DAMIANUS (HELIODORUS LARISSAEUS)

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FORTUNA*

This article deals with a minor treatise on optics composed in later antiquity (probably between the fourth and sixth centuries). It was known to Byzantine scholars in the thirteenth and fourteenth centuries and circulated widely in Western Europe during the fifteenth and sixteenth centuries.

ANTIQUITY

The Greek title of the treatise is *Κεφάλαια τῶν ὀπτικῶν ὑποθέσεων (Summary of the Basic Principles of Optics)*, or *Capita opticorum*, as rendered by Egnazio Danti (1536–86), the sole Latin translator (I.1 below). Fourteen propositions on optics and the theory of vision are first stated and elaborated in a brief and informal way. Wilbur R. Knorr, who describes Damianus' style as "discursive, unsystematic and non-technical," characterizes the work as a "low-level, carelessly organized and inaccurately executed compilation of materials"; he also criticizes its unsystematic presentation of material and its lack of geometric constructions and proofs.[1] These are all features entirely typical of works composed for elementary scientific instruction in later antiquity.

The date and authorship of the *Capita* are uncertain, but overt references to the *Catoptrics* of Hero Mechanicus (fl. ca. 62 A.D.; 20.12–13), to a lost book of the *Optics* of Ptolemy (fl. 127–148 A.D.; 4.17–20), as well as to the Roman emperor Tiberius (14–37 A.D.; 4.10–11) provide a secure *terminus post quem* in the second century A.D. However, two passages in the *Capita* (8.13–14 and 10.12–13) are also identical with the recension of Euclid's *Optics* by Theon of Alexandria who was active in the second half of the fourth century A.D., and so a date close to that period is widely accepted in the scholarly literature.[2] Johan Lud-

*The text of Damianus will be cited according to the page and line numbers of the edition by R. Schöne, *Damianos Schrift über Optik, mit Auszügen aus Geminos* (Berlin, 1897). I acknowledge support from the Social Sciences and Humanities Research Council of Canada and the University of British Columbia, and I am grateful for the help and advice of the CTC editors.

1. W. R. Knorr, "Archimedes and the pseudo-Euclidean *Catoptrics*: Early Stages in the Ancient Geometric Theory of Mirrors," *Archives internationales d'histoire des sciences* 35 (1985) 89.

2. This was the consensus reported in "Damianos (3)," PW 4 (1901) 2055 (F. Hultsch).

vig Heiberg (1854–1928) suggested the *Capita* as a source for Theon,[3] but, as Knorr has noted, the informal and eclectic nature of the treatise, and in particular its critique of Euclidean optics, is incompatible with any proposed use by Theon. Knorr suggests that the *Capita* could have been composed even as late as the fifth or sixth century.[4]

A date cannot be fixed from the authorship of the treatise. The title in most manuscripts identifies the author as a Damianus "of Heliodorus of Larissa", and for that reason Damianus must be identified as its principal author. Since there is no independently documented figure with that name, he has been linked, rather implausibly, with the similarly named, but technically superior, fifth-century mathematical writer, Domninus of Larissa.[5] As for Helidorus, he may simply be Damianus' father, although he has also been taken to be his teacher or even the author of the *Capita* (of which his son would have been the editor).[6] But if, like other scientific and philosophical writers of the fifth and sixth centuries, Damianus did, in fact, reproduce Heliodorus' lectures, this would probably have been made clearer in the title. Even if Heliodorus is a source for the contents of the *Capita,* he still cannot be firmly identified with any independently documented figure. Knorr's suggestion that he was Heliodorus of Alexandria, an able astronomer and the brother of the late fifth-century A.D. Aristotelian commentator Ammonius, is geographically implausible.[7]

While a precise dating of the treatise is impossible, the intellectual milieu of the *Capita* is defined by the foundation of its geometrical optics on a theory of vision that implies links with Platonic exegesis. Sight is said to occur by the emission of light (2.2–5; 4.2–5), a process which can, under certain conditions, cause vision independently of any external source of light (4.6–15). This theory is ridiculed in a text attributed to Alexander of Aphrodisias (second century A.D.),[8] but in the *Capita* (20.5–7) it is based on a text (*Republic* 6, 508b3–4) from "the great Plato" in which sight is characterized as the "most sunlike" of the senses. Hence the lengthy analogy between the eye and the sun (14.16–20.7) may have been derived from an exegesis of this Platonic text. Other signs of philosophical ideas in the *Capita*[9] suggest that Damianus (and perhaps Heliodorus) may have been primarily a philosopher rather than a mathematician, and, if active in the fifth or sixth century A.D., then a Platonist.

