net

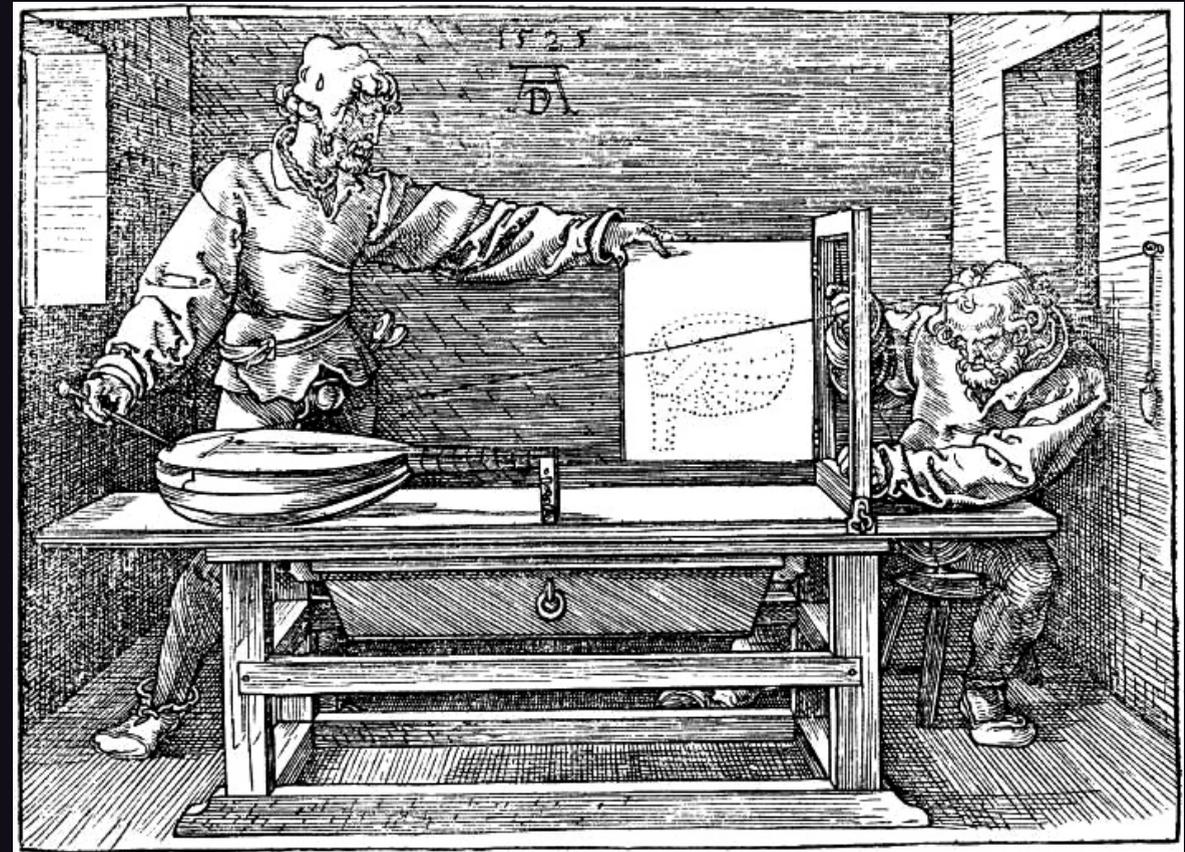


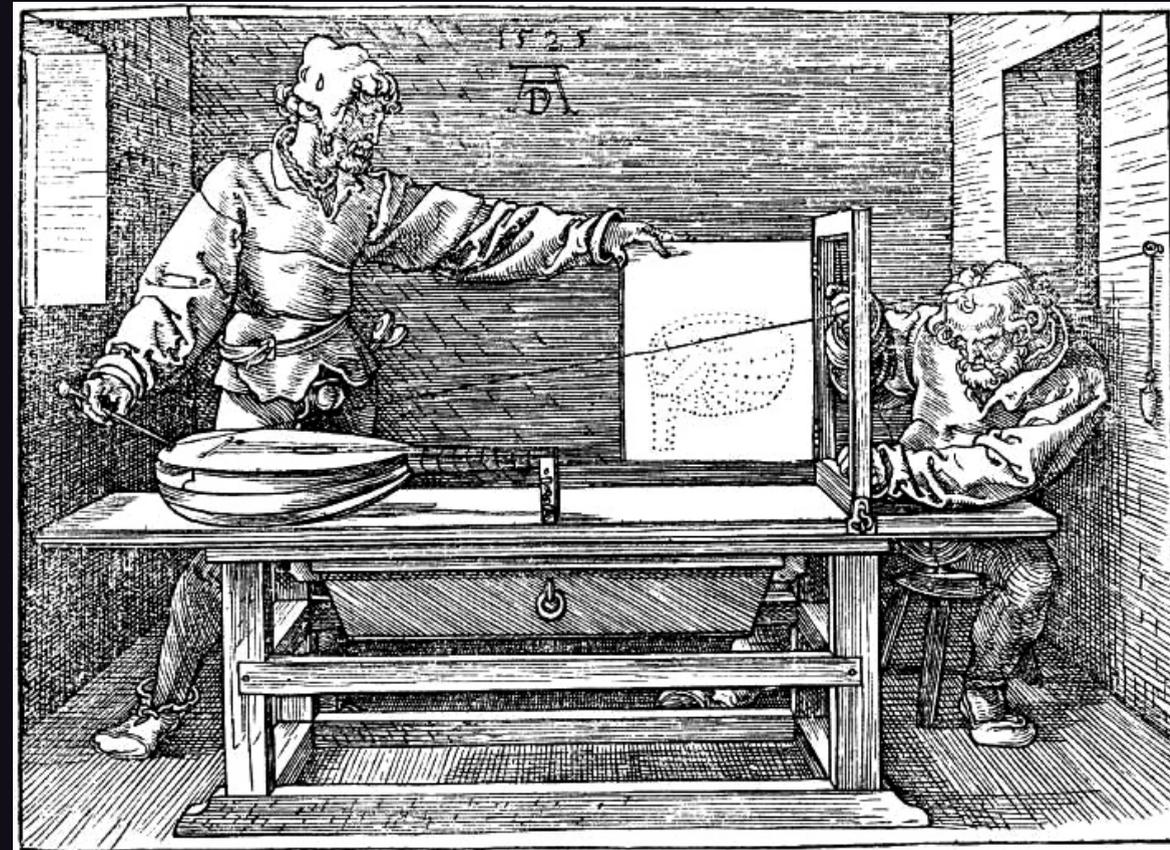
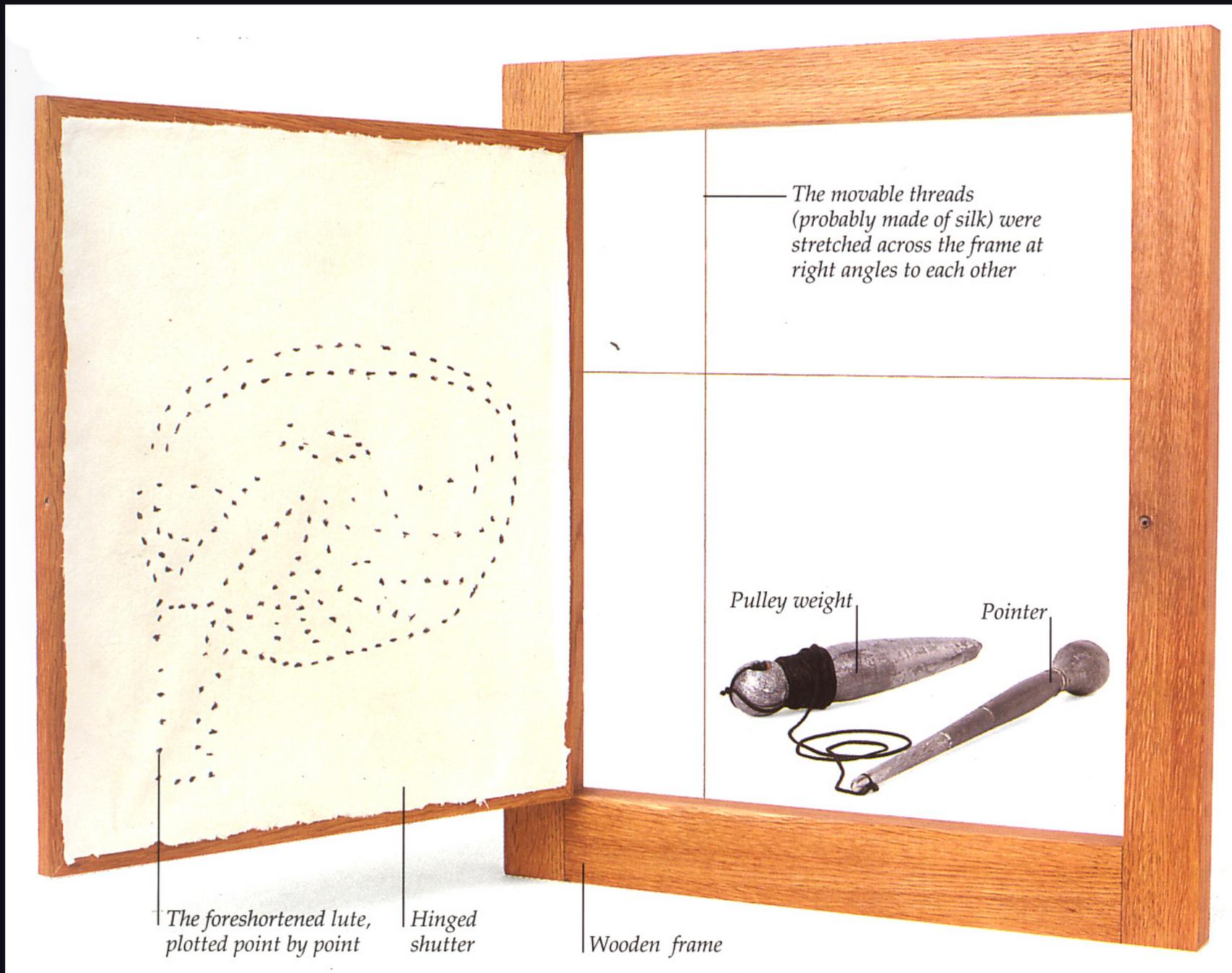
Dürer, draftsman's net



