The Elephant in the Room: Simon Vouet's Catoptric Elephant, Originality, and the Magic of Optics

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Anamorphosis is a type of perspective used to construct images concealed within illegible lines and distorted forms.[1] Renaissance studies of linear perspective gave rise to experimentation with anamorphosis, which reached its peak of complexity and popularity in the mid-seventeenth century following the publication of several theoretical treatises.[2] Paired with didactic instructions, these treatises included guidelines for how to create images in catoptric (or mirror) anamorphosis. In this process, when reflected in a cylindrical or conical mirror, a warped image appears magically undistorted. These catoptric images were collected for *Kunst-und-Wunderkammern* as artificial curiosities, as well as for their demonstrative overlap between art, mathematics, and optical science.

An artist's ability to manipulate the rules of linear perspective displays their technical skill and knowledge of mathematics, for an anamorphic image is no longer a projection of geometrical space, but an inversion that makes the viewer aware of both the picture plane and the limits of perspectival illusion.[3] Anamorphic art requires a relationship between practice and theory (both artistic and mathematic); an artist must understand how to create a convincing projected geometrical illusion in order to render it in reverse, or in the case of catoptric or mirror anamorphosis, construct a distorted image to be reflected in a cylindrical or conical mirror while mindful of the laws of refraction.

A drawing by French artist Simon Vouet, one of the first known pictorial representations of catoptric anamorphosis, depicts eight satyrs in a sophisticated garden admiring the cylindrical anamorphosis of an elephant (Fig. 1); the garden, a recurring motif for instructional guides, identifies the setting as a place of learning. Not yet among the initiated, the satyrs' astonishment betrays them, revealing their lack of understanding of the catoptric effect. Vouet depicts the

variety of their reactions to the trick, ranging from bewilderment to joint efforts to explain the phenomenon.

German artist Hans Troschel engraved Vouet's drawing in 1627, most likely to function as part of a thesis print for a private academy in Rome (Fig. 2).[4] Above the wowed satyrs, Troschel added a banderole bearing the Latin inscription "Format et Illustrat," or "it takes form and enlightens," reinforcing the primitive satyrs' inability to understand the complex geometrical laws that govern the creation of anamorphic images. Their diverse responses to the deception emphasize both the role of catoptrics as "optical puzzles" that require active viewer engagement, and the spiritual enlightenment believed to result from the study of geometry and optics in the seventeenth century.

Historian of science Susana Gómez López's recent discussion of Vouet's design argues that the image was conceived as an erudite emblem for Prince Maurice of Savoy.[5] She further suggests that the drawing was instrumental in the development of optical study in France. While Gómez López's research forges links between Vouet and the learned circles of his colleagues, patrons, and friends in Rome, who likely debated current developments in optics, her analysis lacks engagement with Vouet's drawing, Troschel's subsequent engraving, and the frontispieces made for the anamorphic treatises written by Minim artist-mathematician Jean-François Niceron.

By situating Vouet's design within the context of contemporary catoptric images and the history of elephant iconography, I argue for an alternative to Gómez López's interpretation. The novelty of the cylindrical mirror paired with the rarity of the reflected elephant reinforces the status of catoptric images as examples of "natural magic," or evidence of the divine creative power of god. Derived from antique sources, the elephant was commonly associated with strength and wisdom, and served as a reminder of the capabilities of human intellect.[6] Vouet's

reflected elephant inspires wonder, but also the knowledge and moral integrity achievable by man when tempered with Catholic religiosity. Part of the world of illusionism in religious art, the catoptric transformation of Vouet's elephant from deformed and elongated drawing to naturalistically proportioned reflection serves as a metaphor for inexplicable divine mysteries and promoted sacred miracles in the wake of the Counter Reformation in Europe.

This paper will also consider issues of imitation and originality in catoptric anamorphosis ranging from Vouet's pictorial representation of cylindrical anamorphosis to functional anamorphic images. Going to great lengths to distort a correctly proportioned image in a complicated perspective dependent on geometrical laws demonstrates an artist's originality, in terms of their chosen anamorphic mode of representation, as well as their artistic skill and mastery of mathematics. Anamorphic images like Vouet's showcase a thoughtful interplay between the tangible and intangible, and rely on a seemingly miraculous "transformation" to make the anamorphic image legible.

