

History of Science 903: Celestial Influence and its Discontents, 1300-1650

Michael H. Shank

Bradley Memorial Building—Fall 2013

M 3:30-6

Caution: time will be 5:30 for 9/16, 10/21, 11/18, 12/16 (Chairs' meetings):

This interdisciplinary seminar examines the astrological worldview that made celestial influence the leading cause of natural events in the sublunary realm and that thrived in Hellenistic, Islamic, and Latin civilizations of the Mediterranean in particular, roughly until the age of Newton. The seminar will devote several introductory weeks to the relevant background of astronomy and astrology in Greek antiquity and Islamic civilization, then turn to developments in late-medieval, Renaissance, and early-modern Europe. The focus will be on the physical theory underlying this worldview, on the criticisms it elicited, and on the manifestations of it in natural philosophy, medicine, and the arts in late-medieval and early modern Europe, with a primary focus on the 15th and 16th centuries. The seminar will draw on both primary and secondary sources in astronomy, astrology, optics, and astrological medicine, and consider incarnations of these views in the visual arts in particular. Primary readings will include Ptolemy's *Tetrabiblos*, al-Kindi's *De radiis*; Ficino's *De vita coelitus comparanda*, among others. Secondary readings will range from D.P. Walker's classic *Spiritual and Demonic Magic from Ficino to Campanella* (1958) to Mary Quinlan McGrath's recent *Influence: Art, Optics, and Astrology in the Italian Renaissance* (2013).

Requirements:

Active reading and active participation in discussion

Seminar research paper (ca. 20-25 pp.): The paper should show mastery of, and use one (maybe more) key concept(s) or insight(s) from the historical theories of celestial influence (or its detractors) in order to analyze, clarify, or criticize some appropriate aspect of the student's chosen field or research program. Unless you discuss this with me, I assume that the paper will deal with the chronological boundaries in the title of the course (while drawing on earlier material, as needed).

Books:

Tamsyn Barton, *Ancient Astrology* (London: Routledge, 1994)

D. P. Walker, *Spiritual and Demonic Magic from Ficino to Campanella* [1958] (Philadelphia: University of Pennsylvania Press, 2000). 978-0271020457

Mary Quinlan McGrath, *Influence: Art, Optics, and Astrology in the Italian Renaissance* (Chicago: University of Chicago Press, 2013) 978-0226922843

Ptolemy, *Tetrabiblos*. The Loeb translation by Robbins is now available on line at <http://penelope.uchicago.edu/Thayer/E/Roman/Texts/Ptolemy/Tetrabiblos/home.html>

In addition to the Loeb (Greco-English), Robbins's English translation is also available in a cheap paperback edition

Part 1: Background in Antiquity and medieval Islam

Week 1 (Sept 9): Introduction, introductions, and directions

Mini-lecture: Intro to geocentric heavens

Francesca Rochberg, "Natural Knowledge in Ancient Mesopotamia," in Harrison, Numbers, and Shank, eds., *Wrestling with Nature: From Omens to Science* (Chicago: University of Chicago Press, 2011), pp. 8-36.

Barton, *Ancient Astrology*, ch. 1

Otto Neugebauer, "The Study of Wretched Subjects," *Isis* 42 (1951) p. 111; reprinted in Shank, ed., *The Scientific Enterprise in Antiquity and the Middle Ages* (Chicago: University of Chicago Press, 2000), p. 21.

Quinlan McGrath, *Influence*, ch. 1

Week 2 (Sept 16): Greek antiquity I

Barton, *Ancient Astrology*, ch. 2-4 (pp. 32-113)

Ptolemy, *Tetrabiblos* (book 1-2)—see Learn@UW link

Recommended: Aristotle, *De generatione et corruptione*, II, 10; although dated historiographically, Lynn Thorndike's *History of Magic and Experimental Science* (8 vol.; Columbia University Press, 1923-58) remains a useful guide to primary sources in astrology from late antiquity to the 17th;

Week 3 (Sept 23): Greek antiquity II

Ptolemy, *Tetrabiblos* (books 3-4)—see Learn@UW link

Barton, *Ancient Astrology*, ch. 5-7 (pp. 114-235)

Week 4 (Sept 30): Arguments and Counterarguments

Review Barton, ch. 3.

Alexander Jones, "The Adaptation of Babylonian Methods in Greek Numerical Astronomy," *Isis*, 82 (1991), pp. 441-453; also in Shank, ed., *Scientific Enterprise*, pp. 97-109. (also accessible on JSTOR)

Long, "Astrology: Argument pro and contra," in Jonathan Barmes et al., eds., *Science and Speculation: Studies in Hellenistic Theory and Practice* (Cambridge UP, 1982), 165-92-- see Learn@UW link

Tamsyn Barton, *Power and Knowledge: Astrology, Physiognomics, and Medicine under the Roman Empire* (Ann Arbor: University of Michigan Press, 2002), ch. 3, Conclusion, Appendix A, pp. 133-80 (notes: 217-27); Learn@UW

Lindberg, *Theories of Vision from al-Kindi to Kepler*, Preface and ch. 1 (pp. 1-17; Learn@UW

Augustine, *Confessions*, IV, ch. 1-3 ; see Learn@UW link
<http://www.ourladyswarriors.org/saints/augcon4.htm>

Augustine, *On Christian Doctrine*, II, 20-42 (Bobbs-Merrill ed., pp. 55-78—Learn@UW

Recommended:; Lindberg. "Science and the Early Church," *Isis*, 74 (1983), 509-530, p. 527ff; [Shank ed *Scientific Enterprise*, 143; Cicero, *On divination*; Galen, *On Critical Days*.

