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**Lorenzo Ghiberti and Contested Views of *Perspectiva*
in Renaissance Concepts of Space**

Introduction

In this paper I will revisit the debates surrounding Lorenzo Ghiberti's approach to 'perspectivist' optics, with the aim of shedding new light on the complex intersections between the new developments in pictorial space and the traditions of Medieval optics in early fifteenth century Florence. My aim, however, is not to examine these influences in the context of the techniques and methods of pictorial construction, which have been done by others, but rather to consider broader cultural, artistic and theological issues underlying the relationships between *perspectivus naturalis* and *perspectivus artificialis*, that Ghiberti recognised and drew upon in his own work.

It seems evident, as Richard Krautheimer has argued, that Ghiberti made no clear distinction between optics and linear perspective in his approach to *perspectiva*, a position however that was not the result of ignorance - or some wilful attempt to conflate both - but rather reflected a particular artistic temperament and insight into the notion of 'embodied' vision, as I aim to demonstrate in this enquiry.¹ Accordingly, both aspects will be considered concurrently in Ghiberti's work as an artist and a theoretician, with particular focus on Ghiberti's Third Commentary (which formed a substantial part of his unfinished treatise) and his famous 'Gates of Paradise' project for Florence Baptistery.

The central premise of this investigation is that Ghiberti conceived a form of representation that was informed by Medieval studies of light and vision and the ground-breaking developments in linear perspective. In drawing influence from both, Ghiberti ultimately sought to forge a different conception of pictorial space from those of his contemporaries. This conception, moreover, was deeply influenced by the symbolic aspects of early fifteenth century Florentine sacred and civic spaces.

Contested Perspectives

In Hans Belting's recent book, *Florence & Baghdad: Renaissance Art and Arab Science*, the author argues that developments in linear perspective during the Renaissance were not subject to a

¹ R. Krautheimer and T. Krautheimer-Hess, *Lorenzo Ghiberti*, New Jersey 1990, 313: «This absence of a clear distinction between optics and perspective is also implied in Brunelleschi's famous perspective experiment outside Florence Cathedral, in which he attempted to convince onlookers of the convergence between seeing (nature) and seeing a picture (art)». H. Belting, *Florence & Baghdad: Renaissance Art and Arab Science*, Cambridge, Mass. 2011, 171.

unifying theory or principle, as some have perhaps assumed.² Belting's argument centres on what he sees as an underlying conflict between the 'codification' of perspective in Alberti's pioneering treatise, *della Pittura*, and Nicholas Cusanus' meditation on vision and its challenge to a perspectively ordered space. This is highlighted in Cusanus' *De Visione Dei* (The Vision of God), written sometime around 1453, about seventeen years after Alberti composed his treatise. In *della Pittura*, Alberti conceived the first theory of a geometry of pictorial space using a centric point principle, whose influences have been intensely debated.³ The implicit criticism of Cusanus to Alberti's 'pictorial invention' concerns the underlying premise that the «perspective gaze detaches itself from the body ... in the sense that it enters the picture». Belting argues that this position gives rise to an unprecedented dominance of the observing subject "that people attributed to God's relationship with the world."⁴

This is in sharp contrast to Cusanus' meditation on vision which serves as a kind of theological instruction on how to approach a painting of the suffering Christ, and thereby share the religious experience of seeing and being seen by God. Importantly, Cusanus sent a copy of his treatise to the Abbey of Tegernsee in southern Germany, along with an icon of Christ which was intended to form the focus of his 'experiment'. In the preamble to the text, addressed to the Abbot and Brothers of Tegernsee, Cusanus states:

by means of a very simple and commonplace method I will attempt to lead you experientially into the most sacred darkness. While you abide there, feeling the presence of the inaccessible light, each of you, in the measure granted him by God, will of himself endeavour to draw continuously nearer and in this place to foretaste, by a most delicious sampling, that feast of eternal happiness to which we have been calling in the World of Life through the Gospel of the ever blessed Christ⁵.

In this preamble we get an initial insight into Cusanus's principle of seeing as a reaffirmation of self-presence, through the eyes of fellow monks and ultimately of God; a relationship that lay at the heart of Medieval religious life as Dallas Denery has demonstrated in his seminal text *Seeing and Being Seen in the Later Medieval World*⁶. At the same time, Cusanus' description of «sacred darkness», and the «feeling....of the inaccessible light», evokes the hidden presence of God earlier

² Ibid., 221-27.

³ Some have advanced direct references to Medieval optical theories such as Biagio Pelacani da Parma's, whilst others have pointed towards influences of the methods/techniques of surveying. On the theories of Pelacani, in relation to perspective, see Ibid., 146-50.

⁴ Belting, *Florence & Baghdad*, 212.

⁵ *On the Vision of God - De visione Dei* (1453), in *Nicholas of Cusa: Selected Spiritual Writings*, translated by H. L. Bond, New York 1997, 233-90 (235).

⁶ D. G. Denery II, *Seeing and Being Seen in the Later Medieval World: Optics, Theology and Religious Life*, Cambridge 2009.

expressed in the luminary theology of the Pseudo-Dionysius which influenced Cusanus principle of the ‘coincidence of opposites’⁷. It also finds interesting parallels to Ghiberti’s descriptions in his Third Commentary as will become clearer later.