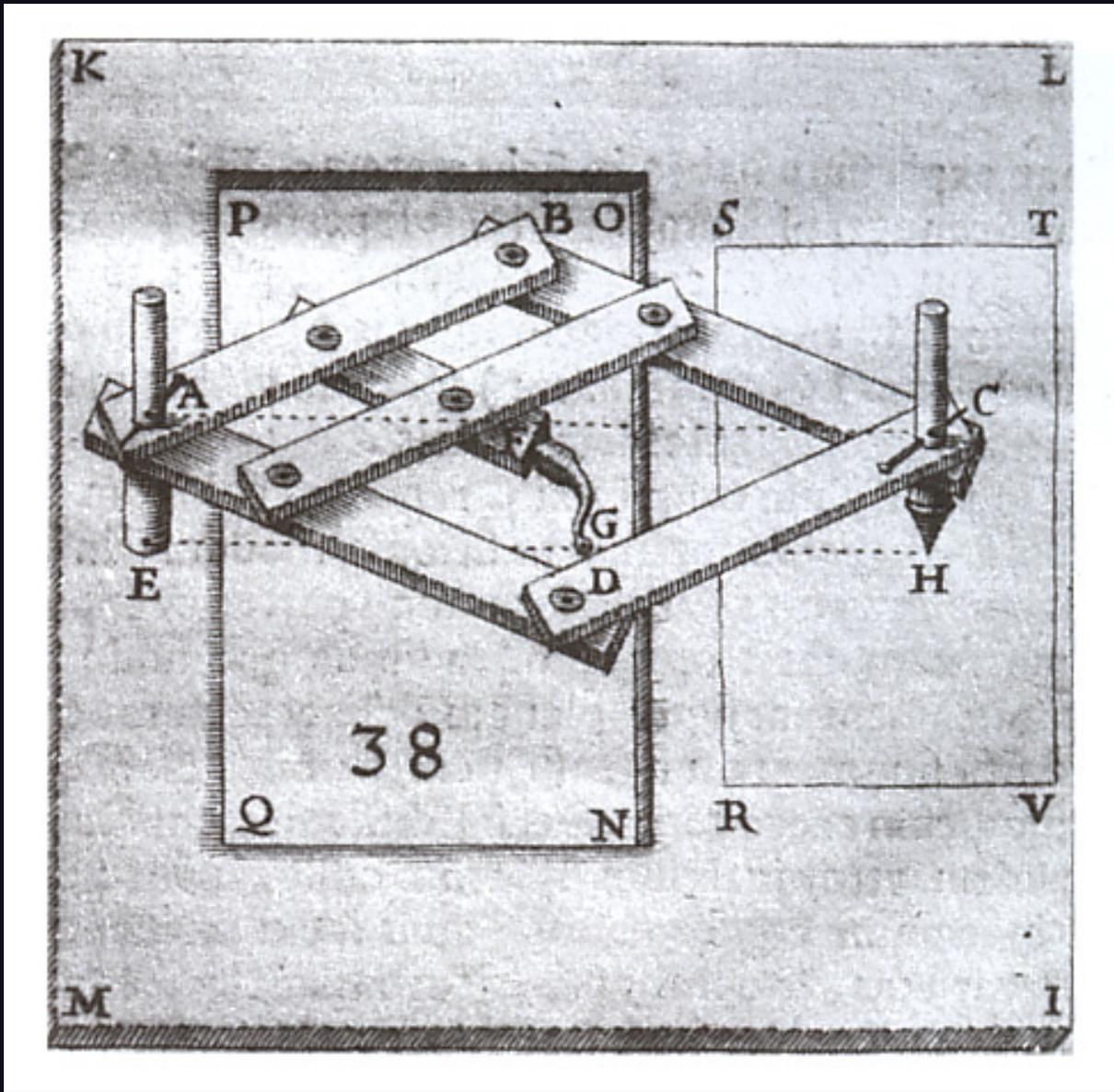
Jacob de Keyser, gun-style eyepiece

Dürer, rulling pen

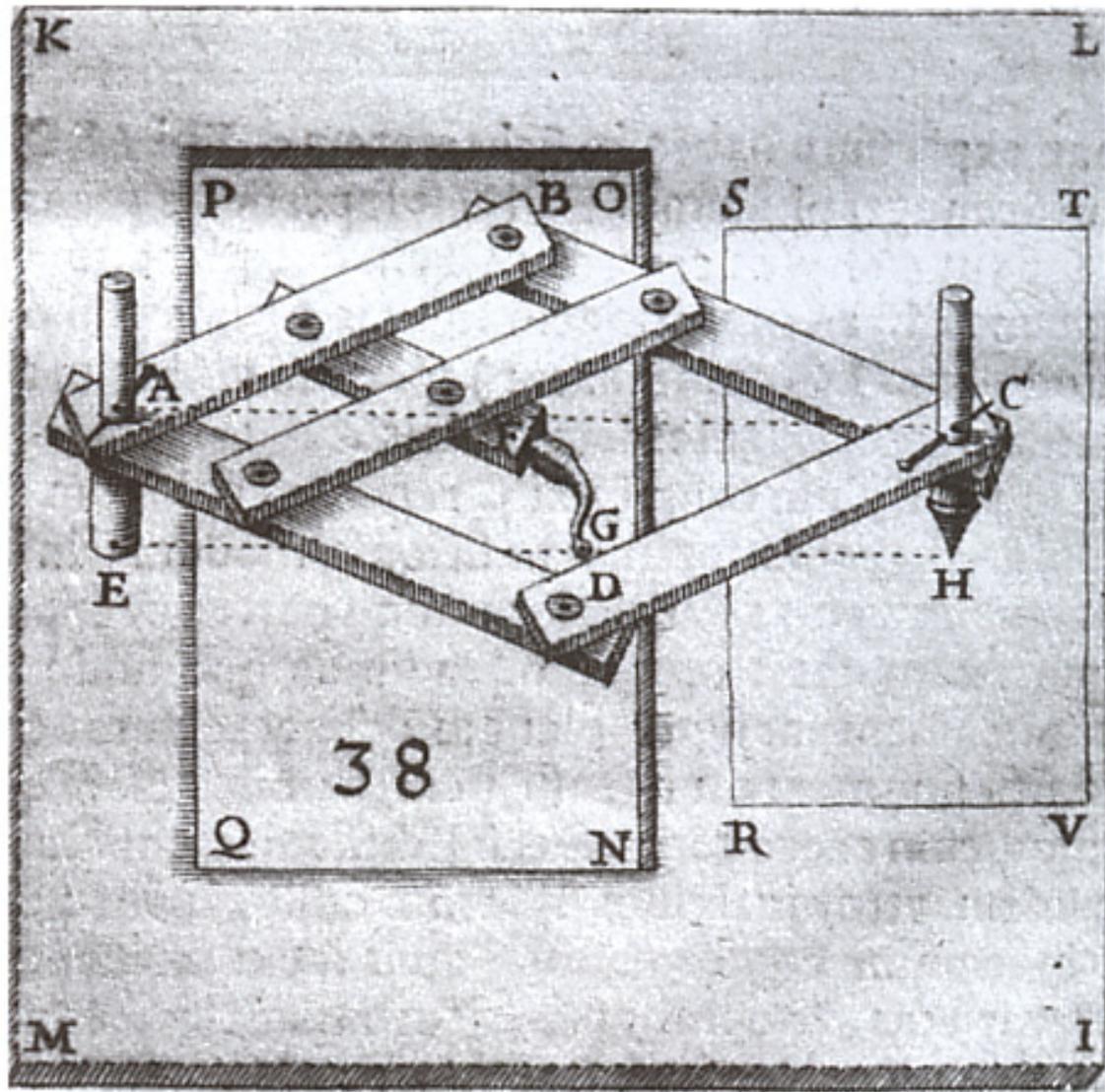




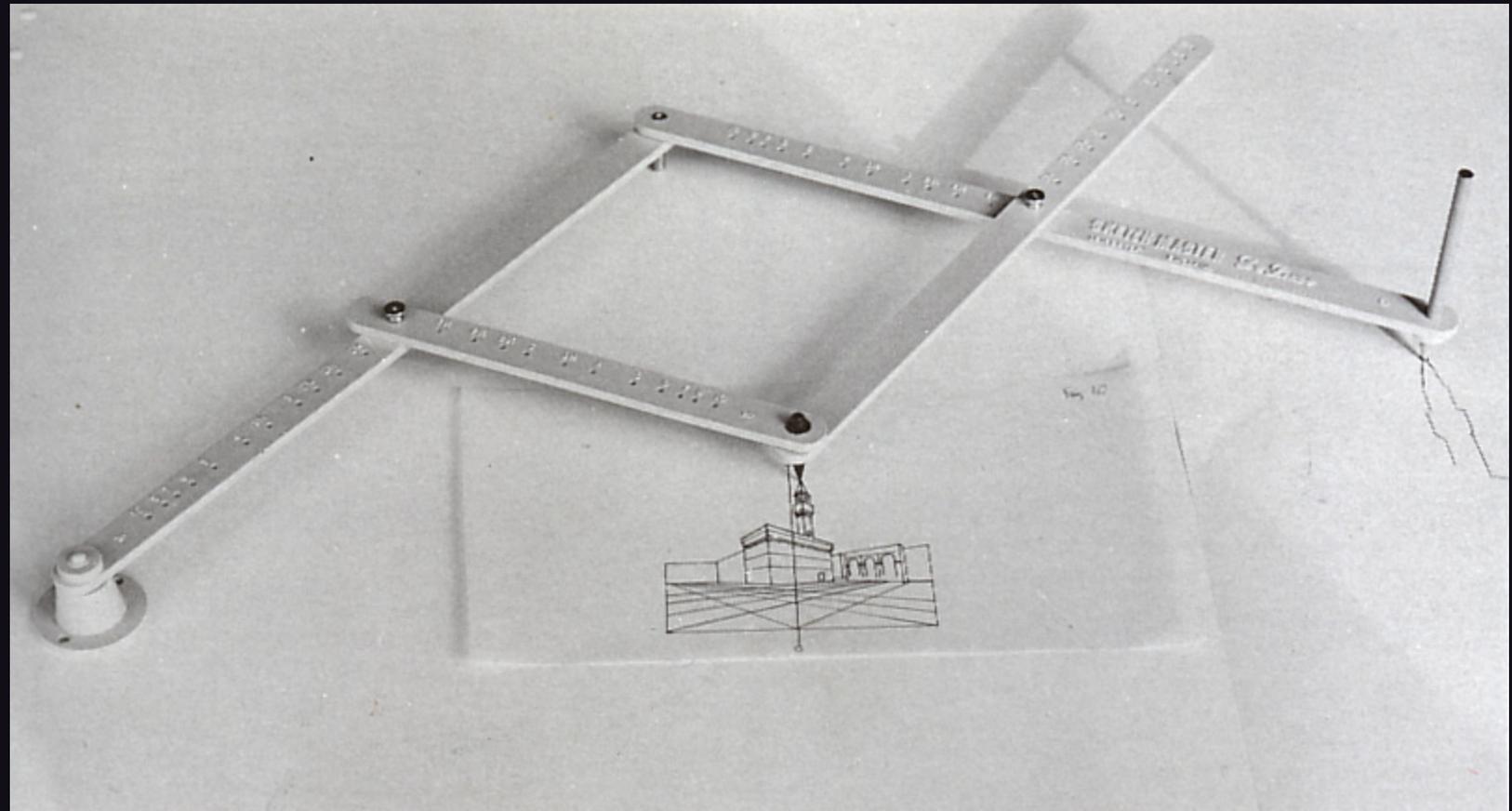
Dürer, ruling pen



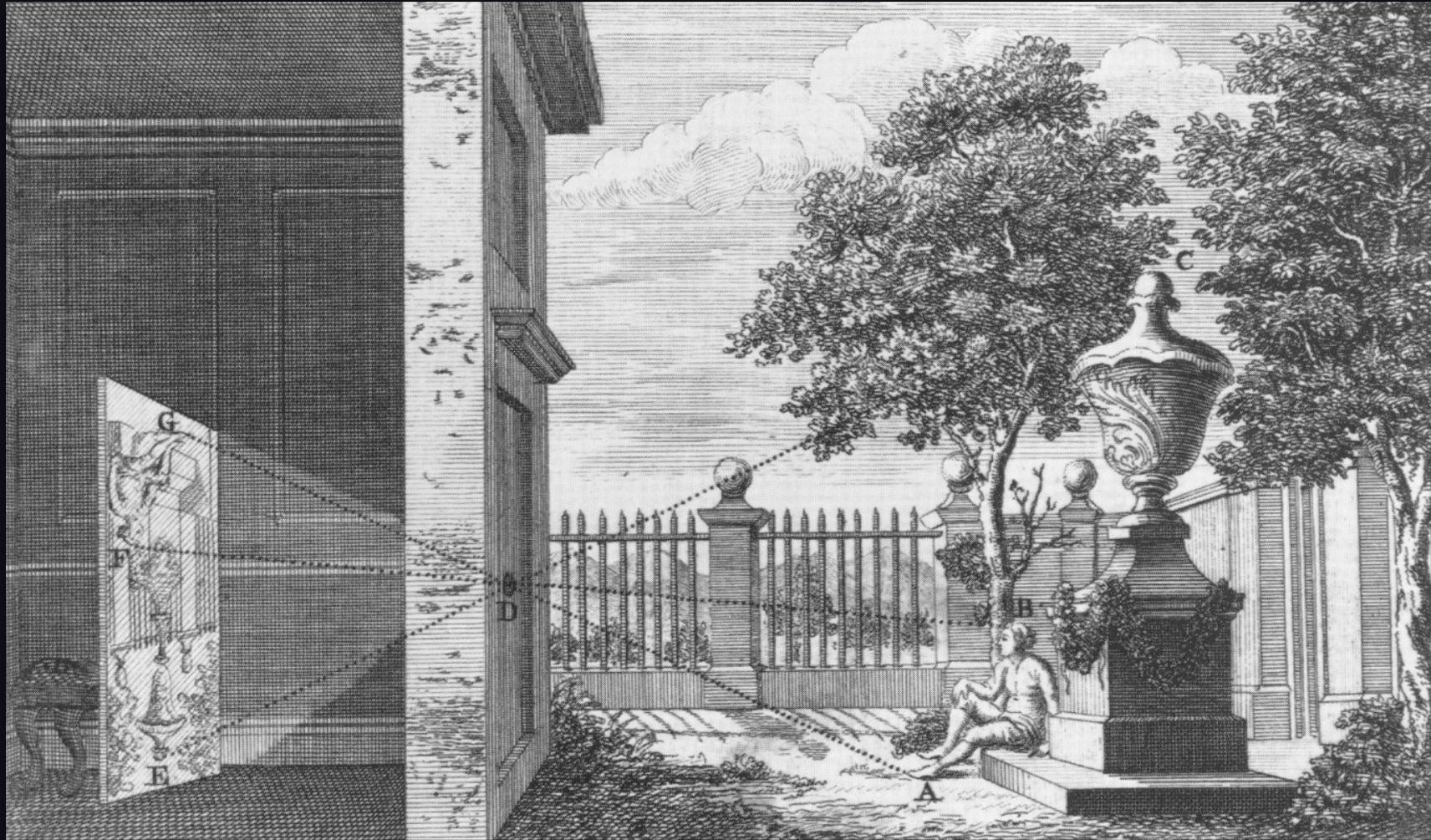
Scheiner's pantograph (1631)



Scheiner's pantograph (1631)