Byzantium and the Renaissance

After antiquity, there is no evidence for the knowledge or use of the *Capita opticorum* until the fourteenth century when the earliest Greek manuscript of the text (Paris, Bibliothèque Nationale de France, gr. 2342) was copied. This codex contains an astronomical and mathematical collection originating in the Palaeologan period and perhaps traceable to Maximus Planudes (end of the thirteenth century).[10] Two other manuscripts can be dated to the fifteenth century, and most of the remaining twenty-four witnesses

3. J. L. Heiberg, ed., *Euclidis Optica* (= *Euclidis Opera omnia* 7) (Leipzig, 1895), xxxi–xxxii.

4. Knorr, "Archimedes," 95–96. He also speculates that the author is "more likely" a Byzantine scholar of a much later date. But this overlooks the links between the treatise and later Platonism; see below.

5. On him see "Domninos (4)," PW 5 (1905) 1521–25 (F. Hultsch). This possibility is considered by J. L. Heiberg, *Litterargeschichtliche Studien über Euklid* (Leipzig, 1882), 137 and P. Tannery "Domninos de Larissa," *Bulletin des sciences mathématiques,* 2d Ser., 8 (1884) 288–98 (= *Mémoires scientifiques,* ed. J. L. Heiberg and H. G. Zeuthen, vol. 2 [Paris and Toulouse, 1912], 105–17), but rejected by Knorr, "Archimedes," 96. Domninus of Larissa belonged to the milieu of Proclus at Athens, and he was engaged in more sophisticated mathematics than is found in Damianus' *Capita.*

6. G. J. Voss, *De universae mathesios natura et constitutione liber* (Amsterdam, 1660), 353–54, argues that he was the father; E. Bartholin, ed., *Damiani philosophi Heliodori Larissaei De opticis libri II* (Paris, 1657), 97, inclined to the view that he was a teacher; Hultsch, "Damianos (3)," 2055, considered both possible. Knorr, ibid., 91, suggests that Damianus edited Heliodorus' treatise some time after its composition; a pupil, however, could publish a lecture course in a teacher's lifetime, as happened with John Philoponus' versions of Ammonius of Alexandria's lectures on Aristotelian treatises composed in the early sixth century A.D. See R. B. Todd, "Héliodore de Larissa," *Dictionnaire des philosophes antiques,* vol. 3 (Paris, 2000), 544–46, for a further review of the evidence.

7. Knorr, ibid., 95. On Heliodorus see "Heliodoros (13)," PW 8 (1912) 18–19 (F. Boll).

8. *De anima liber cum mantissa,* ed. I. Bruns, *Supplementum aristotelicum* 2.1 (Berlin, 1887), 127.34–128.11.

9. Note, for example, the emphasis on the teleological aspects of vision; see 6.4–8, 8.2–4 and cf. 20.16–17.

10. M. Decorps-Foulquier, "Un corpus astronomico-mathématique au temps des Paléologues. Essai de reconstitution d'une recension," *Revue d'histoire des textes* 17

were copied in the sixteenth century when the *Capita* circulated widely. The textual relationships have not yet been explored in detail.

In the late fifteenth century Giorgio Valla (1447–1500) owned a manuscript of the *Capita*[11] and probably referred to the work in his encyclopedia *De expetendis et fugiendis rebus opus* in remarks on the theory of vision that precede his translation of parts of Euclid's *Optics*.[12] Valla, however, did not translate passages from Damianus' treatise as he often did for other ancient scientific works.

A third of the copies of the *Capita* made in the sixteenth century were the work of two well-known and prolific scribes: Andreas Darmarius (1540–last quarter of the sixteenth century) and Angelus Vergecius (first quarter of the sixteenth century–1569).[13] Darmarius made at least five copies of the work.[14] Vergecius, as Paul Tannery (1843–1904) showed, made three copies and supplied a second book of Damianus' treatise in the form of a Byzantine recension of Euclid's *Optics*.[15]

Some manuscripts of the *Capita* omitted the name of Damianus from the title, and Egnazio Danti used one of these codices for the *editio princeps* in 1573. He appended to his annotated Italian translation of Euclid's *Optics* an annotated Italian translation of "Heliodorus" and added the Greek text accompanied by his own Latin translation. Danti's edition made the *Capita* more accessible, if only as an ancillary to Euclid's *Optics*. Bernardino Baldi (1533–1617), the pioneer historian of mathematics, subsequently wrote a brief vernacular life of Heliodorus, but, by depending on Danti, did not identify him with Damianus.[16]