Whilst Alberti’s *della Pittura* attempts to instruct the painter of the necessary practical skills to create a convincing perspectival rendering of space, from the vantage point of an individual observer, Cusanus’s *De Visione Dei* seeks to instruct a community of viewers on how to *perceive* a painting in actual space, whose pictorial construction would not have been based on Albertian principles of ‘legitimate construction’ (*costruzione legittima*). Instead, we are given the inference in the text that the religious icon was intended to *emanate* its presence through the all-seeing eyes of the Saviour:

Your eye, O Lord, reaches toward all things without turning. Our eye must turn itself toward an object because of the quantum angle of our vision. But the angle of your vision, O God, is not quantum but infinite. It is also a circle, or rather, an infinite sphere because your sight is an eye of sphericity and infinite perfection.⁸

In distinguishing his own understanding of vision from that of Alberti, Cusanus states: «The sight of one man is keener than that of another among us ... one will with difficulty distinguish objects near him, while another can make out those at a distance»⁹. Hence, Cusanus sought to convey to his brethren at Tegernsee that true understanding of the Divine requires both insight and a certain longing. *De vision Dei* guides the monks to «feel the icon’s gaze resting on each of them, no matter from what angle they viewed it, as if the gaze were moving from monk to monk along the row»¹⁰. Whilst Michel de Certeau describes this collective visual experience as an orchestrated geometry of the gaze, Belting claims Cusanus’ description effectively «invalidated the new perspective, which contained only a single viewing point in its calculations»¹¹.

Cusanus’ tacit criticism of the limitations of Alberti’s model of linear perspective, and the mode of vision it assumes, provides an instructive theological/philosophical background in which to examine Lorenzo Ghiberti’s approach to perspectival optics. The relative dating of Alberti’s and

⁷ On Cusanus’ theory of *coincidentia oppositorum* see Nicholas of Cusa, *On Learned Ignorance*, trans. J. Hopkins, Minneapolis 1981. In relation to the Pseudo-Dionysius, see T. M. Tomasic, «The Logical Function of Metaphor and Oppositional Coincidence in the Pseudo-Dionysius and Johannes Scottus Eriugena», *The Journal of Religion*, 68, 3 (1988), 361-76.

⁸ Nicholas of Cusa, *On the Vision of God*, 249.

⁹ Quoted in Belting, *Florence & Baghdad*, 222. Nicholas of Cusa, *The Vision of God*, trans. E. G. Salter, New York 1960, 7. How one person has a ‘keener’ vision of distance than another ‘among us’ is a demonstrably theological concept that broadly follows Robert Grosseteste’s idea of the relationship between *aspectus* and *affectus*: «In the same way as light is understood to mean the knowledge of the truth, with regard to the glance of the mind, in just that way it is understood as the love of the known truth in the desire of the mind». Sir R. W. Southern, *Aspectus et Affectus: Essays and Editions on Grosseteste and Medieval Intellectual Life in Honour of Richard C. Dales*, New York 1993, 5. For discussion on this see N. Temple, *Disclosing Horizons: Architecture, Perspective and Redemptive Space* London 2007, 88.

¹⁰ Belting, *Florence & Baghdad*, 222.

¹¹ *Ibid.*

Ghiberti's treatises is revealing in this regard; whilst Alberti's vernacular and Latin versions of *On Painting* were probably written (according to Richard Krautheimer) in 1435 and 1436 respectively, Ghiberti began composing his Commentaries around 1448, leaving the treatise unfinished upon his death in 1455¹². Hence, Ghiberti began writing his work over ten years after Alberti's groundbreaking treatise on painting, and would therefore have been very familiar with the revolutionary developments of linear perspective. This point is clearly evidenced in the composition of some of the bronze panels in Ghiberti's famous Gates of Paradise for Florence Baptistery, of which more will be said later.

In this regard, Luigi Vagnetti suggests that the contribution of Ghiberti to the development in perspective occupies an intermediate position between the novelty of *perspectiva artificialis* and the more established *perspectiva naturalis*¹³. This position however, which some commentators have dismissed as outdated or backward looking, overlooks a more complex and nuanced set of issues underlying Ghiberti's approach to perspectivist optics that constitute an important characteristic of Renaissance perspective. On this basis, the common assumption of a straightforward division between the so-called «Ghiberti medioevalista» and his «grandi contemporanei novatori» should be treated with some scepticism¹⁴.

Ghiberti's Third Commentary

In Lorenzo Bartoli's study of Ghiberti's Commentaries, the author argues that the difference between Alberti's and Ghiberti's approach to perspective could be described as a dichotomy between *ingenium* and *memoria* respectively; between concepts of skill and memory in artistic production¹⁵. As Bartoli states, Alberti's *della Pittura* represents a «scientific and ingenious option which is substantially opposed to the literary and memorial option which animates Ghiberti's pages on art»¹⁶. Alberti seems uninterested in the historical contexts of artistic endeavour, as potential exemplary models, preferring instead to address the immediate needs of artists in his own time through the

¹² See R. Sinisgalla, *Il Nuovo De Pictura di Leon Battista Alberti: The New De Pictura of Leon Battista Alberti*, Rome 2006, 29-33. Rocca suggests that the vernacular came first, in 1435, followed by the Latin version in 1436. Martin Kemp claims that the Latin came first that formed the basis of the printed edition in Basle in 1440, from which Alberti later reworked the Latin version in 1466-1448.

¹³ L. Vagnetti, «Ghiberti Prospettico», in R. Krautheimer (ed.), *Lorenzo Ghiberti nel Suo Tempo*, vol. II, Florence 1980, 421-34 (424).

¹⁴ *Ibid.*, 430; D. Vesely, *Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production*, Cambridge, Mass. 2004, 165.

¹⁵ L. Bartoli, *Arte e Scrittura nella Firenze del Quattrocento: I Commentarii di Lorenzo Ghiberti*, unpublished PhD thesis, Graduate Department of Italian Studies, University of Toronto 1996, 12-5.

¹⁶ *Ibid.*, 13.

ingenium of pictorial instruction. As he states in his Italian edition of *On Painting*: «non molto si richiede sapere quali prima fussero inventori dell'arte o pittori»¹⁷.