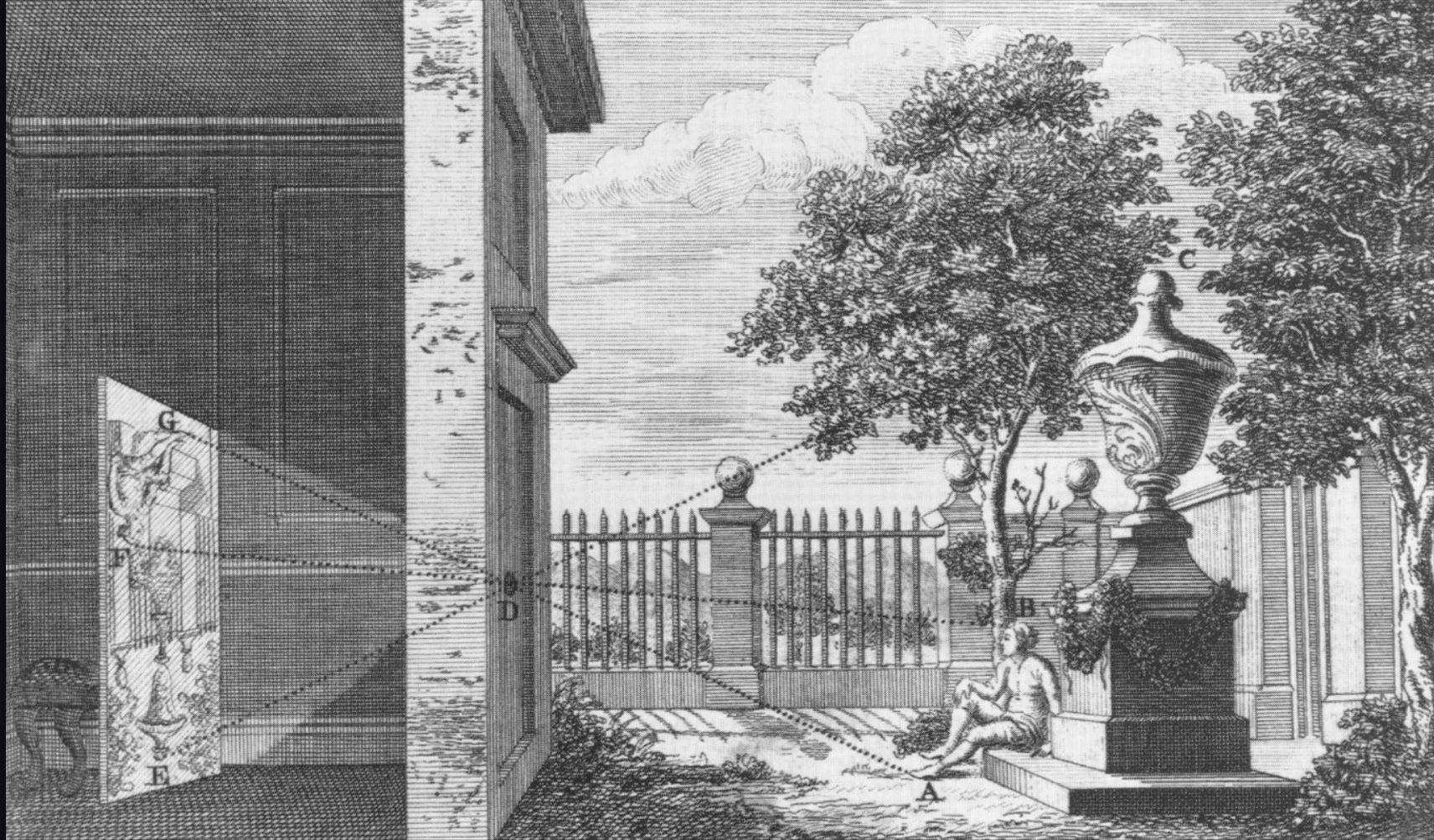


A modern pantograph for copying (and scaling) images



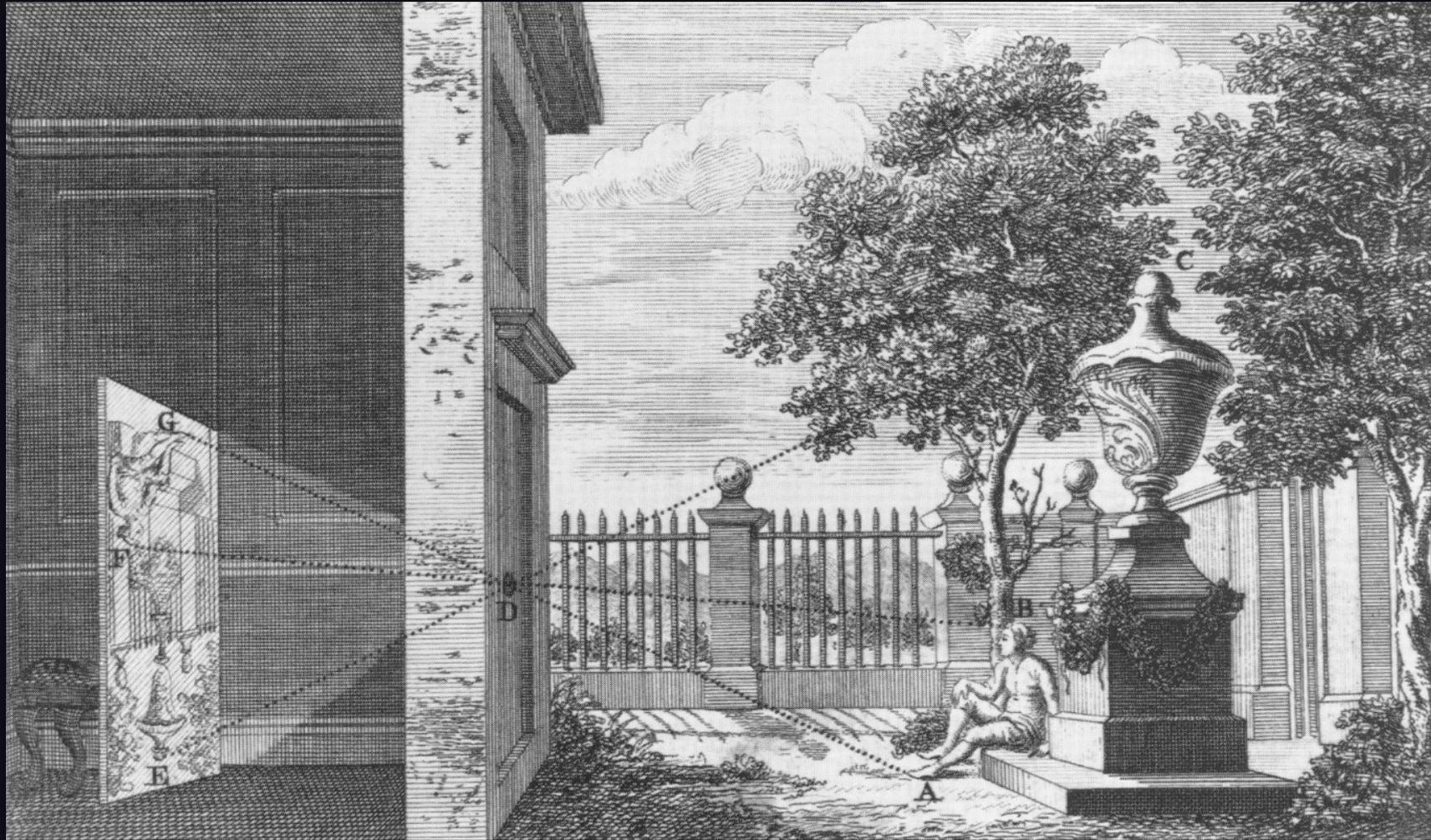
camera obscura



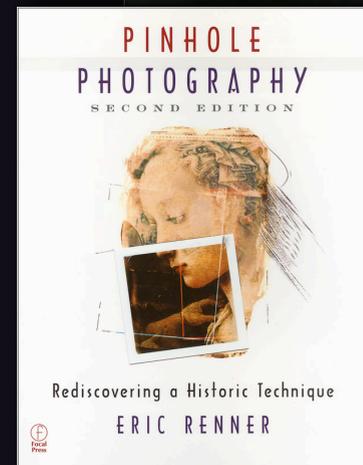


camera obscura

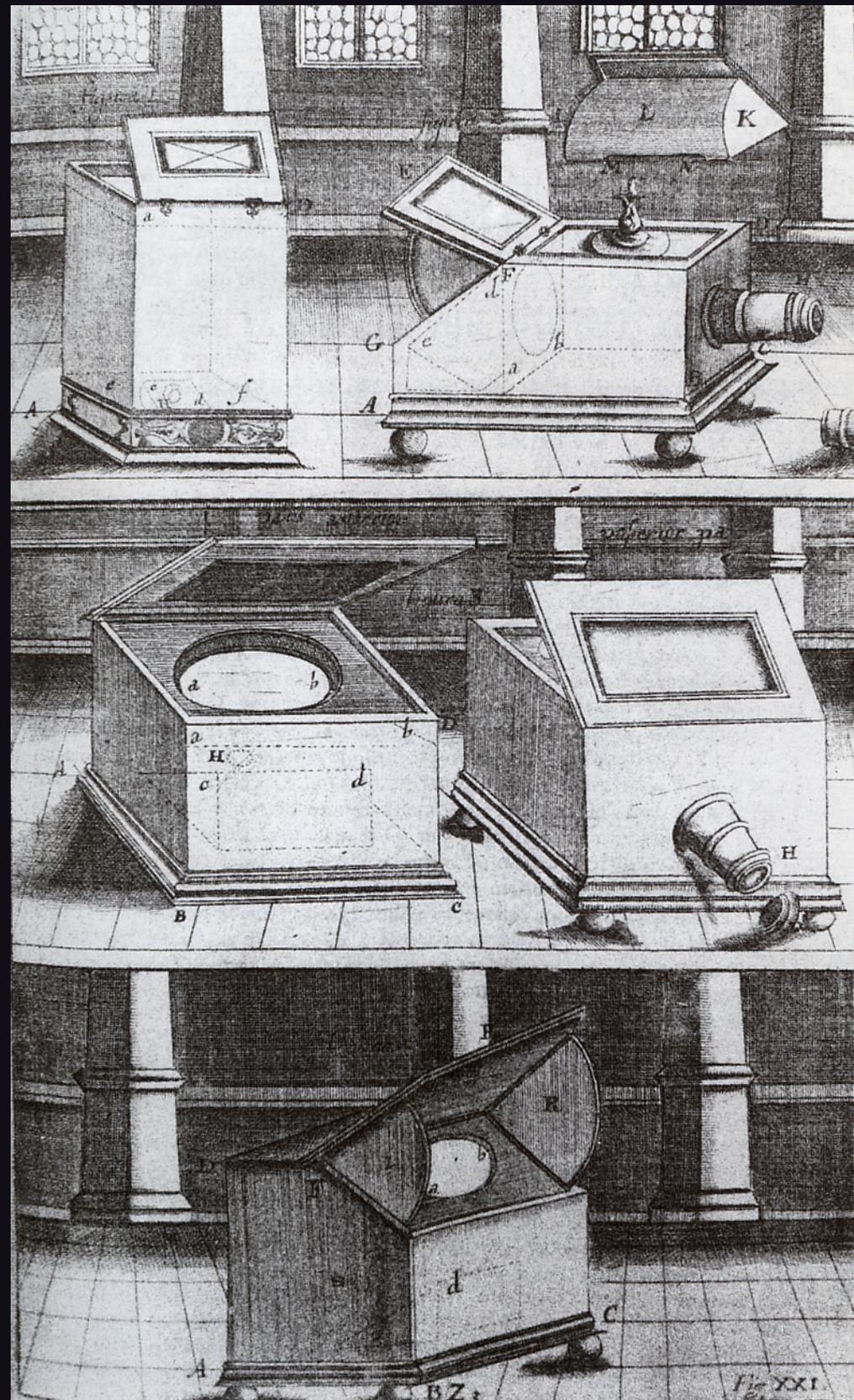




camera obscura