Week 5 (Oct 7): Case Study in Islamic astrology: radiation as a world view

Lindberg, *Theories of Vision from al-Kindi to Kepler*, ch. 2-3: pp. 18-57

al-Kindi, *De radiis*: ca. 80 pp. in small French edition

<http://www.new-library.com/products/images/pages/rz-alkindi-rays-sample.pdf>

Helen Lemay, "The Stars and Human Sexuality: Some Medieval Scientific Views," *Isis* 71 (1980) 127-37; reprinted in Shank, ed., *The Scientific Enterprise in Antiquity and the Middle Ages* (Chicago: University of Chicago Press, 2000), pp. 245-55. (accessible on JSTOR)

Recommended: Pinella Travaglia, *Magic, Causality, and Intentionality. The Doctrine of Rays in al-Kindi* (Turnhout: Micrologus, 1999); Mash' Allah and al-Qabisi (Alcabitius), *The Introduction to Astrology: editions of the Arabic and Latin Texts and an English Translation*, ed. C. Burnett, Keiji Yamamoto, Michio Yano (London: Warburg Institute/Turin: Nino Aragnoa Editore, 2004); Charles Burnett, "Al-Kindi on Judicial Astrology: 'The Forty Chapters,'" *Arabic Sciences and Philosophy*, 3 (1993) 77-117.

Week 6 (Oct 14): The 12th-century translation movement and its impact

There will be some redundancy between these sources; the first is more elementary and older

Lindberg, *Theories of Vision from al-Kindi to Kepler*, ch. 4-6, pp. 58-121.

Lindberg, *Roger Bacon's Natural Philosophy: A Critical Edition, with English Translation, Introduction, and Notes, of De multiplicatione specierum and De speculis comburentibus* (Oxford UP, 1983), pp. xlii-lxxi, pp. 3-91 [English only!=45 pp.)

Quinlan McGrath, *Influence*, ch. 2-3

John North, "Celestial Influence: The Major Premiss of Astrology," in Paola Zambelli, *Astrology Hallucinati: Stars and the End of the World in Luther's Time* (De Gruyter, 1986, pp. 45-100; reprinted in his Collection

Recommended: Paola Zambelli, *Astrology Hallucinati: Stars and the End of the World in Luther's Time* (Berlin: De Gruyter, 1986); Michael Ryan, *A Kingdom of Stargazers: Astrology and Authority in the Late-Medieval Crown of Aragon* (Ithaca: Cornell University Press, 2011)

Week 7 (Oct 21): late medieval skepticism about astrology (Oresme & d'Ailly)

Thomas Aquinas, *Summa contra gentiles*, III, ch. 84-87, ch. 101-105.
<http://dhspriority.org/thomas/ContraGentiles3b.htm#84>

Nicole Oresme, *On the Causes of Marvels* Bert Hansen ed. Excerpts (prologue, ch. 1pp. 137-65, 243-51, 361-63

Nicole Oresme, *Livre de Divinacions* from G. W Coopland, Nicole Oresme and the Astrologers: A Study of his Livre de Divinacions (Liverpool: University Press, 1952, pp. 51-121 (every other page!)

Joan Cadden, "Charles V, Nicole Oresme, and Christinede Pizan: Unities and Uses of Knowledge in Fourteenth-Century France." In *Texts and Contexts in Ancient and Medieval Science: Studies on the Occasion of John E. Murdoch's Seventieth Birthday*, ed. Edith Sylla and Michael McVaugh, 208-44. Brill's Studies in Intellectual History 78. (Leiden: Brill, 1997), pp. 208-44.

Laura Smoller, *History, Prophecy and the Stars: The Christian Astrology of Pierre d'Ailly, 1350-1420* (Princeton: Princeton UP, 1994), ch. 1-4, 7; pp. 3-84, 122-30. Skim the first two chapters, which summarize material we have read.

Part 3: Medicean Florence and its radiation 1450-1650

Week 8 (Oct 28): Marsilio Ficino *et al.* I: Around *De vita* 1-2

For an intro to Ficino, see: Christopher Celenza, "Ficino," *Stanford Encyclopedia of Philosophy*, <http://plato.stanford.edu/entries/ficino/>

Marsilio Ficino, *Three Books on Life*, ed. and trans. Carol Kaske and John R. Clark (Binghamton, NY: RSA, 1989), books 1-2 (skim introduction)

Janet Cox-Rearick, *Dynasty and Destiny in Medici Art: Pontormo, Leo X and the Two Cosimos* (Princeton: Princeton University Press, 1984), pp. 116-42, 159-227.