Alberti's seeming indifference to the artistic achievements of the past sharply contrasts with Ghiberti's Commentaries, indicated in both the structure and contents of the treatise. Comprising three sections, the third and largest part of the work is a lengthy (and largely fragmented) study of *perspectiva*. More a *zibaldone* than a structured treatise, Ghiberti attempts in this part of the work to compile an overview of the theories of optics that include references to *De aspectibus* by Alhazen, *Perspectiva* by Roger Bacon and *Perspectiva communis* by John Pecham¹⁸.

The First Commentary comprises a historical account of the art of antiquity followed by the Second Commentary which provides a survey of the leading artists of the 'modern age', beginning with Giotto and concluding with Ghiberti himself. Ghiberti devotes a large part of the Second Commentary to the Sieneese school of painters, particularly the work of Ambrogio Lorenzetti, whom Ghiberti regarded as his greatest influence¹⁹. In this account, in which Ghiberti deploys a familiar literary device (*ekphrasis*) to construct a word-picture through an examination of the frescoes in the Franciscan friary of San Francesco in Siena (no longer in existence), we are given initial clues to Ghiberti's interests in *perspectiva*²⁰. These centre around the ambiance created in Lorenzetti's dramatic scenes of Christ's Passion and the history of the Franciscan Order, created through the illumination of richly coloured grouped figures. Lorenzetti's consummate skills in rendering natural patterns of the sky clearly impressed Ghiberti, in which painterly figures in dramatic poses serve as models for his own composition of figures in his sculpted reliefs²¹.

This priority of the luminosity of painted/sculpted figures, and their communication through the literary techniques of *ekphrasis*, serves as an interesting counterpoint to Alberti's emphasis on *historia*, in which the emotions evoked by the arrangement and gestures of grouped figures requires the artist to have knowledge of both geometry and oratory/poetry²². Whilst the former implies a diachronic understanding of pictorial space, whereby the viewer absorbs the biblical/historical narrative from different vantage points, the latter gives preference to a synchronic perspective of the

¹⁷ Quoted in *Ibid.*, 14.

¹⁸ Richard Krautheimer and Ten Doesschate have described Ghiberti's Third Commentary as largely a collection of "confused footnotes" or a "hodgepodge of reading notes" lifted from other earlier commentators. Krautheimer, *Ghiberti*, 307; G. de Santillana, «The Role of Art in the Scientific Renaissance», in *Critical Problems in the History of Science*, ed. M. Clagett, Madison 1959, 36.

¹⁹ Lorenzo Ghiberti, *I commentarii*, Florence 1998 (II. Arte moderna, III.1), 87-90.

²⁰ For an examination of *ekphrasis* in Italian Renaissance art, see M. Baxandall, *Giotto and the Orators: Humanist observers of painting in Italy and the discovery of pictorial composition 1350-1450*, Oxford 2006, 85-7.

²¹ D. Norman, «'Little desire for glory': the case of Ambrogio and Pietro Lorenzetti», in *The Changing Status of the Artist*, ed. E. Barker, N. Webb and K. Woods, New Haven 1999, 32-55 (40-1).

²² Leon Battista Alberti, *On Painting*, transl. by C. Grayson, London 1991, Book III, 53 (88).

scene, on account of the role of *costruzione leggitima* to disclose the ‘here and now’ from a fixed position²³.

This diachronic aspect of Ghiberti’s approach to artistic representation finds analogies in his unfinished treatise. In presenting himself as the chief beneficiary of artistic achievement throughout history, Ghiberti lists his own projects at the end of the Second Commentary, most importantly the commission to execute the third bronze doors for Florence Baptistery («Gates of Paradise»). Bartoli’s argument that the work is embodied in the notion of *memoria* is highlighted not just in the artist’s retrospective/historical approach to artistic ideas, but also in his assembly of past theories of optics which were probably intended to serve as both a historical overview, and as an instruction for contemporary artistic practice. Bartoli makes the case that the contrast between Ghiberti’s and Alberti’s treatises «offers a most profitable and textually accurate way to describe the different modes of fifteenth-century writings on art. Alberti and Ghiberti stand as representatives of two different approaches, the first privileging ingenuity, the second memory»²⁴.

The principle of *memoria*, which informed Ghiberti theory of art, influenced it seems his understanding of visual perception, and the role that light plays in one’s apprehension of the world over time. This is revealed in the opening part of the Third Commentary which introduces the subject of *perspectiva* by examining the visual effects of sculptural form and surface. In this account Ghiberti refers to a number of key phrases and terms derived from Alhazen and others, many of which are his own mistranslations of Latin in the *volgare*, or in some cases errors made in the Latin translations of the original Arabic²⁵. This begins with a description of the observation of the night sky:

we see the stars at night, but not during the day. There is no difference between the two times, except that the [air] is in between our sight and the sky, when the day is illuminated we do not see the stars because of the light. When the night is dark, we will see them in the place in which the earth is not illuminated. Moreover, several times many things are hidden from sight, which things seem invisible because of the thin sculptures (*sottili sculture*), and when they are in a weak light or in dark places. And the things, hidden in those sculptures which were unseen in dark places and in weak light, will appear when these <things> will be brought to luminous places or in which there is intense light, such as sunlight ... accordingly sight cannot understand the sculptures and receive their [complexion]

²³ It should be pointed out that developments in perspective in the early Renaissance did not result in the demise of a diachronic understanding of pictorial space, in its late Medieval tradition, but was rather incorporated within the loose framework of *costruzione leggitima*, as we see for example in the frescoes by Domenico Ghirlandaio of the *Stories of St. Francis* in the Cappella Sassetti (Basilica of Santa Trinità) in Florence. Such presence underlines Christian Frost’s argument that innovations in perspective in the fifteenth century did not simply replace earlier late Medieval practices but were instead brought into mutual dialogue. C. Frost, «Procession, Parade and Perspective: Representational Themes in the Sassetti Chapel, Florence», unpublished lecture delivered at the symposium *Vision, Perspectiva and Shifting Modalities of Representation: Tracking Changes and Cross-Fertilisations in the Early-Modern and Modern Ages*, University of Huddersfield, 17th May 2019.