Zahn, *camera obscura*
with built-in lenses and
viewing screen (1685)





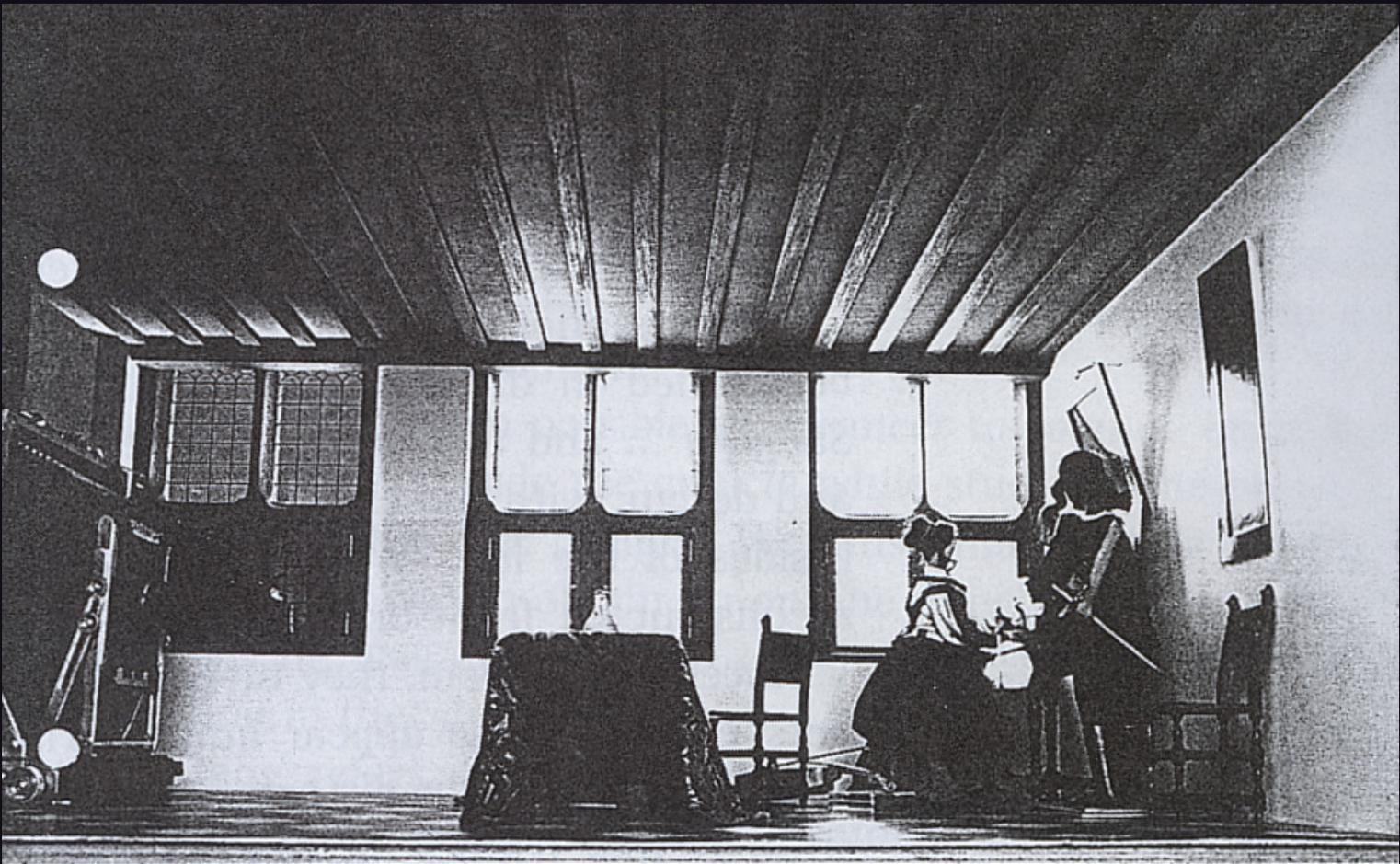
Vermeer, *The Music Lesson* (c. 1665)



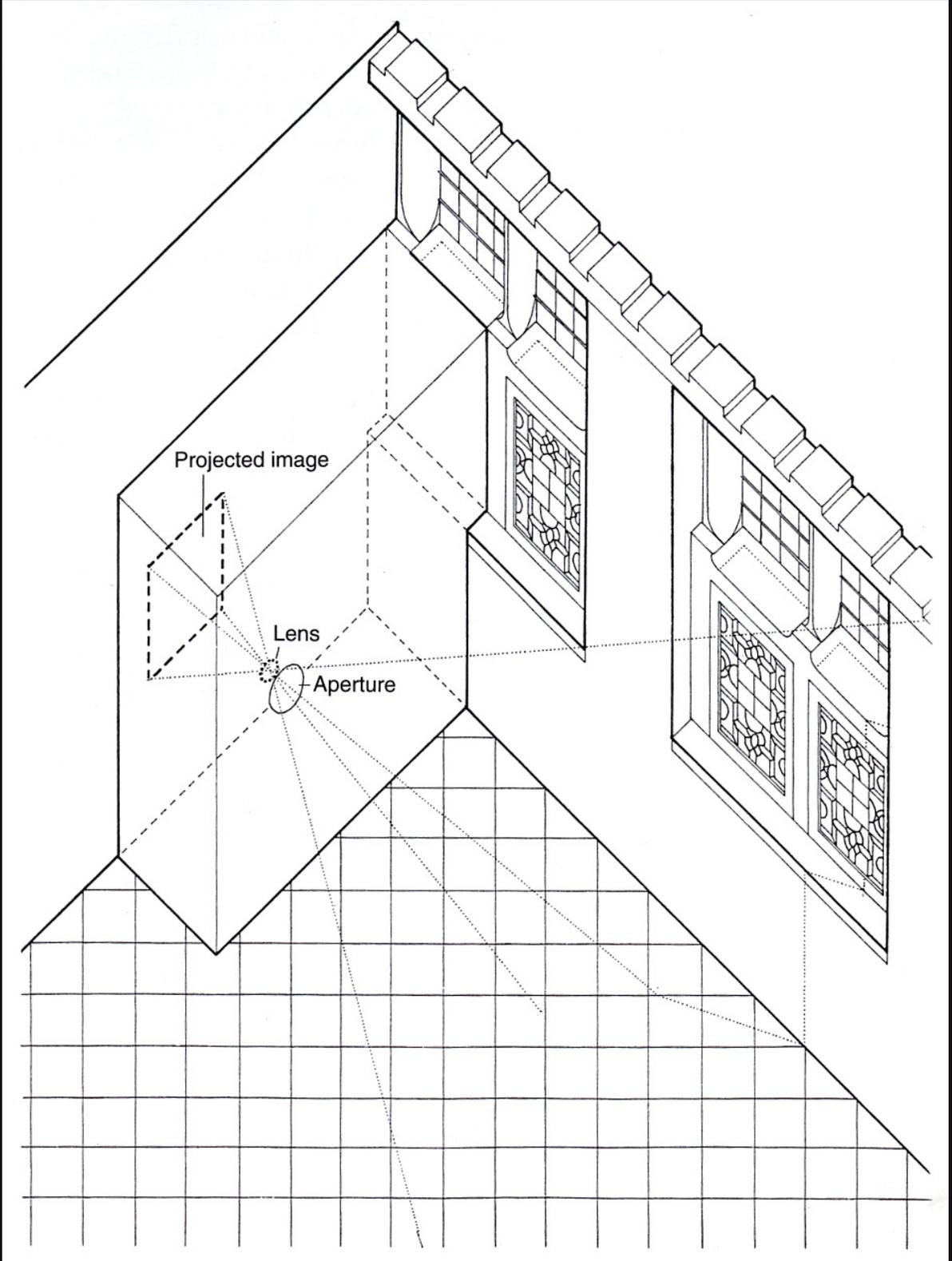
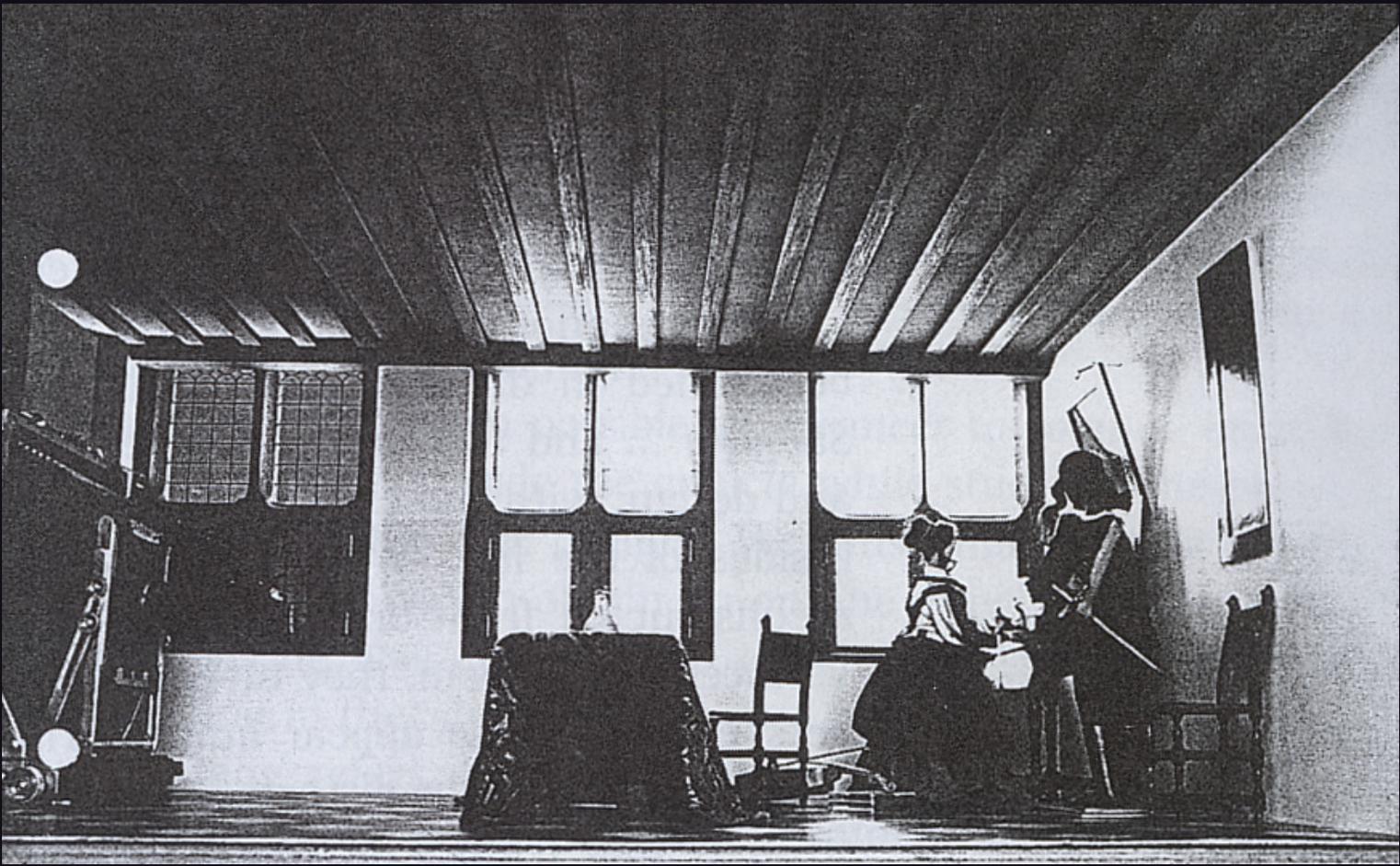
Vermeer, *The Music Lesson* (c. 1665)