From the Middle Ages through the sixteenth century, the mirror was considered a device that revealed the monstrous; what appeared naturalistic to the eye would become deformed when reflected in mirrors.[7] The seventeenth century reversed this sentiment through the development of catoptrics. The mirror became a medium in which a distorted print, drawing, or painted image would be "corrected" through refraction, turning anxieties produced by the deformed image into joy.[8] Presented with two images, the viewer must divide his or her attention between tangible image and immaterial reflection in order to perceive the illusion. Anamorphosis thus fuses the rational and irrational in a visual paradox, revealing to the viewer a reflected object that does not seem to exist in our reality.[9]

In an article examining the relationship between ugliness and beauty, Odeta Žukauskienė argues that anamorphic images produce an anxiety within the viewer.[10] In catoptrics, when presented with a semi-circular image stretching natural forms, the viewer is compelled to actively search for the singular viewpoint to find the naturalistically proportioned image in the mirror. Contemporary commentary records the initial anxieties of patrons confronting their deformed and elongated features in anamorphic portraits. In one example (now lost), French chronologist Jacques D'Auzoles Lapeyre wrote in his 1638 *Mercure Charitable* that Jean-François Niceron, then eighteen, made a portrait of him that "looks more like a monster than a man but the application of a cylinder on the indicated circle represents me so well and naturally that he very much resembles me."[11] Anxieties produced by the unnatural were relieved by the lifelike reflection.

Several contemporary texts and treatises attest to a scholarly and artistic interest in catoptric anamorphosis.[12] Neapolitan scholar, scientist and mathematician Giambattista della Porta mentions catoptric anamorphosis in his *Magae Naturalis (Natural Magic)* of 1558, but without instruction for how to achieve the effect.[13] Jean Louis de Vaulezard, a French knight, published the first guide for rendering objects in cylindrical and conical anamorphosis in Paris in 1630; the text was intended as a short instructional guide for his students.[14] Niceron wrote a more intensive instructional guide to anamorphosis, or what he describes as the "science of mirrors," in his *Curious Perspective* of 1638 and an expanded second edition, *Thaumaturgus Optica* published posthumously in 1646; copious illustrations accompany Niceron's instructive text, suggesting his acknowledgement of the difficulty of creating anamorphic images.[15] Each treatise on anamorphic perspective acknowledges the body, or embodied vision, in relation to the purely optical experience of sight.[16]

In a recent book, Lyle Massey argues that perspective theorists attempted to negotiate a relation between mind and body, challenging earlier scholarship that saw René Descartes' notion of the "mind's eye," or disembodied vision, as analogous with Renaissance theories of perspective.[17] Writers of anamorphic treatises were keenly aware of the body's role in the perception of optical tricks, and Vouet's *Elephant* reflects this consciousness. The naturalistic reflection of an elephant in the cylindrical mirror suggests that the viewer is placed at the predetermined viewpoint. Additionally, in functional cylindrical anamorphosis, the reflected image only exists when the viewer is present to perceive the illusion; as Massey argues, anamorphosis is rooted in lived experience.[18]

Associations between anamorphosis and Catholic theology developed throughout the seventeenth century as the Minim and Jesuit orders embraced the production and collection of anamorphic images and catoptric devices. Both invested in scholarly study, they considered mathematics to be a demonstration of the power of reason that allowed humanity to attain higher knowledge of the divine. The sudden transformation of pictorial forms guided by mathematical principles, from deformed to naturalistically proportioned, served as a metaphor for sacred truths, and such images were used as didactic tools in religious and academic institutions.[19]

A fresco designed and painted by Minim friar-mathematician Emanuel Maignan along a corridor wall in the Santa Trinità dei Monti in Rome serves as an example of an anamorphic image with an instructional function (Fig. 3). When not viewed from the prescribed vantage point, Maignan's anamorphic fresco of *St Francis of Paola* depicts the Minim founder in the center of a strange, mountainous landscape composed of undulating lines; the setting is populated with small figures and buildings, and represents St Francis of Paola performing one of his miracles as he glides across the Straits of Messina on his cloak.[20] As the viewer proceeds

down the hallway and reaches the predetermined viewpoint, the image morphs into a large fresco of the saint kneeling under a tree in prayer (Fig. 4). Jurgis Balstruaitis suggests that Maignan saw the "transformation" of one image into another as a parallel to the transformation of bread and wine into the body and blood of Christ during the sacrament of the Eucharist or transubstantiation.[21] He saw counterparts in other Biblical passages, especially episodes where a disguised Christ reveals himself to his followers—as in the Supper at Emmaus.