²⁴ Bartoli, *Arte e Scrittura nella Firenze del Quattrocento*, 13.

²⁵ I wish to thank Cecilia Panti for pointing this out.

in a dark place. When they are brought under an intense light, they can be seen. Therefore, for this disposition <of light>, this means that intense light manifests many things ... and weak light hides them ... into obscurity²⁶.

Ghiberti's account of the effects of celestial luminosity on one's vision of the sky, through the cyclic movement of heavenly bodies, demonstrates the way light reveals what is latently present. It is interesting to compare this description with Cusanus' instructions to the monks in the Benedictine Abbey of Tegernsee on how to approach (from the east, west and south directions) the stationary religious icon of Christ on a north facing wall; as if the moving bodies of the monks in prayer – passing through zones of light and shadow – become analogous to heavenly bodies rotating around an all-present (and all-seeing) centre²⁷.

Cusanus' cosmo-theological interpretation of vision finds fertile connections to Ghiberti's comparison between the visibility/invisibility of the night's sky and the effects of bright light on 'thin' sculptural surfaces. This suggests at one level an inner sense of the correspondence between the disclosure (illumination) of God's creation (embodied in heavenly bodies) and human craftsmanship. Ghiberti seems obsessed by the power of light to disclose what lies *within* sculptural elements - like an X-ray penetrating the surface of things - inferring that surface qualities of sculpture (their 'complexion') could almost be likened to the translucency of human skin. This quality of translucency, conveyed in the term *sottili sculture*, constitutes one of three kinds of bodies (*corpi diafani*) in Ghiberti's theory of human vision, the others being *corpi luminosi* and *corpi umbrosi*²⁸.

In Ghiberti's reference however to the Latin text of Alhazen, the word 'sculptures' (*sculture*) should translate as 'details', 'designs' or 'particulars' rather than a sculpted piece of art, whose luminary meanings were later deployed by Ghiberti in his account of rediscovered sculptures²⁹. In this description the artist examines the partial veiling of ancient statues which acknowledges past artistic achievements through *memoria*. Ghiberti refers to three examples where ancient sculptured figures were unearthed – in Rome, Padua and Siena – whose discoveries were made possible by «una temperata luce». In all three cases, however, Ghiberti emphasises that «nothing the sight noticed if the hand had not found it [before] by touch»³⁰.

²⁶ Ghiberti, *I commentarii*, II.11, 105-6. Translated by Cecilia Panti.

²⁷ For a description of the movement of monks around the icon see Cusanus, *On the Vision of God*, 235-9. The implied analogy between human perceptual experience and the cosmos in Cusanus' theological instruction is only a glimpse of something more far-reaching underlying his thesis of 'learned ignorance'; namely that Cusanian perspectivity not only rejects traditional geocentrism «but also leaves heliocentrism far behind». As Karsten Harries states, in reference to Alexandre Koyré, Cusanus «goes far beyond Copernicus». K. Harries, *Infinity and Perspective*, Cambridge, Mass. 2001, 38-9.

²⁸ D. Vesely, *Architecture in the Age of Divided Representation: The Question of Creativity in the Shadow of Production*, Cambridge, Mass. 2004, 160-1.

²⁹ I am grateful to Cecilia Panti for pointing this out.

³⁰ Ghiberti, *I commentarii*, III.1, 108 (*Theoria della visione, anatomia, teoria della proporzione*). Translated by Cecilia Panti.

In the sculptured figure unearthed in Rome, which is described as a «statue of a Hermaphrodite as tall as a 13 years old girl»³¹, Ghiberti provides an account of its recovery:

At that time, it was found in a sewer, under the ground of about eight fathoms; the base of that statue was at the top of the sewer. The sculpture was covered by earth up to the level of the street ... It is impossible to express in words the perfection of knowledge, art and teaching of that statue. It was lying flat in a dug-out trench on which a cloth was laid under the statue and wrapped up in a manner to show its masculine and feminine natures, with the arms resting on the ground, and the hands crossing one over the other, and one of the legs was stretched out. With the big toe, it held the cloth, and in that stretch of cloth it showed a wonderful art. It was without a head, but no other part was missing³².

In the second example from Padua, Ghiberti states that «[the sculpture] has many sweetnesses (*dolceze*), which cannot be noticed by sight, either in a strong or in a mild light, but only the hand finds them by touch»³³.

The way in which Ghiberti is struck by the beauty of these sculpted figures is demonstrated as much by their partial concealment (embedded in the soil and wrapped in cloth during the process of their safe recovery), as in their damaged/amputated state. In this preamble to his investigation of *perspectiva* Ghiberti is making a number of important assertions; firstly, that stellar light reveals what is already latent and therefore hidden from view in the sky; secondly this same light serves as an analogy to human vision; and thirdly that without the sense of touch the visual experience of the artist is compromised. Hence, when ancient sculptures come to light in the ground, their knowledge is acquired through the inter-relationships between touch and illuminated vision.