Gregory, model of Vermeer's studio (1995)



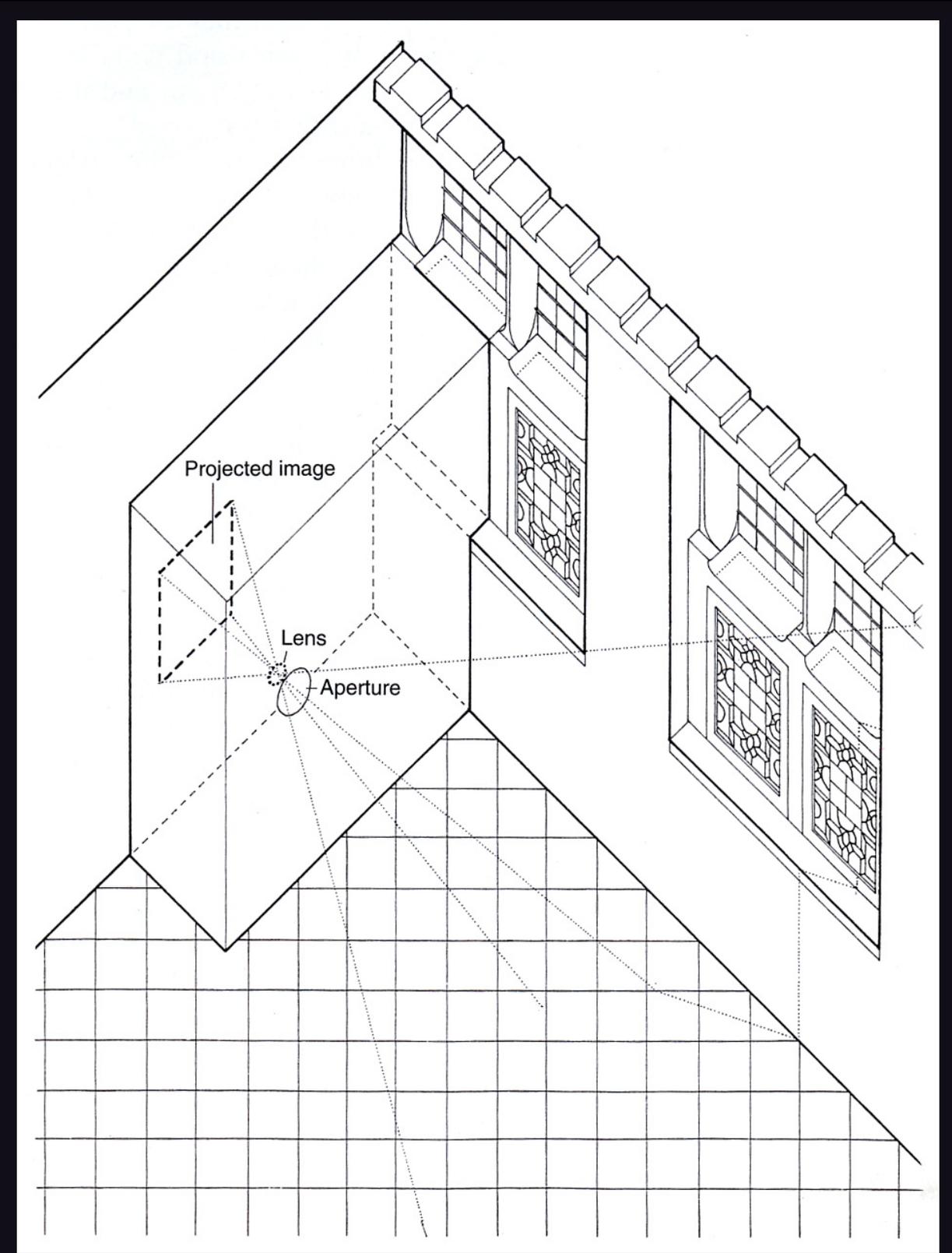
Gregory, model of Vermeer's studio (1995)



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Vermeer, *The Music Lesson* (c. 1665)



Gregory, model of Vermeer's studio (1995)



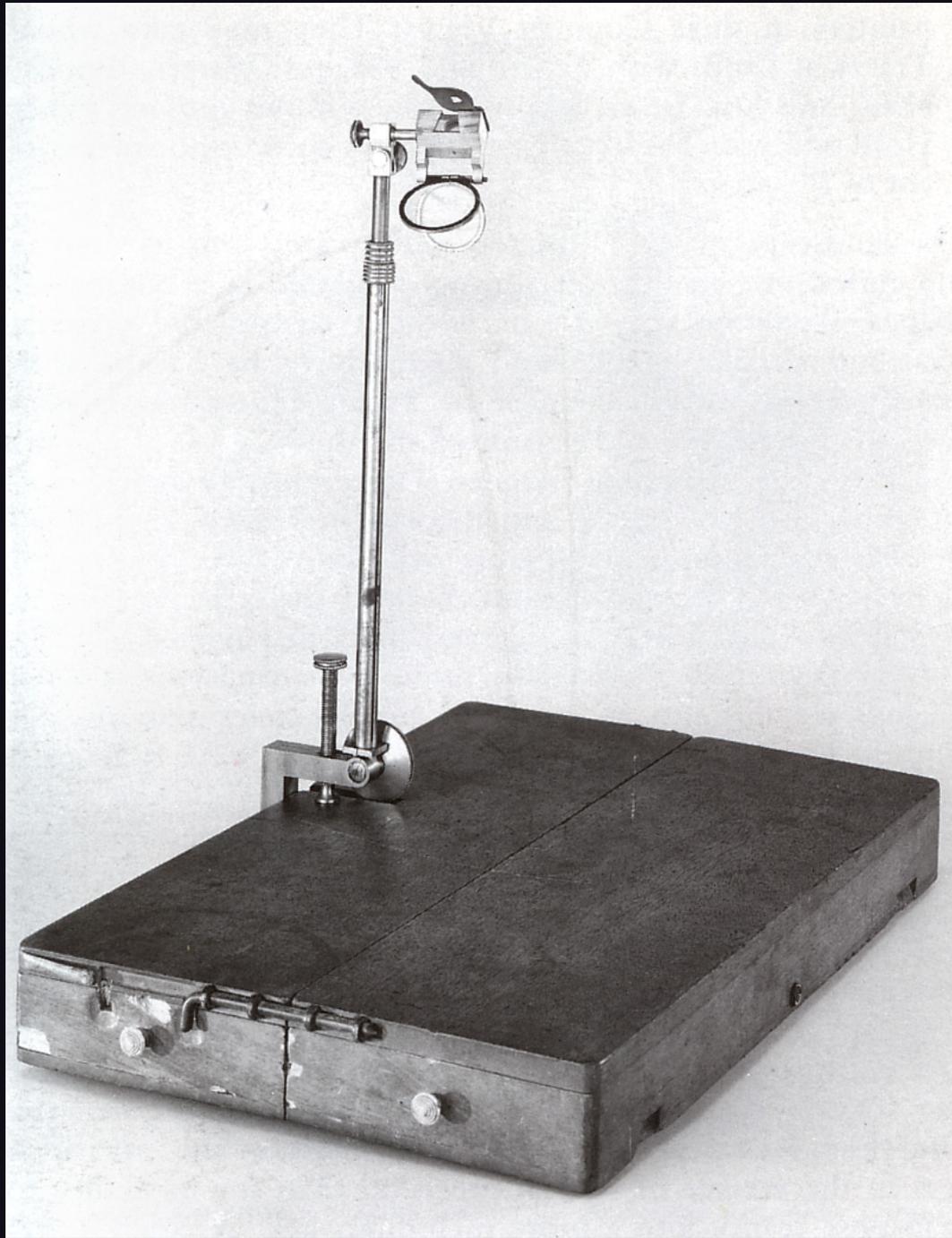
Canaletto (1697-1768), sketch of
Campo di SS Giovanni e Paolo



Basin of San Marco (1740)