Maignan's work at the Santa Trinità dei Monti in Rome is a product of the intellectual activities of the Minim order, which intensified in the seventeenth century. Founded in Italy by Calabrian St Francis of Paola in 1453 and officially recognized by papal bull in 1493, the Minims abided by the virtues of austerity, meditation, and asceticism, and the Order quickly spread to France, Spain, and Germany.[22] Maignan, professor of mathematics and author of a treatise on sundials, devised his own method for transferring the large anamorphic image of *St Francis of Paola* onto the wall of the convent from a correctly proportioned, much smaller design.[23] Maignan's development of an original process for constructing images in planar anamorphosis circulated within the Minim order; the method was eventually used by Niceron to create his own anamorphic fresco of *St John the Evangelist on the Island of Patmos* and later recorded with detailed accompanying illustrations in the *Thaumaturgus Optica* (Fig. 5).[24]

Similarly, the optical experiments of German Jesuit polymath Athanasius Kircher attest to a link between the transformation initiated by catoptrics and the divine mysteries. British travelers on the Grand Tour recount guided visits to Kircher's collection of natural curiosities, antiquities, and optical devices at the Collegio Romano, the Jesuit headquarters in Rome (Fig. 6). Most describe the optical demonstrations as amusements, while others record their astonishment in Kircher's creation of "total environments."[25] Like the creation of anamorphic images,

Kircher's catoptric demonstrations were carefully constructed deceptions that exploit mathematical principles. In his *Ars Magna Sciendi* of 1669, Kircher describes a catoptric demonstration using a closed mirrored box filled with three different precious stones with a peephole in the center of its lid; when the viewer peered through the hole, they saw what appeared to be a trove of endless treasures.[26] In another carefully crafted deception, a figure of Christ, hidden behind a hydraulic device, was hung upside down before a concave mirror. When viewers approached, they saw the figurine reflected upright in the mirror as if suspended in mid-air; astonishment and bewilderment grew as viewers attempted to find the source of the optical trick.[27] Catoptric demonstrations like these were conceived as analogues to the mystical experience and revelations of otherwise disguised truths, and sought to reinforce their veracity.

During the seventeenth century, mathematics was used to enhance and extend the capabilities of vision in attempt to better understand the divine. In his *Magia Naturalis (Natural Magic)* of 1558, Giambattista della Porta describes catoptric anamorphosis as producing what appeared to be a miracle to the uninitiated viewer who does not understand geometry's role in creating the optical trick.[28] Vouet's *Elephant* follows this principle; the catoptric elephant delights and astonishes the unlearned satyrs through "natural magic," or the invisible, rational forces of geometry acting upon the anamorphic image to produce the illusion. To reinforce the transformative and extraordinary power of "natural magic," Vouet represents two perspectives: one that reflects reality in a standard spatial projection in linear perspective, while the other operates according to the laws of refraction. This format also challenges the viewer to determine which component is the work of art: the distorted drawing, the naturalistic reflection, or the performance of the catoptric effect.

Transformations caused by the nonphysical forces of "natural magic" are evident in contemporary depictions of anamorphosis. The frontispiece to the *Curious Perspective,* the first edition of Niceron's foundational treatise, depicts three major forms of anamorphosis (Fig. 7). At the right, a *putto* points to a grand cylindrical mirror reflecting a portrait of King Louis XIII from the distorted image circling its base. To the right, one *putto* instructs another to look through an optical device that creates a new image when directed at a carefully constructed design. Behind them, a *putto* looks up at a conical mirror situated at the top of a triumphal arch, which reflects an image circling its base; this conical device attached to the underside of the arch refers to Niceron's own ambitious suggestion to incorporate catoptrics into architectural designs.[29] The classicizing space suggests the ancient roots of optical study and its elevated status among contemporary intellectuals.