The Modern Period

Danti's edition was reproduced twice in the seventeenth century (1610 and 1670). In 1657 the Danish Cartesian scientist Erasmus Bartholin (1625–98)[17] published an edition based on his collation of a manuscript (Vatican City, Biblioteca Apostolica Vaticana, Barb. gr. 131) that included the spurious second book of Damianus inserted by Angelus Vergecius. He also had access to the notes of the Dutch scholar Isaac Voss (1618–89), who was reportedly preparing his own edition and had earlier transcribed Barb. gr. 131.[18] Bartholin's commentary is the most extensive

(1987) 15–54. This study deals with two manuscripts of Damianus: Paris, Bibliothèque Nationale de France, gr. 2342 and Milan, Biblioteca Ambrosiana, A 101 sup.

11. It does not seem to have survived. For the evidence of its existence see G. Mercati, *Codici latini Pico Grimani Pio e di altra biblioteca ignota del secolo XVI esistenti nell'Ottoboniana e i codici greci Pio di Modena,* Studi e testi 75 (Vatican City, 1938), 204. On Giorgio Valla see CTC 1.126, 224; 4.351; 6.56–57; 7.8; 8.24–26.

12. See *De expetendis et fugiendis rebus opus* 15.3 (Venice, 1501), where Valla ridicules Damianus' favored theory of vision by emitted light in the same terms as Alexander of Aphrodisias (*De anima* 128.7–10) by arguing that in darkness an increase in the number of viewers should produce increased illumination.

13. On these scribes see E. Gamillscheg and D. Harlfinger, *Repertorium der griechischen Kopisten 800–1600,* vol. 1 (Vienna, 1981), Part A, 25, 29 and vol. 2 (Vienna, 1989), Part A, 25–27, 32.

14. Vatican City, Biblioteca Apostolica Vaticana, Barb. gr. 129 (V. Capocci, *Codices Barberiniani graeci,* vol. 1 [Rome, 1958], 220–22); El Escorial, Real Biblioteca de San Lorenzo, Gr. 567 (w. IV. 15) (G. de Andrés, *Catálogo de los códices griegos de la Real Biblioteca de El Escorial,* vol. 3 (Madrid, 1967), 219–20); Munich, Bayerische Staatsbibliothek, Cgm 165 (I. Hardt, *Catalogus codicum manuscriptorum graecorum Bibliothecae Regiae Bavaricae,* vol. 2 [Munich, 1806], 196–98); Hamburg, Staats- und Universitätsbibliothek, Cod. philol. 91 (lost at the end of World War II; letter of Dr. Harald Weigel, 11 February 1993) (= no. 50 in H. Omont, "Notes sur les manuscrits grecs des villes hanséatiques Hambourg, Brême et Lübeck," *Centralblatt für Bibliothekswesen* 7 [1890] 351–77 at 366–67); San Juan Capistrano (California), Robert B. Honeyman, Jr. Collection, General Science 7 (Faye and Bond, *Supplement to the Census,* 20), fols. 61–73 (= lot 1127 in the Sotheby sale of 2 May 1979 and now in a private collection).

15. For Vaticanus Barb. gr. 131 see P. Tannery, "Les hypothèses optiques de Damianos et Ange Vergèce," *Mémoires scientifiques* 2.319–23 and Capocci, ibid., 224–25. Vergecius also copied Vaticanus Barb. gr. 20 (Capocci 22–23) and Milan, Biblioteca Ambrosiana, I 84 inf. (Tannery 323).

16. On Baldi's lives of Damianus and Heliodorus, see E. Narducci, "Vite inedite di matematici italiani scritte da Bernardino Baldi," *Bullettino di bibliografia e di storia delle scienze matematiche e fisiche* 19 (1886) 335–489 at 343–44. These lives are preserved in Stresa, Centro Internazionale di Studi Rosminiani, Archivio Storico dell'Istituto della Carità, cod. Boncompagni 65 (olim 156), fols. 355v–357r and fols. 357v–358v respectively. See also P. L. Rose, *The Italian Renaissance of Mathematics: Studies on Humanists and Mathematicians from Petrarch to Galileo,* Travaux d'Humanisme et Renaissance 145 (Geneva, 1975), 253–54. Bartholin included Baldi's vernacular life of Heliodorus in the introduction to his edition of 1657, and Baldi included brief lives of both Damianus and Heliodorus in his *Cronica di matematici overo Epitome dell'istoria delle vite loro* (Urbino, 1707), 45–46, where reference is also made to Giorgio Valla's use of Damianus (see n. 12 above).