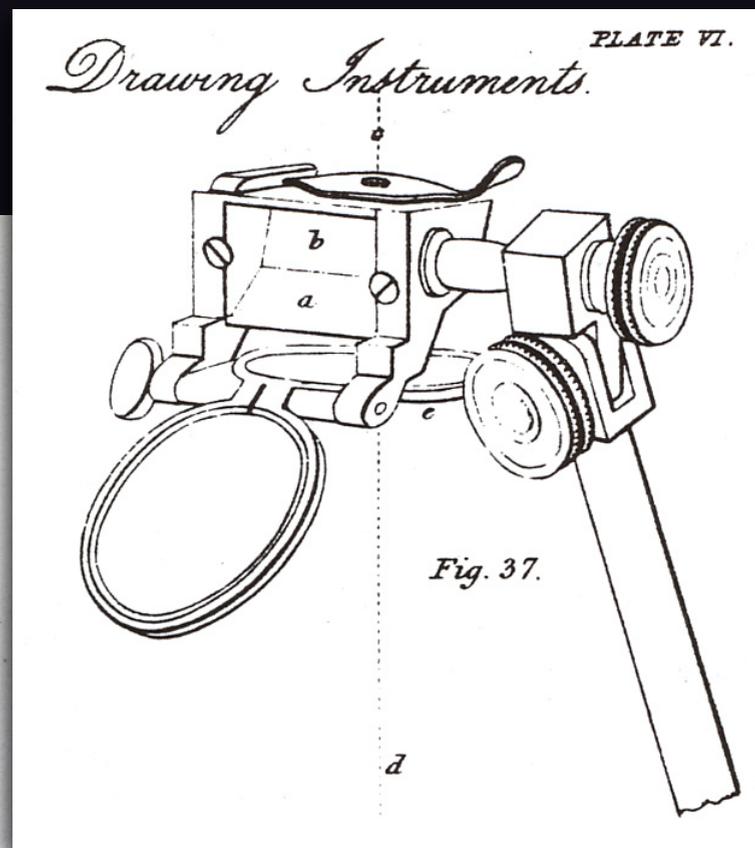
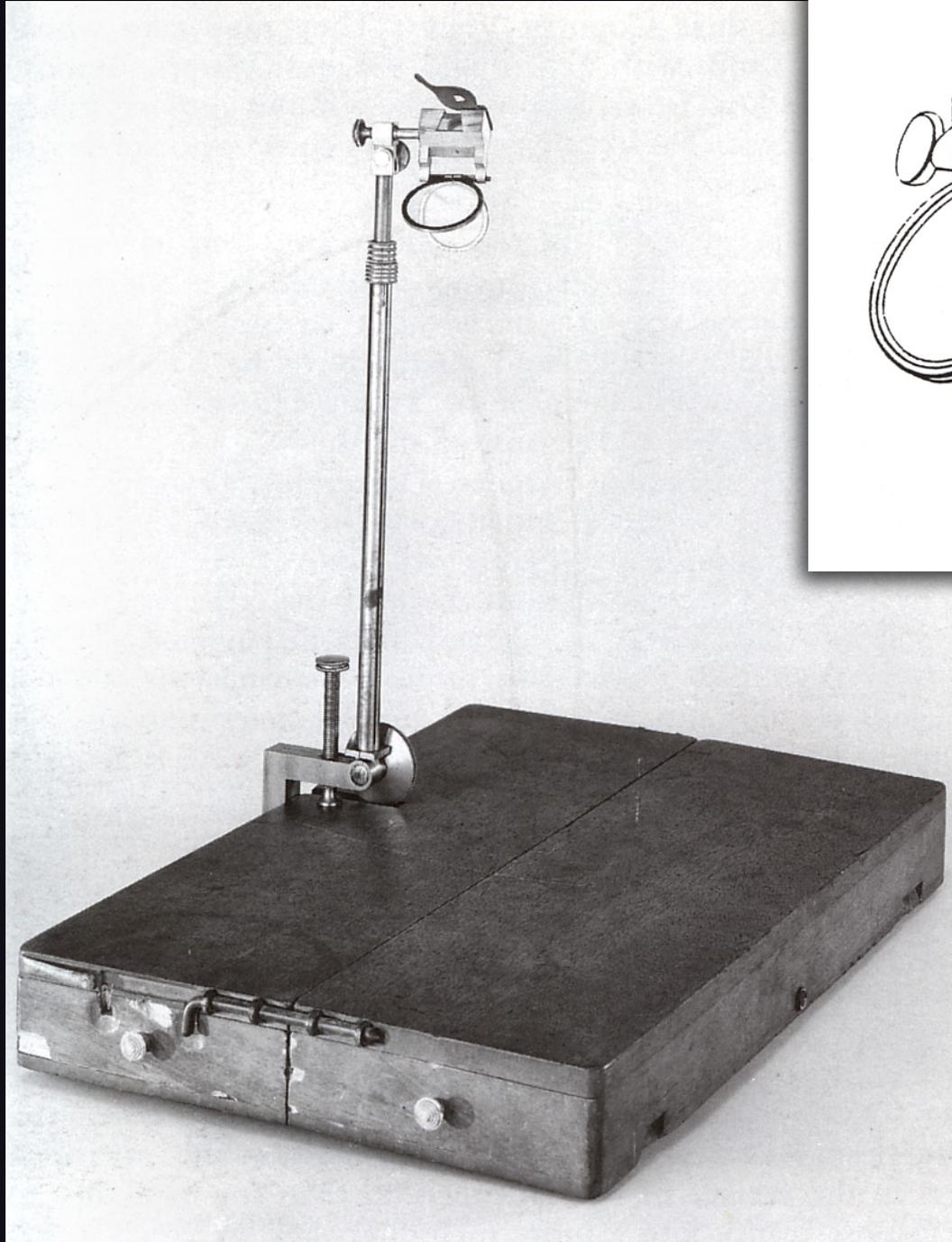


Canaletto (1697-1768), sketch of Campo di SS Giovanni e Paolo



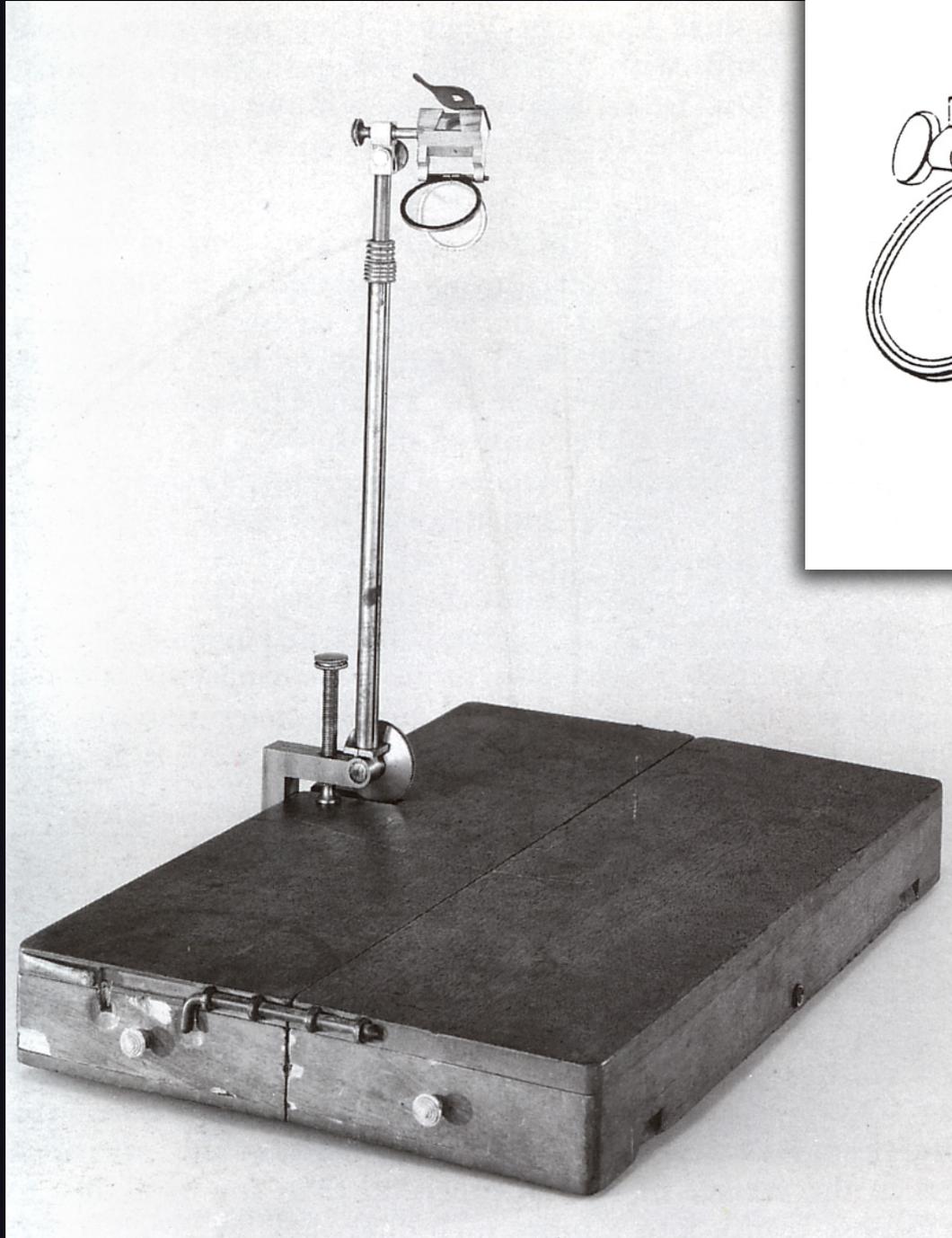
Wollaston, Camera Lucida (1806)

Varley, Camera Lucida

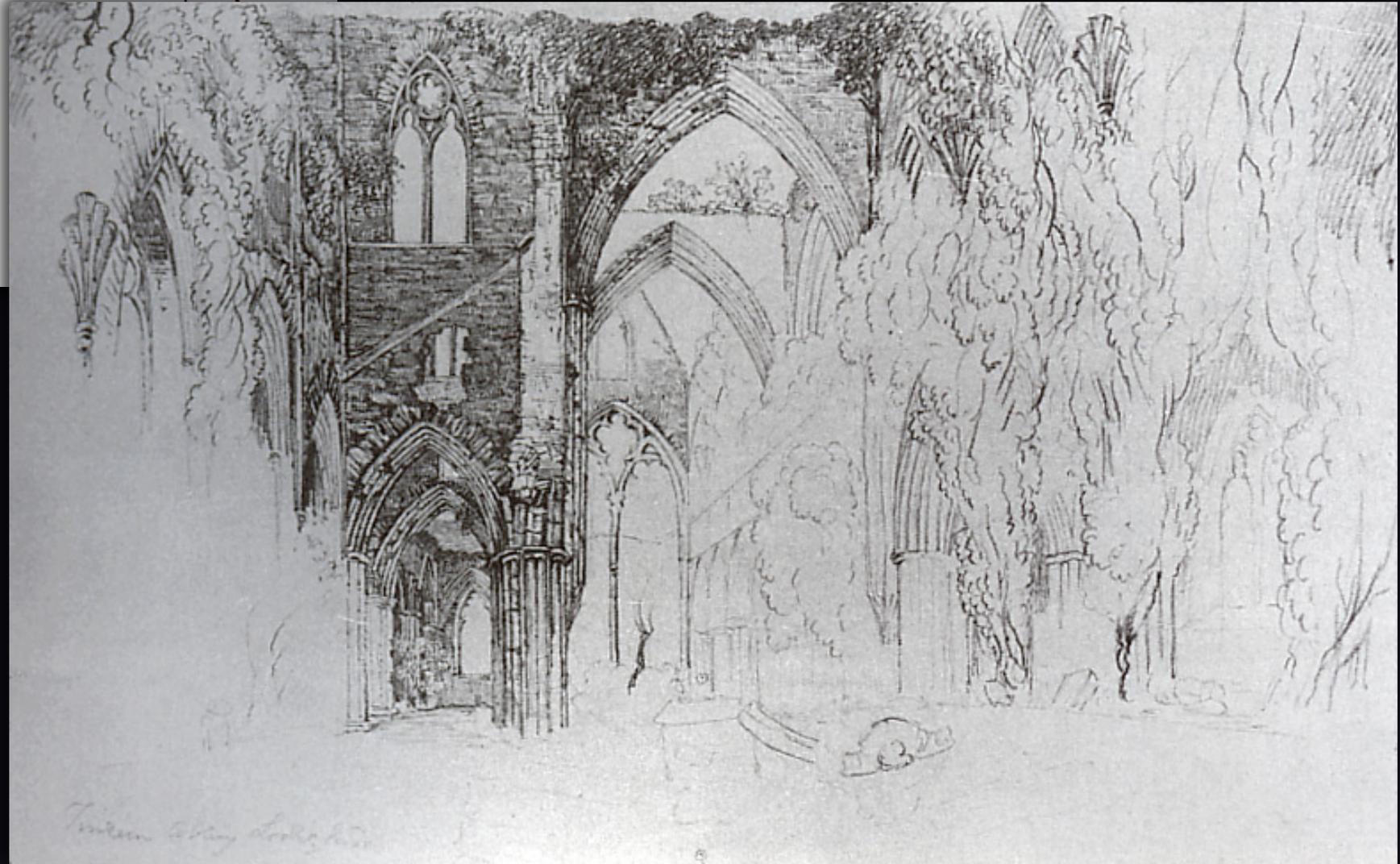
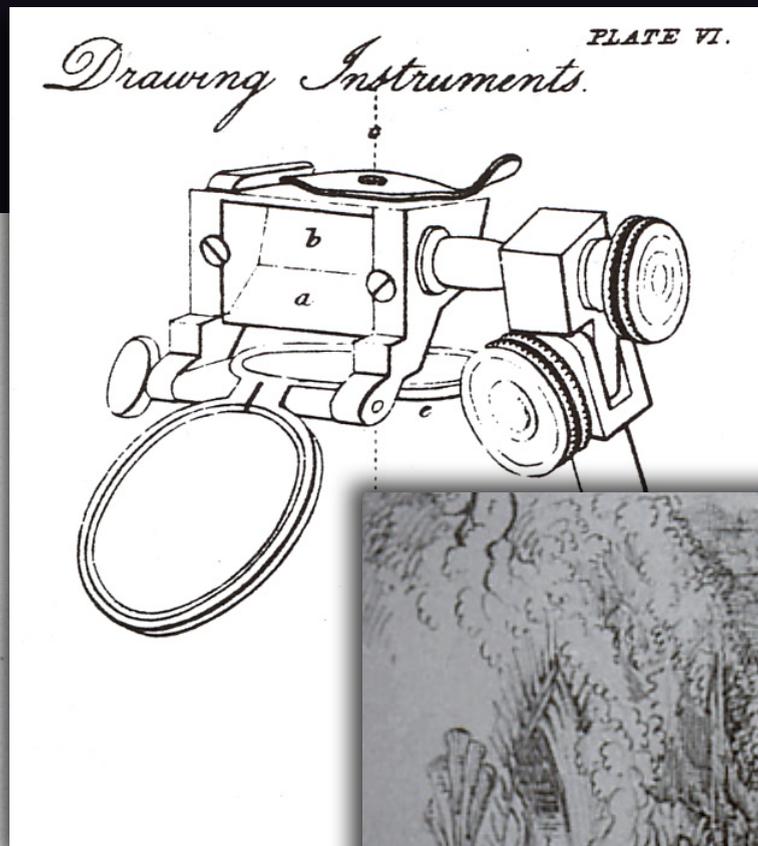