Curiously, the cylindrical mirrors represented in Vouet's *Elephant* and Niceron's frontispiece do not reflect the actual process of functional catoptric images. As typical in cylindrical anamorphosis, as seen in a circa 1640 example of a Crucifixion scene (Fig. 8), a wave appears above the reflected image. The pictorial representations of cylindrical anamorphosis hide this strange result of refraction, perhaps in an effort to exaggerate the perfection achievable through geometry. Similarly, the cylindrical mirror in Vouet's design does not capture the overlapping gestures of the shocked satyrs; the suspended reflection of the elephant is left uninterrupted, stressing the divine dimension of optical effects.

Vouet's introduction to catoptrics is undocumented, but Jacques Thuillier and other scholars suggest that the artist was introduced to Chinese examples of cylindrical anamorphosis when he visited the Ottoman court of Constantinople in 1613 to paint a portrait of Sultan Mustafa I.[30] Vouet likely developed his interest in catoptrics as he interacted with learned

patrons and their scholarly circles.[31] Living in Rome from 1614 to 1627 and recipient of a stipend from Louis XIII to study painting, Vouet built relationships with major collectors and intellectuals in Rome; these patrons included the pro-French Barberini, their secretary and founder of the Museo Cartaceo Cassiano dal Pozzo, and Cardinal Francesco Maria del Monte.[32] As Balstruaitis, Massey, and Gómez López argue, Vouet was undoubtedly aware of current scientific debates through exposure to these intellectual circles, especially Cassiano dal Pozzo, who in 1614 wrote of Vouet's frequent visits to his home.[33]

Evidence of Vouet's continued interest in the study of optics is found in the *Thaumaturgus Optica*, the second edition of Niceron's treatise published posthumously in Latin. Not only did Vouet design the frontispiece, but is described in Niceron's text as being well versed in the science of optics.[34]

Like the frontispiece for Niceron's *Curious Perspective,* Vouet's design for the *Thaumaturgus Optica* features innocent and impressionable *putti* diligently learning from and playing with a variety of optical devices (Fig. 9).[35] Two *putti* use a compass to carefully construct an anamorphic image to be reflected in the cylindrical mirror at the bottom right as a nearby *putto* directs a tubular device at a polyprism positioned atop a pedestal. An angel flying into the scene carries a portrait of Cardinal Mazarin, alluding to his support of optical study.[36] A classicizing statue above the colonnade holds an astrolabe to gage astronomical readings, while others situated within the arches below hold a compass and globe; the statue at the far right makes the relation between theology and optical science explicit as she looks heavenward to the source-less rays of light entering the scene from the upper left. In the traditional pose of modesty, she rests her right arm on her chest in deference, emphasizing god's creation of the natural world as the catalyst and foundation for optical study.

Both frontispieces cite Niceron's association with the Minim Order, whose support of optics is fictively inscribed above the triumphal arch in the *Curious Perspective* and along the front of a pediment in the *Thaumaturgus Optica*. As a friar, Niceron was active at the Minim convent of the Annunciation of Saint François de Paule near the Place Royale in Paris and later at the Santa Trinità dei Monti in Rome. He benefited from the scholarly network of Minim mathematicians, theologians, and philosophers, as well as the intellectual exchange between the convents in Paris and Rome, as facilitated by Minim friar and mathematician Marin Mersenne.[37] Additionally, the title *Thaumaturgus Optica* refers explicitly to both the study of optics and the Minim founder St Francis of Paola as a performer of miracles, linking optical tricks with sacred events.[38]

Anamorphic images give the artist an opportunity to display their originality in creating "double images" that extend the viewing experience to an oblique viewpoint, a reflection in a cylindrical mirror, or through the mediation of a lens. In the case of the tubular optical device, a polyprism is fitted within the tube to refract a carefully prepared image (Fig. 10). Niceron illustrates two examples in his *Thaumaturgus Optica*: one depicts twelve sultans that morph into a portrait of Louis XIII (known as conqueror of the Turks) when viewed with the device (Fig. 11), while another depicts Christ with fourteen popes that transforms into a portrait of Urban VIII (Fig. 12). As Niceron illustrates, fragmented passages from the original image of Christ and the surrounding popes come together, refracted through the particular shape of the polyprisim, to construct the portrait of Urban VIII. Balstruaitis and modern scientists who have recreated Niceron's device explain that when using these optical devices, the natural world is mediated and enhanced through the lens and refraction of the concealed polyprisim.[39] These devices and their corresponding images place great emphasis on the seemingly miraculous quality of

transformation, and Niceron's examples reinforce associations of the phenomenon with secular and spiritual authorities. The polyprisim facilitates the conversion of fragments into a whole image, reflecting the reality of Louis XIII as vanquisher of the Turks and Urban VIII as the leader of the Catholic faith, but through the means of miraculous illusionism.

