

# The mirror, the window, and Galileo's eye: how one lost Renaissance painting changed the way we see the world from sacred to secular

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**Abstract:** I'm writing a book tentatively called "The mirror, the window, and Galileo's eye: how one lost Renaissance painting changed the way we see the world from sacred to secular", offering new arguments as to why Brunelleschi employed the science of optics and especially the mirror in his first perspective Florentine Baptistery picture.

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I am currently preparing a new book [1], my third on the subject of linear perspective in the visual arts [2,3]. Five reasons have provoked this latest effort. The first is to make a clearer distinction between the medieval European science of optics, known in Latin as *perspectiva communis* (or *naturalis*), originally concerned only with the physiology of vision and the geometry of how light rays travel through various mediums; and linear (also aerial) perspective in painting, known in later Latin as *perspectiva artificialis*. Second, I want to demonstrate that the Latin word *perspectiva* (and all its vernacular variant spellings) meant only optics until very late in the fifteenth century; thus any documentary mention of that term between, say, 1413 and 1450, could only have referred to optics and never to painters' perspective or architectural views. Third, I will argue again (as in my first two books [2,3]) that Filippo Brunelleschi's first "perspective" demonstration was founded entirely upon the principles of medieval *perspectiva communis* and not on architectural drafting or surveyors' measuring techniques as have been frequently advocated. Furthermore, Brunelleschi's demonstrations surely took place around the year 1425, amply indicated by the construction methods of specific paintings and relief sculptures executed by Florentine artists close to that date (Masaccio's *Trinity* and Donatello's *Feast of Herod* relief, for example).

Fourth, and most important, I will propose that Brunelleschi was motivated to conduct his demonstrations not for the purpose of introducing more secular "realism" into Florentine painting, but for making religious imagery more accessible and thus more useful as a didactic instrument during a period when the Christian Church was in crisis. As I will show, Brunelleschi was quite inspired by the current teachings of Fra Antonino Pierozzi, his early friend and later archbishop of Florence, who consistently employed optical analogies in his preachings concerning Christian moral behavior, particularly about the spiritual meaning of mirror reflection (following Saint Paul's "through a glass darkly" passage in *Corinthians I*, 13:12): As Antonino himself wrote, "whatever can be naturally known about God, is manifested by means of [mirrors]" [4]. Brunelleschi, as we know, did use a mirror (flat, concave, or convex; it doesn't matter) to reflect the Baptistery image in his first painting demonstration, not just as a witty tour de force to enhance the viewer's excitement at his unprecedented pictorial "realism," but to reveal, as Antonino also stated, "...an image, as if a thought behind a likeness...just as [the prophets] see God or his divine mysteries behind the images and likenesses of sensible things"[4]. In other words, to make Florentine painting more than ever able to approximate God's divine reality, just as if it were optically reflected by a mirror directly from heaven to earth.

My fifth and final reason is to show how this original Christian incentive was ironically stood on its head as Brunelleschi's *perspectiva artificialis* was more and more co-opted for secular purposes, first for recreating classical (pagan) art forms by Leon Battista Alberti, and ultimately by Galileo Galilei to prove that "heaven" was actually a reflection of earth, not the other way around.

While many scholars agree that Filippo Brunelleschi derived his first linear perspective construction by applying the geometric principles of *perspectiva naturalis* (medieval optics), there is still much argument as to exactly how he applied these principles. Indeed, he may not even have traced his unique picture on an ordinary painted panel, but rather, as some scholars have suggested, directly on the surface of a flat mirror.

1. S. Y. Edgerton, *The mirror, the window, and Galileo's eye: how one lost Renaissance painting changed the way we see the world from sacred to secular*, in preparation.
2. S. Y. Edgerton, *The Renaissance rediscovery of linear perspective*, New York: Harper & Row, 1976, 206 p.; Munich: W. Fink Verlag, 2002 (German translation).
3. S. Y. Edgerton, *The heritage of Giotto's geometry: art and science on the eve of the scientific revolution*, Ithaca: Cornell University Press, 1991, 319 p.; Munich: W. Fink Verlag, 2004 (German translation).
4. Fra Antonino Pierozzi (Antoninus, Saint, Archbishop of Florence, 1389-1459), *Summa theologica*, 4 vols., Graz: Akademische Druck-u. Verlagsanstalt, 1959.