Alessandro Parronchi has claimed that Ghiberti's reference to the sense of touch, in a work ostensibly concerned with the subject of optics (Third Commentary), was quite unique³⁴. Whilst Ghiberti made reference to Alhazen's *De Aspectibus* (eleventh century translation from the Arabic original), to explain the phenomenon of vision based on the rules of mathematics in the geometric propagation of light, it seems evident that he was more concerned with the visceral nature of vision; how the tissue of the optic nerve ("tuniche dell'occhio") responds to the sensation of light³⁵. This

³¹ Ibid., III.1, p107. Translated by Cecilia Panti

³² Ibid., III.1, p108. Translated by Cecilia Panti

³³ Ibid. Translated by Cecilia Panti.

³⁴ A. Parronchi, «Le 'Misure dell'Occhio' Secondo il Ghiberti», in Id., *Studi Su La Dolce Prospettiva*, Milan 1964, 313-48 (325).

³⁵ This is partly demonstrated in a drawing of the human eye (in the form of an anatomical dissection), highlighted in the sixteenth century manuscript of Ghiberti's commentaries (Tavola 4: c.18v: Ghiberti, *I commentarii*, p129). Ignoring Alhazen's precise geometric rendering of vision, this drawing attempts to reconcile the external (real) configuration of the eye with an abstract arrangement of concentric spheres, neglecting in the process the eye's internal anatomical structure. For discussion of this drawing, see C. Maltese, «Ghiberti Teorico: I Problemi Ottica Prospettici», in Krautheimer, *Lorenzo Ghiberti nel Suo Tempo*, II, 407-19 (414). For a discussion of the sources in Ghiberti's Third

priority has led Bartoli to conclude that Ghiberti's understanding of *perspectiva* was informed by an essentially 'sensistic' approach, in which all human senses are inextricably linked³⁶. Long before Maurice Merleau-Ponty conceived a phenomenology of perception, where seeing is conceived as a form of touching, Ghiberti drew upon his direct (tactile) experiences as a sculptor to inform his understanding of the perception of spatial depth and by implication his approach to perspective³⁷.

Ghiberti's account of the gradual uncovering of ancient sculpture in obscure light conveys a certain mystical quality that could be likened to Cusanus' later description of the monks' encounter with the icon of Christ, revealed in the «most inaccessible light». It seems apparent however that Ghiberti's explanation of vision was informed (first and foremost) by his own artistic temperament, rather than relying on theological and philosophical meditations. We see this demonstrated most clearly in the way he selectively adapts the narratives of his ancient and medieval sources in order to more fully convey – and flesh out - his own distinctive perspective. At the same time, Ghiberti broadens the spectrum of vision by speaking of a multitude of colours emanating from luminous objects in the world and entering the eye's aperture. Take for example this observation from the Third Commentary, largely drawn from Roger Bacon's *Perspectiva*:

But light operates more <than colour> in sight ... and it weakens the operation of seeing. But a very weak and thin light does not change the sight, as it would be necessary, also it does not disclose things. But moderate light strengthens the operation of seeing and discloses things that are conveniently near <the observer> ... The appearance and gazing is changed; and colour appears different to sight, as on the neck of the dove, according to how it turns the neck to the light in different positions, and the same happens to the tail of the peacock. Many things do the same, as fish [scales], the rotting and putrid oak ... When light appears over these things, their light is concealed and they are seen in their colour. But when they are in darkness, their light appears.³⁸

Utilising Medieval colour theory, Ghiberti is clearly reflecting on his own work (as both a sculptor and designer of stained-glass) when exploring the relationships between colour and the gradation from bright light to darkness. Underlying Ghiberti's description is the premise that colour forms a sub-stratum of the light spectrum, whereby coloured hues are revealed in lightness and light in darkness. Ghiberti was intensely interested in both the painterly qualities of colour, expressed in his admiration for Lorenzetti and their application in stained glass. This is demonstrated in Ghiberti's

Commentary, see in particular, G. Federici Vescovini, «Il Problema della Fonti Ottiche Medievali del Commentario Terzo di Lorenzo Ghiberti», in *Ibid.*, 349-87.

³⁶ Bartoli, «Arte e Scrittura nella Firenze del Quattrocento», 14.

³⁷ On Merleau-Ponty's 'tactile' theory perception, see his *Phenomenology of Perception*, London 1989, 315-7.

³⁸ Ghiberti, *I commentarii*, XI.1, 140 (*Theoria della visione, anatomia, teoria della proporzione*). Translated by Cecilia Panti.

astonishingly rich polychromatic designs for the roundels of Santa Maria del Fiore, *Assumption* (1405) in the west façade, and *Agony in the Garden* (1445) in the cupola.

Interesting descriptions of these round windows, and their symbolic meanings, can be found in the various writings of a contemporary of Ghiberti, Giannozzo Manetti, who became papal secretary to Nicholas V in 1451 and later authored the pope's famous biography:

In the *De pompis*, round windows in the upper part of Florence Cathedral light «individual places [*singula loca*] of the east end» ... and during the consecration ceremony [of the cathedral] a cardinal «was carried here and there throughout all the sacred places [*sacra loca*] of the basilica». ... In the *Life* [of Nicholas V], the windows «illuminate with their splendour every single place of the long and ample space (*singula queque ampli et longi spatii loca*) lying below that great crossing». And the windows of the basilica illuminated «the individual places of the dome (*singula testudinis loca*) with their light» ... Interior space, in these Manettian examples, is the sum of individual places. However, space is not, as in Aristotle, just object dependent – that is generated by and enveloping solids – but is itself an entity composed of sub-units (places), rather like a bunch of grapes in the discrete nature of each unit, but more like a sheet of bubble-wrap in their horizontal arrangement.³⁹

Christine Smith and Joseph O'Conner argue that Manetti's understanding of space may well have been influenced by Ghiberti's *I commentarii*, where Manetti most probably first became acquainted with optical theory⁴⁰. Manetti's close observations of the passage of light from Ghiberti's round windows, in the newly completed dome of Florence Cathedral, served as an ideal context in which to directly experience Ghiberti's understanding of *perspectiva*. Conceived as a vessel for holding light, the notion of *spatium*, which was implicit in Manetti's descriptions, conveys the sacred settings of religious rituals evidenced in the consecration ceremony of Florence Cathedral⁴¹. By receiving the «species of sensible things» human sight 'tracks' illuminated *places* that constitute entities of a larger (all-encompassing) cosmos; an understanding of *perspectiva* that finds comparison with Cusanus' theology of vision.