Graham Smith, reviews of Cox-Rearick in *The Art Bulletin* 69 (1987), 304-7 (accessible via JSTOR)

Recommended: Charles Burnett "Al-Kindi in the Renaissance," in P. R. Blum (ed.), *Sapientiam amemus: Humanismus und Aristotelismus in der Renaissance* (Munich: Wilhelm Fink, 1999), 13-30.

Week 9 (Nov 4): Ficino *et al.* II: *De vita* 3

Ficino, *Three Books on Life*, (book 3)

D. P. Walker, *Spiritual and Demonic Magic*, Part I, ch. 1-3

Quinlan McGrath, *Influence*, ch. 4

Week 10 (Nov 11): Ficino *et al.* III: Case Study: Dürer's Melencolia I

D. P. Walker, *Spiritual and Demonic Magic*, Part II, ch. 4

David Pingree, "A New Look at Melencolia I," *Journal of the Warburg and Courtauld Institutes*, 43 (1980), pp. 257-58. Available on JSTOR

Erwin Panofsky, Raymond Klibansky and Fritz Saxl, *Saturn and Melancholy* (London: Thomas Nelson, 1964), Part III, ch. 2 (skim 241-74), Part IV, ch. 2 (pp. 284-365)

Michael H. Shank, "The Faces of Saturn: Images and Texts from Augustus through Dürer to Galileo" in Marvin Bolt, James Kaler, and Stephen Case, eds., *Engaging the Heavens: Inspiration of Astronomical Phenomena V Proceedings ASP Conference Series*, vol. 468 (ASPC, 2013), pp. 105-28.

Week 11 (Nov 18): Mary Quinlan-McGrath, *Influence* (visit)

Quinlan McGrath, *Influence*, ch. 5-Conclusion

Monica Azzolini, *The Duke and the Stars: Astrology in Renaissance Milan* (Cambridge, Mass.: Harvard University Press, 2013)

Recommended; Mary Quinlan-McGrath, "The Villa Farnesina. Time-Telling Conventions and Renaissance Astrological Practice," in « *Journal of the Warburg and Courtauld Institutes* » 58 (1995), pp. 53-71

Week 12 (Nov 25): Pico's Astrology and his Attack thereupon

Steven Vanden Broecke, "Astrology and politics in the Renaissance," in Brendan Dooley, ed., *A Companion to Renaissance Astrology* (Leiden: Brill, 2013)

Steven Vanden Broecke, *The Limits of Influence: Pico, Louvain, and the Crisis of Renaissance* (Louvain: University Press, 2003), chapter selections TBA

Brian Copenhaver in Stanford Encyclopedia of Philosophy
<http://plato.stanford.edu/entries/pico-della-mirandola/>

D. P. Walker, *Spiritual and Demonic Magic*, ch 5.

H. Darrel Rutkin, "Use and Abuse of Ptolemy's *Tetrabiblos* in Renaissance and Early Modern Europe: Two Case Studies (Giovanni Pico della Mirandola and Filippo Fantoni)," in Alexander Jones, eds., *Ptolemy in Perspective. Use and Criticism of his Work from Antiquity to the Nineteenth Century*, (Dordrecht and New York: Springer 2003), pp. 135-150.

Week 13 (Dec 2): Westman's Controversial Thesis about the Astrological Origins of Copernican Heliocentrism

Excerpts from Robert S. Westman, *The Copernican Question: Prognostication, Skepticism and Planetary Order*, ch. 1-3, pp. 1-105.

Reviews by Swerdlow, "Copernicus, Astrology, with an Appendix of Translations of Primary Sources," *Perspectives on Science* 20 (2012) 353-78

John Heilbron, "Robert Westman on Galileo and Related Matters," *Perspectives on Science* 20 (2012) 379-88

Westman Reply *Perspectives on Science* 20

Essay Reviews: Planetary Order in the Long Sixteenth Century (Michel Lerner and Miguel Granada in *Journal for the History of Astronomy* 43 (2012) 233-43

Shank essay review in *Isis* (forthcoming): my review; Westman's reply; my reply to the reply

Recommended: Sara J. Schechner, *Comets, Popular Culture, and the Birth of Modern Cosmology* (1997)

Week 14 (Dec 9): Pope Urban VIII, Campanella, and Galileo

Cox-Rearick, *Dynasty and Destiny in Medici Art*, pp. 233-91

D. P. Walker, *Spiritual and Demonic Magic*, ch. 6-7 (189-end)

Mario Biagioli, "Galileo the Emblem Maker," *Isis* 81 (1990), pp. 230-58

John Beldon Scott, *Images of Nepotism: The Painted Ceilings of Palazzo Barberini* (Princeton: Princeton University Press, 1991), excerpts on Campanella

Germana Ernst, "Telesius me delectavit," "From Naples to Padua," and "The Disappointment of Liberty," ch. 1-2, 11 of her *Tommaso Campanella: The Book and the Body of Nature*, trans. David Marshall (Springer, 2010), pp. 1-31, 215-41 (Leeearn@UW)

Shank draft of Galileo Chapter