Until Gómez López, scholars of Vouet and anamorphic art have neglected to address the artist's decision to reflect an elephant in the image's cylindrical mirror.[40] Gómez López argues that the design could refer to Prince Maurice of Savoy, whose emblem was, as described in a contemporary text, a "curved mirror in the form of a column."[41] Citing the elephant as an *impresa* worthy of kings, she notes that the animal was used as an emblem for another member of the House of Savoy, Emanuel Filiberto, who ruled as Duke of Savoy from 1553 to 1580.[42] Gómez López's argument is based on the description of the Prince's catoptric emblem, but also a 1621 letter from Vouet to Cassiano dal Pozzo that records the artist's desire to gain the favor of the Prince Cardinal of Savoy.[43]

Vouet's elephant, however, could broadly refer to a cultural interest in natural wonders. Identifiable as an Asian elephant due to its small ears and rounded back, the reflected animal recalls the many elephants that existed in recent historical memory, including the famous white elephant Hanno given to Pope Leo X by King Manuel I of Portugal in 1514. Elephants from faraway locations marched between European courts to enrich diplomatic encounters, and were often re-gifted as rulers became increasingly unwilling to pay the cost of maintaining them.[44] In some cases, individual owners exploited elephants as a source of traveling entertainment, and would host public visitations or circus shows in various cities.[45] In a recent article, Louise Rice notes that French painter Nicolas Poussin fulfilled Cassiano dal Pozzo's request to have a painted record of Don Diego, an Asian elephant who resided in the bottom level of the Palazzo Venezia

in 1630 (Fig. 13); the work, a history painting of Carthaginian general Hannibal crossing the alps on a warring elephant, was the result of Poussin's direct observation and careful study of the visiting creature. This pictorial record of Don Diego would have been seen within the context of Dal Pozzo's collection of paintings, as well as the many drawings after antiquities and *naturalia* in his Museo Cartaceo.[46]

Vouet's choice to represent the rare, elegantly garbed elephant as it takes form through the novel process of cylindrical anamorphosis reinforces the animal's role as a wonder of nature. The intangible appearance of the reflected elephant, created through the rational forces of geometry and refraction, astonishes the satyrs, stressing the miraculous nature and divine origin of optical effects.

The erudite subject of Vouet's design and its conflation of religious ideals, optical science and contemporary developments in natural philosophy would have been appropriate for a Roman thesis print. Thesis prints in the early modern period, as described by Susanna Berger and Louise Rice, record the doctoral defenses of students at Rome's many academic institutions and were distributed to audience members at the event.[47] In many cases only the images from thesis prints survive; text was commonly cut away in an effort to save the elaborate print. This is especially true for thesis prints produced during the 1620s and 1630s, a period when allegorical imagery and complicated heraldic conceits took precedence over explanatory text. The intellectual content of Vouet's design, especially in the engraving's addition of "format et illustrat" in the banderole hovering above the catoptric demonstration, suggests that optical science, a likely topic of study at Roman universities, would lead to spiritual enlightenment. The reflection of an elephant in the cylindrical mirror heightens this message.

The elephant, in its robust form, signifies religious and intellectual morality, as well as the endurance of faith. Pliny, Ovid, and Aristotle's descriptions of the elephant's moral superiority were repeated in medieval bestiaries,[48] and Cesare Ripa, in his *Iconologia*, includes the immovably faithful elephant as an attribute of the allegory of religion (Fig. 14). Ripa's entry for "*religione*" identifies the elephant as possessing "the rare qualities found in the noblest of beasts worthy of honors higher than those of Cardinaldom,"[49] while in a later passage on "*benignità*," he goes on to describe the elephant as inherently good in terms of its nature-given "prudent intellect and quasi-human sentiment."[50]