17. On Bartholin see DSB 1 (1970) 481–82 (A. R. Hall) and *Dansk Biografisk Leksikon* 1 (1979) 475–76 (H. M. Hansen).

18. His transcription is found in Leiden, Bibliotheek

ever written on the *Capita.* Like Danti, Bartholin deals mainly with geometrical optics, but he also includes a valuable discussion of the theory of vision in which Damianus' theory is contrasted with other ancient theories as well as that of Descartes.[19]

There was one inferior eighteenth-century edition based on Danti. Johann Gottlob Schneider (1750–1822) discussed the text selectively in his *Eclogae physicae* (1801). In 1897 Richard Schöne (1840–1922) published the only modern critical edition of the *Capita;* accompanied by a German translation, the Greek text was based on the earliest manuscript, Parisinus gr. 2342 (s. XIV), with Schöne's corrections from two sixteenth-century manuscripts (Vaticanus Barb. gr. 20 and Munich, Bayerische Staatsbibliothek, Cgm 165) and some modern emendations.[20]

Bibliography

I. Editions and Translations

Heliodori Larissaei Capita opticorum (Hamburg, 1610); E. Bartholin, ed., *Damiani philosophi Heliodori Larissaei De opticis libri II* (Paris, 1657), with a Latin translation; T. Gale, ed., *Opuscula mythologica, ethica et physica* (Cambridge, 1671); A. Matani, ed., *Heliodori Larissaei Capita opticorum* (Pistoia, 1758), with a revised Latin translation; R. Schöne, ed., *Damianos Schrift über Optik, mit Auszügen aus Geminos* (Berlin, 1897), with a German translation. (For editions of Egnazio Danti's text and translation see I.1 below).

II. Text and Manuscripts

J. G. Schneider, *Eclogae physicae,* vol. 2 (Jena and Leipzig, 1801), 235–40, 250–54; P. Tannery, "Rapport sur une mission en Italie," *Archives des missions scientifiques et littéraires,* 3d Ser., 13 (1888) 405–55 at 446–49 (= *Mémoires scientifiques,* ed. J. L. Heiberg and H. G. Zeuthen, vol. 2 [Paris-Toulouse, 1912], 269–331 at 319–23); F. Hultsch, review of R. Schöne's edition, *Berliner philologische Wochenschrift* 46 (12 November 1898), cols. 1413–17; M. Decorps-Foulquier, "Un corpus astronomico-mathématique au temps des Paléologues. Essai de reconstitution d'une recension," *Revue d'histoire des textes* 17 (1987) 15–54.

III. General

Fabricius-Harles 5.648 and 7.128–29; Hoffmann 3.202; "Damianos (3)," PW 4 (1901) 2054–55 (F. Hultsch); G. Sarton, *Introduction to the History of Science,* vol. 1 (Baltimore, 1927), 354; "Damianus," *Dictionnaire des philosophes antiques,* vol. 2 (Paris, 1994), 594–97 (R. B. Todd); "Héliodore de Larissa," ibid., vol. 3 (Paris, 2000), 544–46 (Todd).

IV. Studies

J. L. Heiberg, *Litterargeschichtliche Studien über Euklid* (Leipzig, 1882), 136–39; P. Tannery, "Domninos de Larissa," *Bulletin des sciences mathématiques,* 2d Ser., 8 (1884) 288–98 (= *Mémoires scientifiques* 2.105–17); J. L. Heiberg, *Euclidis Optica* (= *Euclidis Opera omnia* 7) (Leipzig, 1895), xxxi–xxxii; A. Lejeune, *Euclide et Ptolémée: deux stades de l'optique géométrique grecque* (Louvain, 1948), passim (see Index); Lejeune, *Recherches sur la catoptrique grecque d'après les sources antiques et médiévales,* Académie Royale de Belgique: Classe des Lettres et des Sciences morales et politiques, Mémoires, 2d Ser., 52.2 (Brussels, 1957), passim (see Index); Lejeune, *L'Optique de Claude Ptolémée dans la version latine d'après l'arabe de l'émir Eugène de Sicile,* 2d edition (Leiden and New York, 1989), 13*, 272; W. R. Knorr, "Archimedes and the pseudo-Euclidean *Catoptrics:* Early Stages in the Ancient Geometric Theory of Mirrors," *Archives internationales d'histoire des sciences* 35 (1985) 28–105 at 32–33 and 89–96.