It is on the basis of the combined haptic, luminous and polychromatic understanding of vision underling the Third Commentary, that we can begin to understand more clearly Ghiberti's approach to *perspectiva* and hence to his own role as an artist. Both the physiological process of vision and the physical nature of light are inextricably interconnected in Ghiberti's work. Carlo Maltese speculates on how the relationship between both in Ghiberti's theory of vision was manifested:

³⁹ C. Smith – J. F. O'Conner, *Building the Kingdom: Giannozzo Manetti on the Material and Spiritual Edifice*, Tempe, Arizona 2006, 141.

⁴⁰ *Ibid.*, 141.

⁴¹ *Ibid.*, 138-46.

If I had to think of an image built according to the optical and psycho-physiological principles of Ghiberti I should imagine forms where the contours are substantially abolished and where the outline vibrations and the game of shadows are not contained within a fixed geometric structure, but coagulate fluidly and intuitively and at the same time harmonically around variations of chiaroscuro and colour⁴².

Gates of Paradise

Let us now turn to Ghiberti's second bronze doors commission (the so-called 'Gates of Paradise') for Florence Baptistery to determine how his particular spatial/temporal understanding of vision and light informed his artistic production. Given the date of the contract for the final phase of this commission on 28th January 1448, in relation to the probable time-period when Ghiberti composed his Third Commentary (from 1448 to his death in 1455), it is unlikely that the latter directly influenced the former. Indeed, we know that all ten bronze panels were probably cast as early as 1437, making any case for a direct influence of the Third Commentary on the design highly improbable⁴³.

Figure 1: Lorenzo Ghiberti, Gates of Paradise, Florence Baptistery (begun 1425), © 2018. Photo Scala, Florence.

What has not been seriously considered however by commentators is the possibility that Ghiberti's design for the Gates of Paradise influenced his theory of vision, rather than the other way round. Bartoli speculates that Ghiberti sought to conceive in his Third Commentary «a way of visualising [the Gates of Paradise]», which also reflected his physiological reading of the eye and brain in the text. In other words, the Third Commentary (in its completed state) may have been intended to serve as a textual guide to visualising the Gates of Paradise in its public setting, that could be compared (albeit in an artistic rather than theological sense) to Cusanus' later *De Visione Dei*.

This brings us to the arrangement and contents of the reliefs in the Gates of Paradise. Upon viewing these doors, one is immediately struck by Ghiberti's radical departure from the earlier (Medieval) practice of encasing individual narratives within quatrefoil motifs, demonstrated in Andrea Pisano's original South Portal doors which served as the compositional arrangement for Ghiberti's first bronze door commission for the Baptistery. In its place, Ghiberti significantly enlarged the size of each relief by reducing the number of panels from twenty-eight to ten. At the same time, he placed each panel directly adjacent to its neighbour resulting in five bas-reliefs to each door leaf, stacked one above the other. Framed within a narrow border, comprising busts and standing/reclining

⁴² Maltese, «Ghiberti Teorico: I Problemi Ottico Prospettici» (author's translation), 418.

⁴³ Krautheimer, *Lorenzo Ghiberti*, 192.

figures, the overall impression of the doors is a rich and interconnected tapestry of reliefs rather than a series of separate sculptural narratives, as was the case in the other bronze doors of the Baptistery.

Upon his appointment in 1424 by the *Arte di Calimala*, Ghiberti received the support of key advisors to determine the choice and sequence of themes from the Old Testament. This included Leonardo Bruni and Ambrogio Traversari, whose final iconographic programme probably drew inspiration from St Ambrose's allegorical commentaries of the Old Testament (from his *Hexaëmeron* and *De Paradiso*)⁴⁴. The ten panels comprised narratives taken from the stories of *Genesis* - Cain and Abel, Noah, Abraham, Isaac, Joseph, Moses, Joshua, David and Solomon - whose juxtaposed iconographic themes allude to the principle of the Old Testament as a prefiguration of Christ's life, death and resurrection.

With specific reference to the landscape scenes in the Joshua and David panels, Krautheimer argues that «depth is no longer made measurable. Foreground crowds are pierced by a wedge of space, yet the depth of this space cannot be estimated with any degree of approximation. Crowds in a front plane are never sufficiently large to give the impression of an incalculable multitude». Krautheimer concludes that «The entire story is thus arranged in bands, superimposed above each other in a vertical composition ... Linear perspective is played down, and with it the presentation of a consistent and measurable space»⁴⁵.

Figure 2: Bronze panel of the Story of Cain, Gates of Paradise, © 2018. Photo Scala, Florence.

Kathryn Bloom makes a case that these horizontal bands, in the composition of the reliefs, follow a rule-of-thumb proportional «relation between figure heights and the surface of the panels»⁴⁶. Bloom argues that Ghiberti may have drawn influence from John Peckham's intuitive approach to measuring space, highlighted in his detailed reference to the *Perspectiva communis* in the Third Commentary⁴⁷. Ghiberti's interpretation of how to intuitively estimate distance (and therefore spatial depth) through the inter-relationships between figures is fundamentally different from Albertian perspective, which treats the gridded floor as a mathematical datum for measuring depth and relative distance, on which individual figures are placed like chess pieces. Whilst recognising that Ghiberti

⁴⁴ Ibid., 175.