Cultural interest in the elephant's ability to inspire wonder is evident in many sixteenth and seventeenth-century table decorations, both stationary and moving automata, which feature the large creature precariously supporting a number of ornate objects and figures. In one design for an ivory table decoration by German artist Marcus Heiden in 1639, the elephant functions as the immovable support that stabilizes a series of vertical, fragile objects that culminate in a ship situated atop a globe held by Atlas (Fig. 15). The elephant bears the weight of the absurd structure in an almost unbelievable feat of strength and balance. Elephant automata also stress the animal's role as a natural wonder while also associating the elephant with foreign cultures. A sixteenth-century example from Augsburg depicts the elephant as caryatid, supporting a clock and two warriors: one playing drums above the creature's head and the other aiming an arrow with his bow in an ornate canopied tent (Fig. 16). When wound, the entire structure would move forward while the warrior released his arrow; the intricate mechanisms guiding the automaton's movement, as well as through the foreign elephant and warrior composing its form, sought to astonish viewers through artificial magic and novelty.

In his fundamental discussion of Bernini's elephant and obelisk commissioned by Alexander VII in 1667 for the Piazza della Minerva in Rome, William D. Heckscher traces the various iconographic and allegorical associations of the elephant from the Middle Ages through the seventeenth century (Fig. 17).[51] Bernini's elephant draws upon a number of sources, namely the popular "elephant with his castle" iconography, which depicts an elephant impressively supporting a decorative object or notable residence.[52] It also signifies the elephant as a moral allegory for intellectual and religious fortitude. The pagan obelisk, spiritually purified by Pope Alexander VII, becomes a marker of divine wisdom supported by the unbending faith represented by the great elephant. As Heckscher argues, these iconographic sources were particularly appropriate for a statue erected by the scholarly Alexander VII.[53]

Seen within the context of contemporary elephant iconography, Vouet's reflected elephant serves as an emblem of moral and intellectual strength tempered by faith. The suspended elephant, weightlessly reflected in a cylindrical mirror in the shape of an ancient column, is a symbol of enlightenment. Anamorphosis, in a sense, was the perfect analogue to what the Catholic Church and the various religious orders supporting it hoped to achieve: to advance, through great learning and science, the truths of the divine often distorted by irrational and subversive (for which read, Protestant) texts and ideas.

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[1] Hans Holbein's *Ambassadors* is the most well known example of a painting containing
[2] For an introduction to anamorphic art, see Jurgis Baltrušaitis, *Anamorphic Art* (Cambridge: Chadwyck-Healey, 1977), 11-36; and Lyle Massey, *Picturing Space, Displacing Bodies: Anamorphosis in Early Modern Theories of Perspective* (University Park: Penn Statue University Press, 2007), 1-8.
[3] Baltrušaitis, *Anamorphic Art*, 3-10.
[4] For an introduction to Jesuit thesis prints, see Louise Rice, "Jesuit Thesis Prints and the Festive Academic Defense at the Collegio Romano," in *The Jesuits: Cultures, Sciences, and the Arts, 1540-1773,* edited by Gauvin Alexander Bailey, T. Frank Kennedy, Steven J Harris, and John O'Malley (Toronto: University of Toronto Press, 2019).
[5] Gómez López, Susana, "The Encounter of the Emblematic Tradition with Optics: The Anamorphic Elephant of Simon Vouet," *Nuncius/Museo Galileo* 31, no. 2 (2016): 289-331.
[6] William S. Heckscher, "Bernini's Elephant and Obelisk," *The Art Bulletin* 29, no. 3 (1947): 174.
[7] Odeta Žukauskienė, "Orderly Ugliness, Anamorphosis and Visionary World: Jurgis Balrušaitis' Contribution to Art History." In *Ugliness: The Non-Beautiful in Art and Theory* (New York: I.B. Tauris, 2014): 191.
[8] Ibid., 213.
[9] For a concise introduction to anamorphosis, see Lillian H. Zirpolo, "Introduction," in *"The Most Noble of the Senses": Anamorphosis, Trompe-l'oeil, and other Optical Illusions in Early Modern Art,* ed. by Lilian H. Zirpolo (Ramsey, New Jersey: Zephyrus Scholarly Publications, 2016): vii-xxiv.
[10] Žukauskienė, "Orderly Ugliness, Anamorphosis and Visionary World," 201-03.
[11] Jacques d'Auzolles on Niceron from *Le Mercure charitable, ou Contre- Touche et souverain remède pour desempierrer le R. P. Petau, jésuite d'Orléans, depuis peu métamorphosé en fausse pierre-de-touche, par Jacques d'Auzoles Lapeyre. in-fol*., G. Alliot, Paris, 72-73. The full quotation in translation reads: "…very excellent spirit and very learned man (if then we were to call man, being only about eighteen years old) in all that depends on the optics; this kind spirit when the less I thought it was advisable to make my portrait the following figure, which seems rather a monster than a man, but applying a cylinder and putting it on the circle that is marked it represents me if naively well, more like." See Žukauskienė, "Orderly Ugliness, Anamorphosis and Visionary World," 213.
[12] For an overview of catoptric anamorphosis, see Baltrušaitis, *Anamorphic Art,* 131-158.
[13] Giovanni Battista Della Porta, *Della magia naturale* (Naples: C. Vitale, 1611), p. 627; see also Gómez López, "The Encounter of the Emblematic Tradition with Optics: The Anamorphic Elephant of Simon Vouet," 303.
[14] Baltrušaitis, *Anamorphic Art*, 150.
[15] Scientists note the difficulties of reconstructing images in planar anamorphosis, catoptric anamorphosis, and those made for an optical viewing tube. They relied on Niceron's instructional illustrations and accompanying text. See James L. Hunt and John Sharp, "The Refractive Anamorphic Viewer of J-F. Niceron: Reconstructing a 17th Century Optical Toy," *American Journal of Physics,* 79 (2011): 1023-1029.
[16] Massey, *Picturing Space, Displacing Bodies: Anamorphosis in Early Modern Theories of Perspective*, 23-36.