der Rijksuniversiteit, Vossianus Gr. Q. 75, fols. 1r–11v; see K. A. de Meyier, *Codices Vossiani graeci et Miscellanei* (Leiden, 1955), 191–92. De Meyier speculates that the manuscript transcribed here may be Vaticanus Barb. gr. 20, also the work of Angelus Vergecius, but it seems clear from the introduction to Bartholin's edition (fol. eiii^{v}) that he and Voss had transcribed the same manuscript. Voss's plans for an edition are reported by his father, Gerard Johann Voss (1577–1649), in *De universae mathesios natura* (n. 6 above), 353–54.

19. Bartholin, *Damiani ... De opticis* (n. 6 above), 99–102.

20. Schöne, ix–xii, tentatively labelled an untitled text (22.10–30.11), appended without indication of authorship to many manuscripts of Damianus, "Auszüge aus Geminos" ("Selections from Geminus"). This text is not integral to the content or original form of the *Capita* and was probably added by a scholarly scribe.

I. *Capita Opticorum*

TRANSLATION

1. Egnatius Dantes

The Latin translation by Egnatius Dantes (Egnazio Danti) of what his manuscript identified as Heliodorus' treatise on optics accompanied his *editio princeps* of the Greek text and formed an appendix to his annotated Italian translation. Both translations and the edition were a further appendix to an annotated Italian translation of Euclid's *Optics* and *Catoptrics.* The Greek text of the *Capita opticorum* is described as "tale quale io l'hebbi dalla Libreria Vaticana" (fol. p2r), but this Greek manuscript cannot be located at present in the Vatican Library.

Danti's edition and translations of the *Capita* were published at Florence in 1573 as part of a series of scientific works that he prepared for teaching purposes during a period (1562–74) when he was professor at the Florentine Studio and "Cosmografo" of the Medici (for further details of Danti's program see Settle, cited below). He thus almost certainly translated the *Capita* in the years immediately preceding its publication.

The printer reports in a note to the reader (fol. q4r) that Danti included Heliodorus instead of some practical material on optics and catoptrics only because Bernardinus Martiranus (whose dates are uncertain; see Cosenza 3.2212) was about to publish on that subject. Danti may also have been influenced by the Parisian scholar Johannes Pena (Jean de la Pène, 1528–58), whose edition of the Euclidean optical treatises (Paris, 1557) he used for his Italian translation of the *Capita* (see p. 5). Pena had prefaced his edition with a lengthy essay on the theory of vision in relation to cosmology; see P. Barker, "Jean Pena and Stoic Physics in the Sixteenth Century," *Southern Journal of Philosophy* 23 (Supplement) (1985) 93–107. Danti may have become interested in Heliodorus' treatise because it too included material on the physical theory of vision as well as a discussion of sight in relation to celestial bodies, a subject that Pena addresses in arguing for the incompatibility of Aristotelian celestial matter with geometrical optics.

Heliodori Larissaei Capita opticorum (ed. of Florence, 1573). [*Inc.*]: (fol. r2r; p. 2.3–5 Schöne) Quadam a nobis proiectione ea, quae sub aspectum cadunt, attingimus. Id quod proicitur atque emittitur a nobis lux est . . . / . . . [*Expl.*]: (fol. s3r; p. 22.5–9 Schöne) Ac supra docuimus in refractionibus aequales a solaribus radiis confluere et constare angulos angulis visus nostri, quem ad aequales angulos frangi, demonstratum est.

Manuscripts:

(micro.) Florence, Biblioteca Nazionale Centrale, Magl. VIII 1492 (XXV bis), fasc. 10, s. XVI, unnumbered fols. 1r–3v (Kristeller, *Iter* 1.136a, where fasc. 10 is not identified). The translation, like the one in the printed edition, lacks indication of authorship; it is uncertain whether this is Danti's autograph copy or a copy of his edition. There are some corrections in a later hand. Since Danti was in Florence at the time of the publication of his edition, the printed text can be assumed to have had his approval.