⁴⁵ Ibid., 198-9.

⁴⁶ K. Bloom, «Lorenzo Ghiberti's Space in Relief: Method and Theory», *The Art Bulletin*, 51, 2, (1969), 164-9 (166).

⁴⁷ Ibid., 164.

was clearly influenced by aspects of Alberti's *costruzione legittima*, evidenced in the pictorial structure of the three panels of Isaac, Joseph and Solomon, he sought nevertheless to treat individual and grouped figures as the primary basis for measuring dimensional and proportional relationships rather than the surrounding perspectival 'scaffold'.

Figure 3: Bronze panel of Solomon, Gates of Paradise, © 2018. Photo Scala, Florence.

This distinctive feature of Ghiberti's work leads us to make the following observation:

Ghiberti discovered behind the geometrical construction of depth a more fundamental depth: the natural spatial relationship of human bodies, their gestures and movements ... it becomes apparent that Ghiberti formulated a coherent alternative view of the structure of perspective space that may be described as situational⁴⁸.

In this «situational» understanding of perspective space, Vesely claims that Ghiberti treated proportion not as a purely geometric problem but primarily as a «distribution of light and shadows over the surface of bodies»⁴⁹.

To get a sense of how Ghiberti intended the Gates of Paradise to be viewed in this context, we need to turn to the concluding part of the Second Commentary, where Ghiberti first introduces the project:

There were ten stories all in architectural settings (*casamenti*), in relation with [*colla ragione*] which the eye measures them and real to such a degree that if one stands far from them they seem to stand out in high relief. [However] they have very low relief and on the *piani* [horizontal plane] one sees the figures which are near appear large and those that are far off smaller as reality shows it (come adimostro il vero)⁵⁰.

Krautheimer considers in some detail the meanings of *casamenti* and *colla ragione* in this statement. He demonstrates that *casamenti* does not mean frame (or casement), as one would perhaps suppose, since no such meaning existed in Italian writings of the 15th century.⁵¹ Instead he concludes that *casamenti* can only signify 'architectural settings', a meaning that clearly wasn't intended to

⁴⁸ Vesely, *Architecture in the Age of Divided Representation*, 163-4.

⁴⁹ *Ibid.*, 160.

⁵⁰ Krautheimer, *Lorenzo Ghiberti*, 232.

⁵¹ *Ibid.*, 232 (*casamenti*) and 231 (*colla ragione*). Bloom goes further by stating that *casamento* «would seem to refer to a kind of non-scientific perspective organisation ... Used in this way, *casamento* is close to the modern, general meaning of perspective as simply the diminution in space, as 'to put something in perspective'». Bloom, «Lorenzo Ghiberti's Space in Relief», 168 (note 28).

relate specifically to building features within individual reliefs. In applying the term generically to the whole bronze doors, it seems more likely that it referred to the spatial arrangements of each panel and their inter-relationships, whether the scenes are dominated by landscape or architecture. Krautheimer then goes on to highlight that in Renaissance theories of mathematics and perspective, *colla ragione* «refers to the proportional relationship of geometrical forms such as lines and triangles»⁵². Ghiberti is probably seeking to demonstrate how the perspectival effects of foreground and background figures augment the visual experience of reality itself through the gradations of light, giving the impression of being in closer proximity or greater depth as one approaches - or recedes from - the panels. Ghiberti's description is unique in giving a first-hand account by an artist of how one should visualise sculptural reliefs in a public setting in 15th century Florence.

It is unlikely that Ghiberti would have treated the visual experience of these gilded bronze reliefs as merely random encounters, but rather as part of commemorative or celebratory acts as Amy Bloch suggests: «The doors, as visual images, complemented and, indeed, enhanced civic and religious rituals through their ability to suggest tangibly what might only be implied tacitly in the performance of the baptismal rites»⁵³.

In a recent PhD thesis, Gwynne Dilbeck examines the ceremonial function of the Gates of Paradise, and how this was partly determined by both the symbolic meanings and locations of the panels⁵⁴. Given, however, that Ghiberti considered knowledge of optical theories to be central to enhancing artistic skills, it seems plausible that he also had a vested interest in anticipating how his bronze panels would be viewed from different vantage points. Ghiberti would have been well aware of the routes of processions to the Baptistery that incorporated the rite of Baptism on Holy Saturday (the vigil of Easter that celebrates Christ's resurrection) and the *Corpus Domini* (which takes place sixty days after Easter to commemorate the Eucharist).

Figure 4: View of the Baptistery and the Gates of Paradise from the west portal of Florence Cathedral. © 2018. White Images/Scala, Florence.

⁵² Krautheimer, *Lorenzo Ghiberti*, 231.

⁵³ A. R. Bloch, *The Sculpture of Lorenzo Ghiberti and Ritual Performance in Renaissance Florence*, unpublished PhD Dissertation, State University of New Jersey (Graduate School, New Brunswick, Rutgers), New Brunswick, N.J, January 2004, UMI, Dissertation Facsimile, Ann Arbor, Michigan, 206.

⁵⁴ G. A. Dilbeck, *Opening the gates of paradise: function and the iconographical program of Ghiberti's bronze door*, unpublished PhD thesis University of Iowa, 2011; <https://ir.uiowa.edu/etd/2691>.

By the late Middle Ages, baptismal processions began in the cathedral and crossed the *paradisus* (the space between the cathedral and the baptistery) to the font of San Giovanni via the east door, finally exiting through the north door. Whilst, as we have seen, the Gates of Paradise were originally intended to be installed in the north portal of the Baptistery, their final location at the east entrance provided a perfect setting in which to forge visual connections between sculpted relief and ceremonial/public space⁵⁵. Indeed, the dynamics of opening and closing the doors of the Baptistery in these ceremonies would have played an important influence on how the bronze reliefs would have been viewed and understood during these auspicious occasions.