[17] Ibid., 1-3, 23-36. Alternatively, Baltrušaitis argues that anamorphosis was the counterpart to Cartesian distrust of the senses; see Baltrušaitis, *Anamorphic Art,* 61-70. Niceron and Descartes did not know each other personally, but the philosopher sent Niceron a copy of his *Principles of Philosophy* in 1644.
[18] Massey, *Picturing Space, Displacing Bodies: Anamorphosis in Early Modern Theories of Perspective*, 2.
[19] Baltrušaitis, *Anamorphic Art,* 37-60; and Massey, *Picturing Space, Displacing Bodies: Anamorphosis in Early Modern Theories of Perspective,* 95-109.
[20] Massey, *Picturing Space, Displacing Bodies: Anamorphosis in Early Modern Theories of Perspective,* 95-97.
[21] Baltrušaitis, *Anamorphic Art,* 50.
[22] Massey, *Picturing Space, Displacing Bodies: Anamorphosis in Early Modern Theories of Perspective*, 100.
[23] An explanation of how Maignan's method works is found in Barbara Maria Stafford, *Devices of Wonder: from the World in a Box to Images on a Screen* (Los Angeles: J. Paul Getty Museum, 2001): 235-252; see also Baltrušaitis, *Anamorphic Art,* 56-57.
[24] Niceron's anamorphic fresco of St John the Evangelist on the Island of Patmos of 1644 was destroyed when Napoleon invaded Rome.
[25] Marie Theres Stauffer, "Mirror Art: Early Modern Catoptric Devices in Books, Collections, and Demonstrations," in *"The Most Noble of the Senses": Anamorphosis, Trompe-l'oeil, and other Optical Illusions in Early Modern Art.* Edited by Lilian H. Zirpolo. Ramsey (New Jersey: Zephyrus Scholarly Publications, 2016): 73-77.
[26] Ibid., 72.
[27] Ibid., 80-84.
[28] Gómez López, "The Encounter of the Emblematic Tradition with Optics: The Anamorphic Elephant of Simon Vouet," 303.
[29] Baltrušaitis, *Anamorphic Art*, 150.
[30] Agostino De Rosa, "Jean-Francqois Niceron: Persepctive and Artificial Magic," *FME Transactions* 45, no. 2 (2017), 217; Gómez López, "The Encounter of the Emblematic Tradition with Optics: The Anamorphic Elephant of Simon Vouet," 297.
[31] Vouet was also named the Principe of the Accademia di San Luca in 1624 to replace Antiveduto Grammatica after dubious financial affairs. The Accademia's protector, Cardinal Francesca Maria del Monte, organized a plenary session on October 20, 1624 to elect a new Principe. See Gómez López, "The Encounter of the Emblematic Tradition with Optics: The Anamorphic Elephant of Simon Vouet," 297.
[32] Erich Schleier, "Les Commanditaires de Vouet à Rome," in *Simon Vouet: les Années Italiennes, 1613-1627*, ed. by Blandine Chavanne (Paris: Musée des Beaux Arts, 2008): 67-80; see also Rossella Vodret. "Simon Vouet, 1617: Una 'Buona Ventura' per Cassiano dal Pozzo," *Bollettino d'Arte* 6, no. 81 (1997): 89-94.
[33] Schleier "Les Commanditaires de Vouet a Rome," 67-68. Cassiano dal Pozzo lived near Vouet on the Vicolo della Croce, and attempted to amass an encyclopedic collection ranging from knowledge of ancient Rome to the wonders of nature. This endeavor put Cassiano into contact with other European intellectuals.
[34] Gómez López, "The Encounter of the Emblematic Tradition with Optics: The Anamorphic Elephant of Simon Vouet," 329.