(micro.) Paris, Bibliothèque Nationale de France, gr. 2476, s. XVI, fols. 7r–12r (H. Omont, *Inventaire sommaire des manuscrits grecs de la Bibliothèque Nationale,* vol. 2 [Paris, 1888], 267). The Latin translation follows the Greek text (fols. 1r–6r), and both appear to have been copied from Danti's printed edition.

Missing manuscript:

Cambridge, Trinity College, 1350 (O.7.22) (M. R. James, *The Western Manuscripts in the Library of Trinity College Cambridge,* vol. 3 [Cambridge, 1902], 361). The title is given as *Heliodori Larissaei Optica Graece cum translatione Latina Ignatii Danti auctiora editis et cum aliis codicibus collata.* No folio numbers are provided. The manuscript was recorded as missing in 1855.

Editions:

1573, Florentiae (Florence): ex officina Iunctina. Gr.-Lat. Adams E-1021; L. S. Camerini, *I Giunti tipografi editori di Firenze 1571–1625* (Florence, 1979), no. 20; NUC. BL; BNF; (MH).

1610, [Hamburg]: in librario Heringiano. Gr.-Lat. The edition is said to be "ex bibliotheca Lindenbrogi" (i.e., Friedrich Lindenbrog [1573–1648]; see NDB 14 [1894], 596–97). NUC. BL; BNF; (RPB).

1670, Cantabrigiae (Cambridge): Ioannes Creed. Gr.-Lat. The edition of Damianus (based on that of [Hamburg], 1610) is the last of the ten fasicules (dated 1670 and 1671) of T. Gale, ed., *Opuscula mythologica, ethica et physica* (Cambridge, 1671) and has separately numbered pages 1–12. It was omitted from the second edition

(Amsterdam, 1688). NUC (under Gale). BL; BNF; (CtY; MH).

1758, Pistorii (Pistoia): Antonius Bracalius. Gr.-Lat. The editor was Antonio Matani (1730–79); he revised Danti's translation slightly and added some notes. NUC. BL; BNF; (ICU; ICJ).

Biography:

Egnazio Danti was born Carlo Pellegrino Rinaldi at Perugia in 1536 into a family with a tradition of scientific, literary, and artistic interests. He was educated by his family and entered the Dominican Order in 1555. From 1562 to 1574 he was in the service of Cosimo I de' Medici at Florence. There he prepared maps, constructed a terrestrial globe and astronomical instruments, initiated studies on the reform of the calendar, and lectured on mathematics at the Florentine Studio.

Following Cosimo I's death in 1574 Danti left Florence, and in 1576 he accepted a chair in mathematics at Bologna. In 1580 he was called to Rome by Pope Gregory XIII to assist in the reform of the calendar and to undertake cartographical projects. In 1583 he was made bishop of Alatri, where he died in 1586.

Works:

During his stay in Florence Danti published a *Trattato dell'uso della sfera* (Florence, 1569; rpt. Florence, 1578), arranged the publication of his grandfather Piervincenzo's Italian translation of Johannes Sacrobosco's *Sphaera* (Florence, 1571; rpt. Perugia, 1574 and Florence, 1579), and published an annotated Italian translation of the ps.-Proclan *Sphaera* (Florence, 1573). In Bologna he published *Le scienze matematiche ridotte in tavole* (1577) and *Anemographia* (1578). His final publication was a second edition of Latino Orsini's *Trattato del radio latino* (Rome, 1586).

Bibliography:

Cosenza 2.1181; DBI 32.659–63 (with extensive bibliography) (F. P. Fiore); *Enciclopedia italiana* 12.349–50; DSB 3.558–59 (M. L. Righini-Bonelli); P. Riccardi, *Biblioteca matematica italiana. Dalla origine della stampa ai primi anni del secolo XIX* (Modena, 1873–93; rpt. in 2 vols., Bologna, 1985), 1.387–94; 2.53–54.

J. del Badia, *Egnazio Danti cosmografo e matematico e le sue opere in Firenze* (Florence, 1898); T. Frangenberg, "Egnazio Danti's Optics. Cinquecento Aristotelianism and the Medieval Tradition," *Nuncius* 3 (1988) 3–38; T. B. Settle, "Egnazio Danti and Mathematical Education in Late Sixteenth-Century Florence," in J. Henry and S. Hutton, eds., *New Perspectives on Renaissance Thought: Essays in the History of Science, Education and Philosophy in Memory of Charles B. Schmitt* (London, 1990), 24–37.