Parronchi claims that the doors were intended to be partly viewed obliquely as well as frontally, based on common view-points using bifocal perspective⁵⁶. Whilst he does not refer to the ceremonial and ritual contexts, which may have informed such changing vantage points, it seems inevitable that these religious and civic occasions would have largely determined one's approach to the Gates of Paradise.

Figure 5: Demonstration of perspectival relationships between bronze panels of Lorenzo Ghiberti's Gates of Paradise, Florence Baptistery. Redrawn by author after Alessandro Parronchi.

From seventeenth and eighteenth century prints and paintings of the Piazza del Duomo, we can clearly see how both the north and east portals of the Baptistery served as the exist and entry points, providing a clue as to how these doors would have been viewed during these processions.

An indication of the fertile inter-relationships between religious ceremony/liturgy, architectural setting and the participatory dimensions of vision in fifteenth century Florence can be found in the sermons of the influential Dominican priest (and later Archbishop of Florence), Antonino Pierozzi (popularly known as Fra Antonino). Fra Antonino was a charismatic preacher who exerted significant influence on the populous of the city through his public sermons which he delivered in both religious and civic spaces. His sermons contained repeated references to optical metaphors to convey the relation between human and divine vision⁵⁷. Brought together in his four-volume work, the *Summa*

⁵⁵ These fertile symbolic relationships almost certainly influenced Filippo Brunelleschi's famous perspective experiment, outside the main west portal of Florence Baptistery, which predates Ghiberti's commission for the second bronze doors but post-dates the famous competition which Ghiberti won for the first bronze doors. For an interpretation of this see my forthcoming book, *Architecture and the Language Debate: Artistic and Linguistic Exchanges in Early Modern Italy* (Routledge, 2020).

⁵⁶ Parronchi, «Le 'Misure dell'Occhio' Secondo Il Ghiberti».

⁵⁷ This relates to a relatively common practice among preachers during the late Middle Ages and early Renaissance, evidenced in the popular preaching manual, *De oculo morali* (Concerning the Moral Eye) by Peter of Limoges. See D. L. Clark, «Optics for Preachers: The *De oculo morali* of Peter of Limoges», *Michigan Academician*, 9 (1977), 329-43.

theologica, written towards the end of his life, the sermons would no doubt have been a source of influence among theologians, artists and humanists⁵⁸. Samuel Edgerton speculates that it was Fra Antonino's preaching that inspired Ghiberti to read the optical tracts located in various libraries in Florence, that later formed the basis of his Third Commentary⁵⁹. It is perhaps no coincidence that one of these libraries, which contained a Latin manuscript of Alhazen's *De Aspectibus*, was the so-called 'public library' of San Marco founded by Cosimo de Medici. The foundation of the library began with the famous book collection of Niccolò Niccoli bequeathed to San Marco⁶⁰.

Conclusion

Whilst it would be wrong to claim that the sensibilities of an artist, such as Ghiberti, can be directly allied to the theological perspectives of such figures as Cusanus and Fra Antonino, it seems evident nevertheless that the debates concerning the status and meaning of linear perspective in early fifteenth century Florence, and their relationships to Medieval optics, were shrouded in profound theological and philosophical questions about human vision. In these debates, the communicative dimensions of Ghiberti's Gates of Paradise would have provided an ideal context for demonstrating 'collective' visual experience (as opposed to a detached 'ocular-centrism' anticipated in Albertian perspective), in much the same way that Cusanus instructs a community of monks to perceptually *share* the religious experience of an icon of Christ. In this paper, I have sought to trace relationships between the early developments in linear perspective and Medieval optics in fifteenth century Florence, revealing in the process how Ghiberti's *perspectiva* sought to address similar challenges to those identified by his contemporary Cusanus:

In concentrating on the direct visibility of proportions and their "correctness", Ghiberti intended to use vision to resolve the tension between the divine intellect and human understanding. If successful, he would come very close not only to vindicating Cusanus's belief that man can become through his creativity godlike but also to instantiating the meaning of the influential Renaissance discourses on the new dignity of man⁶¹.

⁵⁸ Formally prior of the Observant Dominican convent of San Marco during the early 1440s, it is likely that Fra Antonino oversaw and even supervised the famous devotional frescoes by Fra Angelico that embellish the walls of the convent.

⁵⁹ S. Y. Edgerton, *The Mirror, the Window, and the Telescope: How Renaissance Linear Perspective Changed Our Vision of the Universe*, Ithaca 2009, 36.

⁶⁰ B.L. Ullman and P.A. Stadter, *The Public Library of Renaissance Florence. Niccolò Niccoli, Cosimo de' Medici and the Library of San Marco*, Padua 1972. A noted humanist, Niccoli was also a close friend and interlocutor of Ghiberti.

⁶¹ Vesely, *Architecture in the Age of Divided Representation*, 165-6.

ABSTRACT

This paper explores Lorenzo Ghiberti's approach to perspective in early fifteenth century Florence, demonstrating the manner in which his treatment of light, vision, colour and gesture were closely inter-twined in the representation and perception of space. The investigation argues that Ghiberti's artistic practice directly influenced his theoretical understanding of perspective (revealed in his unfinished 3rd Commentary), which constitutes a rather different approach compared to Alberti's codification of *costruzione legittima*. The paper highlights interesting parallels between Ghiberti's luminous treatment and Nicholas Cusanus' model of communing geometric space in perspective (*De vision Dei*), demonstrated in the spatial and iconographic features of the Gates of Paradise which are examined in the context of the rituals of baptism and the processions/ceremonies associated with Florence Baptistery.

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