[35] Florine Vital-Durand and Giuliano Ferretti, *Art et Langage: Les Frontispices Allégoriques de la Science à l'âge Classique (*Paris: L'Harmattan, 2012): 186-193.
[36] Ibid., 191.
[37] Ibid., 40, 100. See also Baltrušaitis, *Anamorphic Art*, 61.
[38] Fred Leeman, *Hidden Images: Games of Perception, Anamorphic Art, and Illusion from the Renaissance to the Present* (New York: H.N. Abrams, 1976), 108.
[39] Hunt and Sharp, "The Refractive Anamorphic Viewer of J-F. Niceron: Reconstructing a 17th Century Optical Toy," 1023-1029. Hunt and Sharp wrongly identify Louis XIII as Ferdinand I.
[40] Vouet scholars, Baltrušaitis, and Massey only mention the elephant in passing.
[41] This description of the emblem is recorded in a 1657 eulogy entitled "The Cylinder" written by Maurice of Savoy's associate Emanuele Tesauro in remembrance of the Prince. See Gómez López, "The Encounter of the Emblematic Tradition with Optics: The Anamorphic Elephant of Simon Vouet," 312.
[42] Ibid., 289, 307.
[43] Ibid., 315; Bottari, *Raccolta di Lettere sulla Pittura*, 332; Gómez López suggests that Vouet sent his design in the form of Troschel's engraved print to Maurice of Savoy, who was then living in Turin.
[44] Louise Rice, "Poussin's Elephant," *Renaissance Quarterly* 70, no. 2 (2017): 556.
[45] Ibid., 567.
[46] Ibid., 551; For the Museo Cartaceo, see Francis Haskell, *The Paper Museum of Cassiano dal Pozzo* (Ivrea: Olivetti, 1993).
[47] See Rice, "Jesuit Thesis Prints and the Festive Academic Defense at the Collegio Romano," 148-169; Rice, "Pietro da Cortona and the Roman Baroque Thesis Print," in *Pietro da Cortona: atti del convegno internazionale, Roma-Firenze, 12-15 novembre 1997* (Milan: Electa, 1998); Rice, " 'Pomis Sua Nomina Servant': The Emblematic Thesis Prints of the Roman Seminary." *Journal of the Warburg and Courtauld Institutes* 70 (2007): 195-246; and Susanna Berger, "The Invention of Wisdom in Jean Chéron's Illustrated Thesis Print." *Intellectual History Review* 24, no. 3 (2014): 343-366.
[48] Gómez López, "The Encounter of the Emblematic Tradition with Optics: The Anamorphic Elephant of Simon Vouet," 289.
[49] Ripa, *Iconologia*, 1603, p. 431; Heckscher, "Bernini's Elephant and Obelisk," 174.
[50] Heckscher, "Bernini's Elephant and Obelisk," p. 175, n. 106.
[51] Ibid., 155-182.
[52] One example from the seventeen century depicts a broad, unbelievably strong elephant supporting the weight of the Palazzo Ducale in Venice. See Heckscher, "Bernini's Elephant and Obelisk," fig. 25.
[53] Ibid., 177-180.