Wollaston, Camera Lucida (1806)

Varley, Camera Lucida



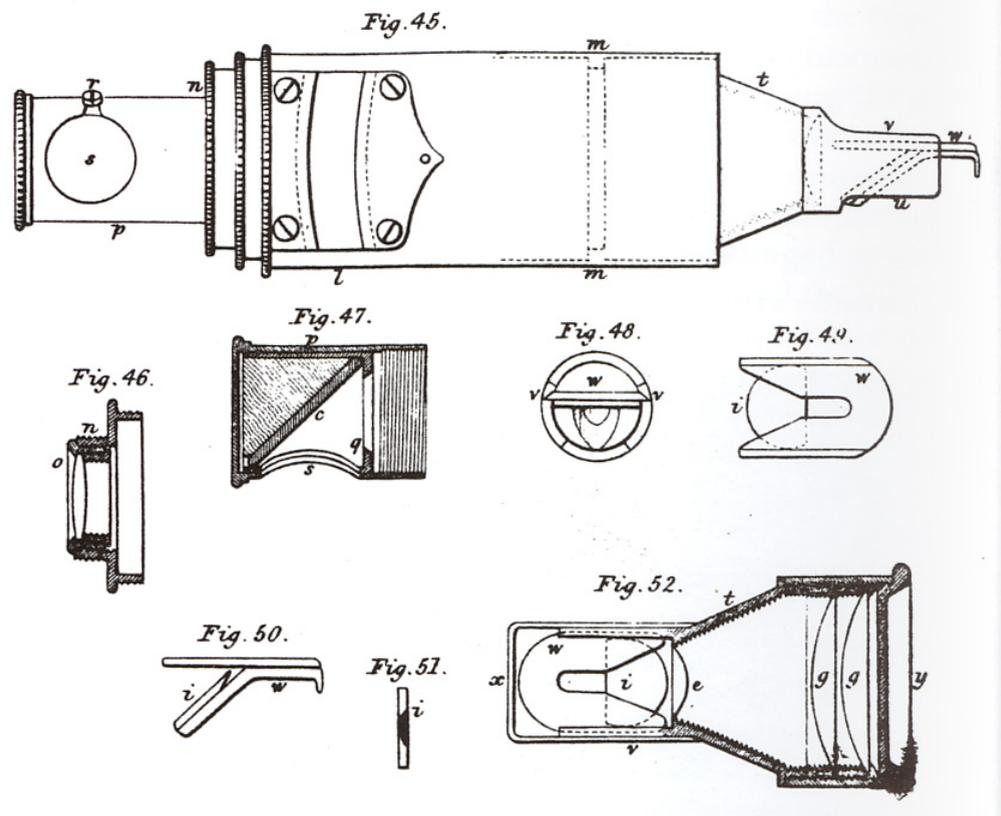
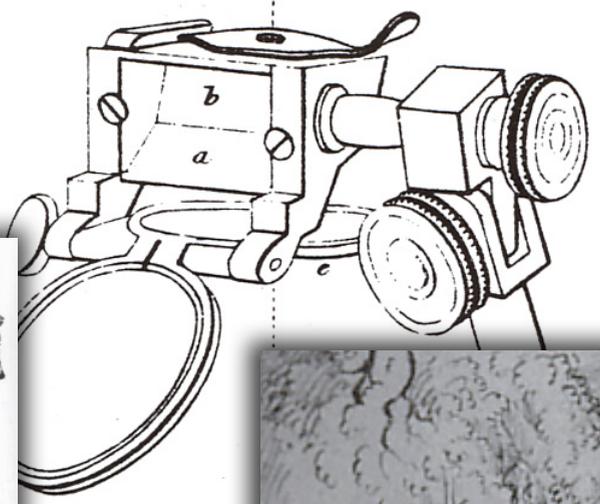
Wollaston, Camera Lucida (1806)



Herschel, Tintern Abbey Looking East (1829)

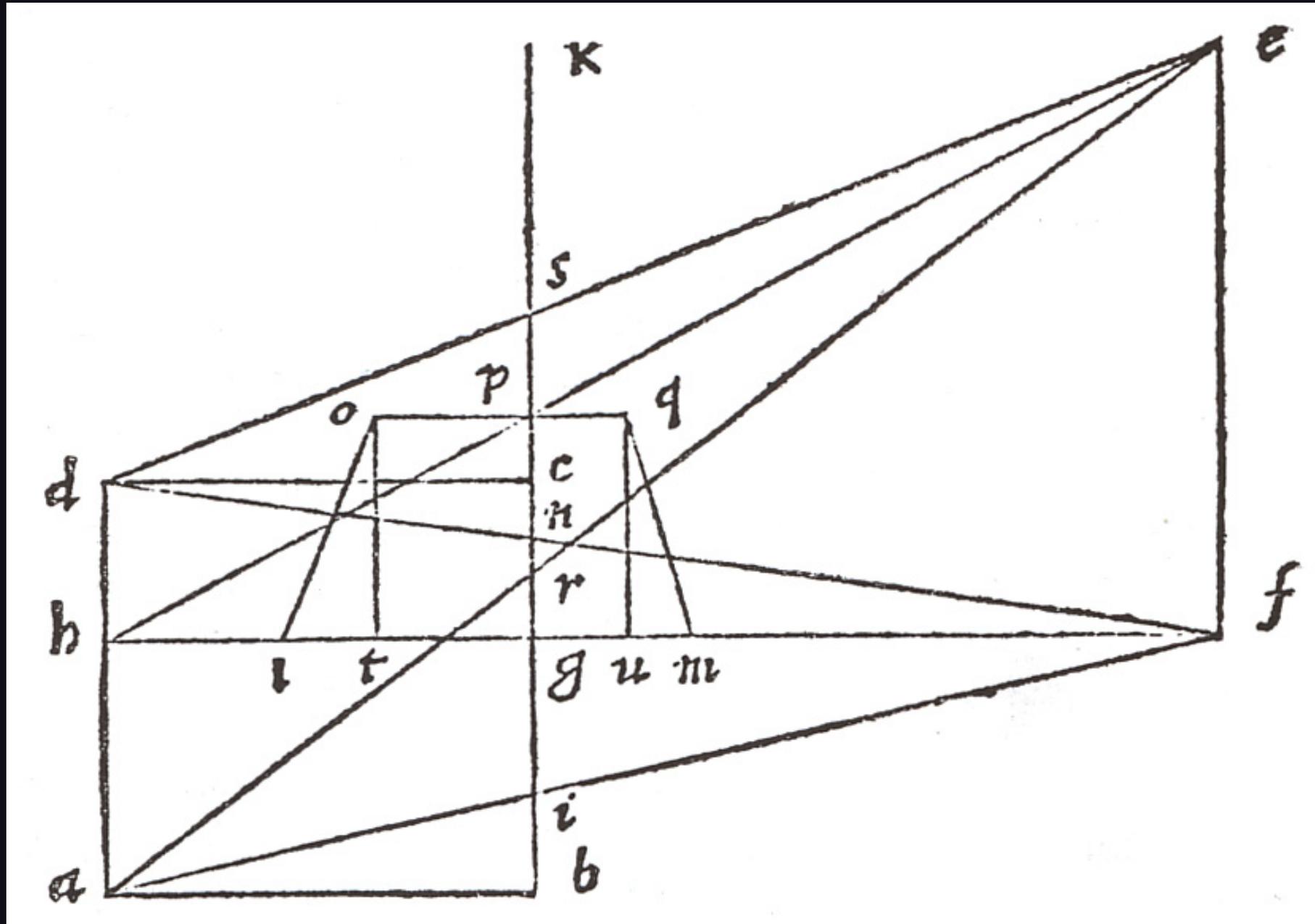
Varley, Camera Lucida

Drawing Instruments. PLATE VI.

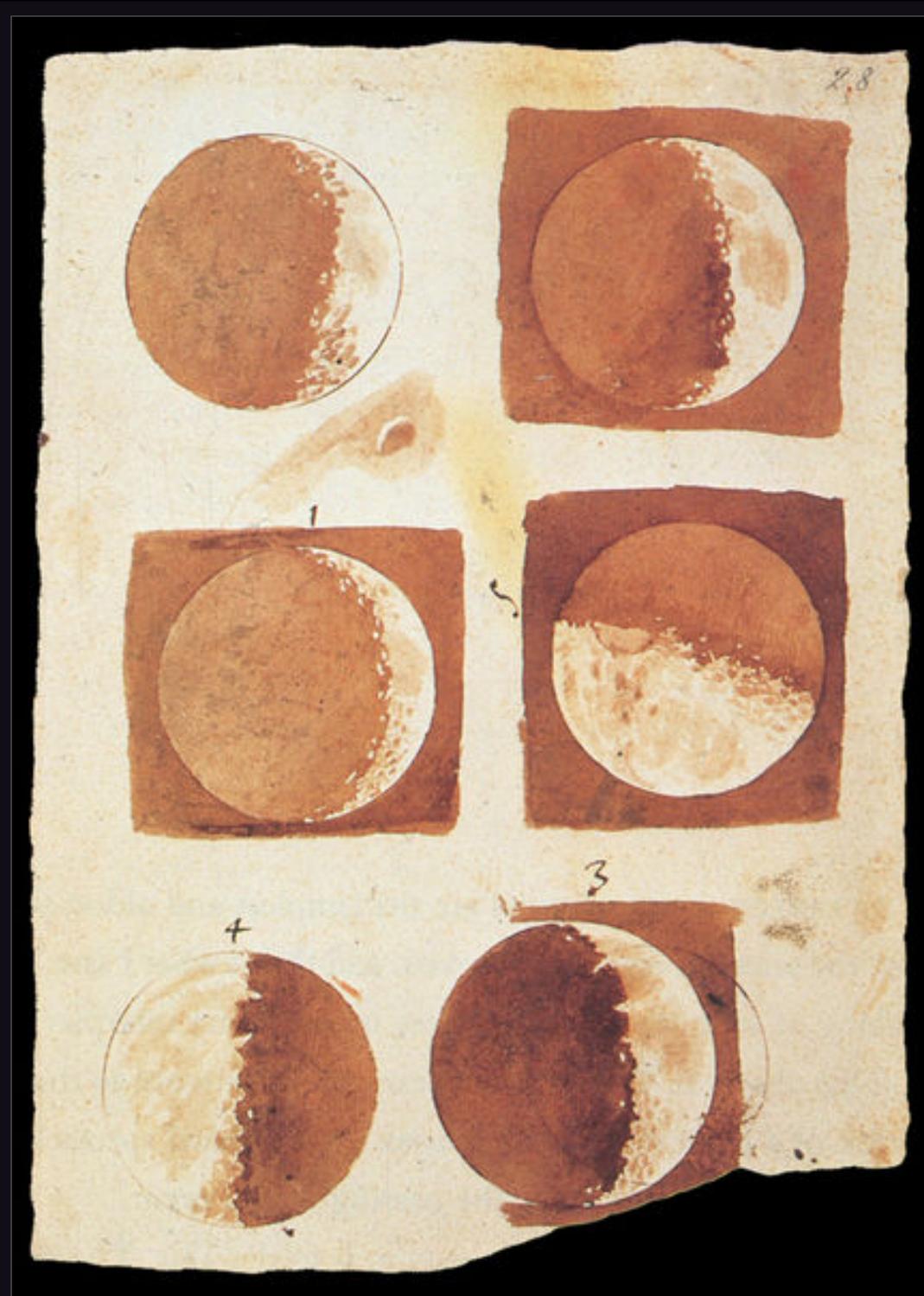


Varley, Graphic Telescope (1811)

Herschel, Tintern Abbey Looking East (1829)



Commandino, from treatise on perspective (1558)



Galileo, mountains on the moon as seen during different lunar phases (c. 1610)



Zuccaro, Palazzo Zuccari (1592)



Romano, Palazzo del Tè (1592)

Parmigianino
Madonna with the long neck
(1540)





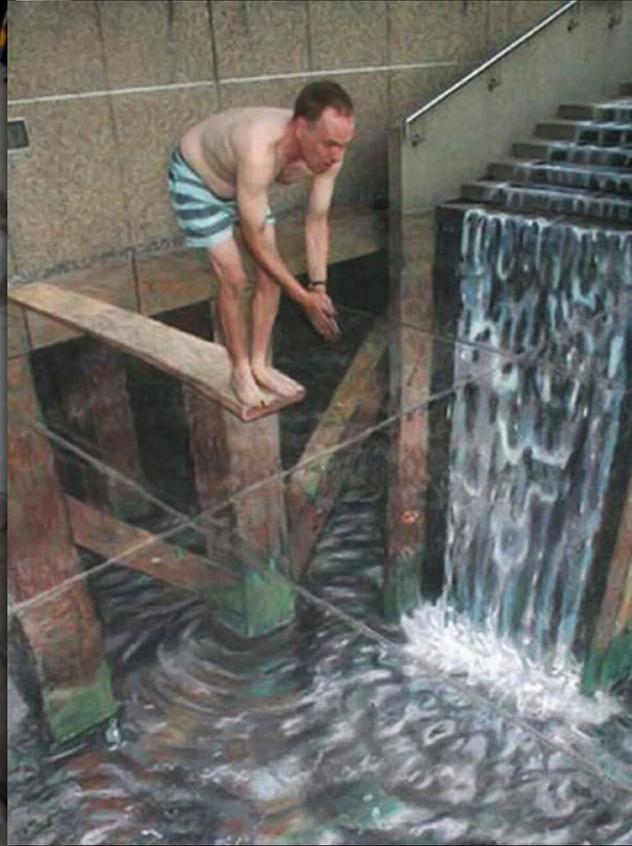
Peruzzi, Salone Delle Prospettive (1518)



Peruzzi, Salone Delle Prospettive (1518)



Julian Beever, sidewalk art



Julian Beever, sidewalk art



Julian Beever, sidewalk art



Julian Beever, sidewalk art

Hans Holbein
The Ambassadors
(1533)



Bernini
The Ecstasy of St. Teresa
(1652)

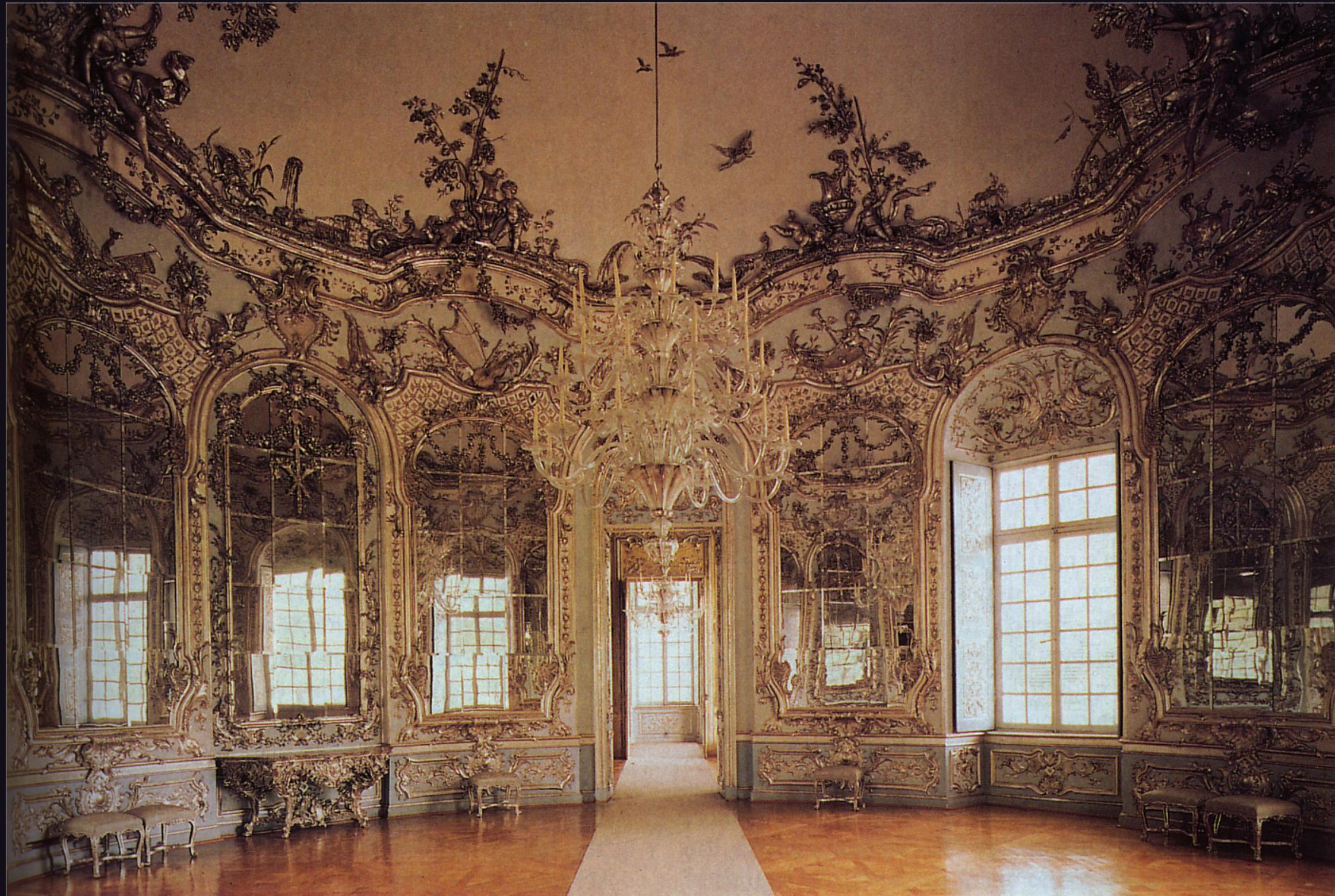


Rubens
sketch for Virgin and Child
(1628)

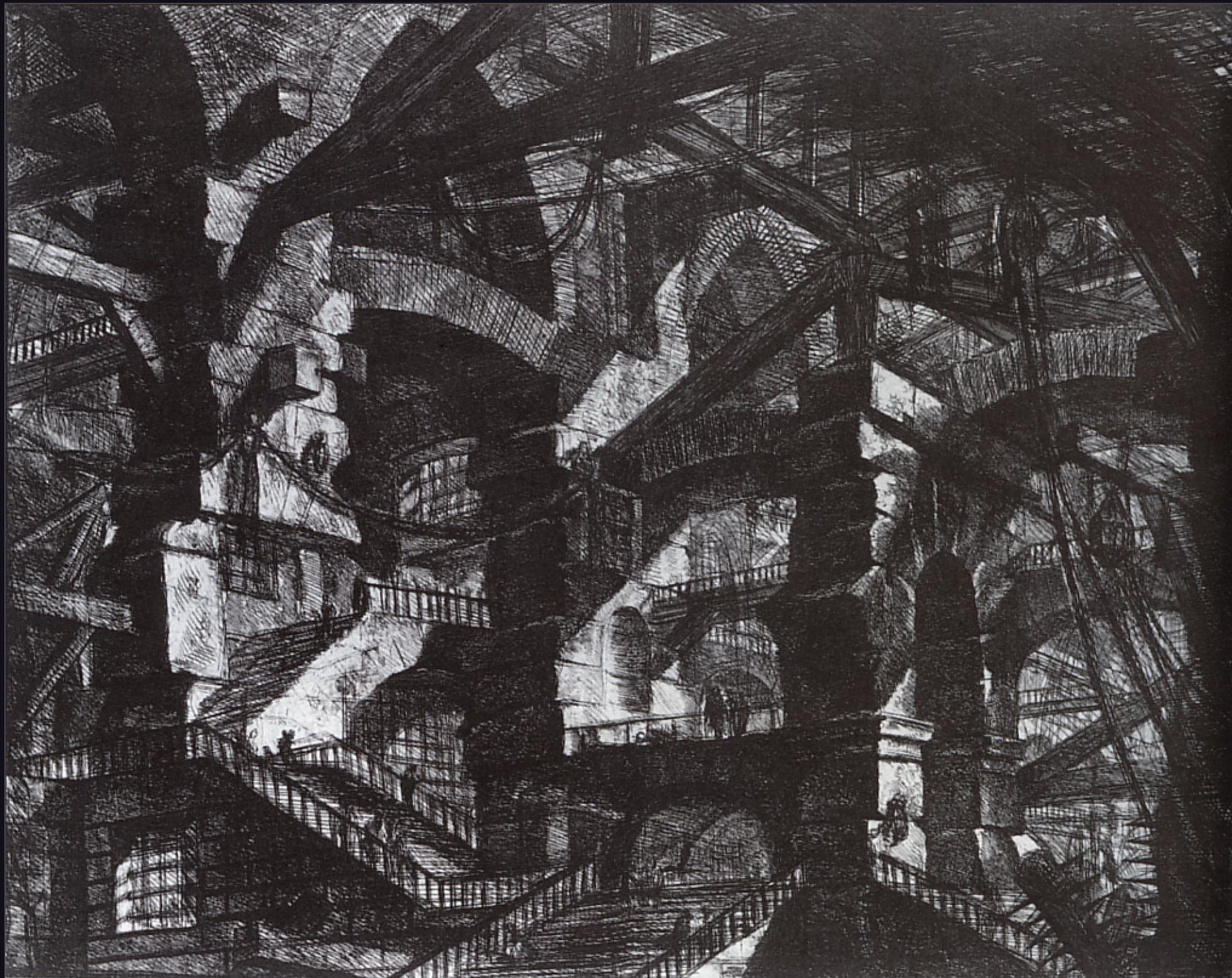


Gaulli
Worship of the
Holy Name of Jesus
(1683)





Francois de Cuvillies, The Amalienburg (1739)



Piranesi, Carceri (“prisons”) (1750)

Fragonard
The Swing
(1766)





David, Oath of the Horatii (1784)

