

History of Science 512
Galileo Galilei: Life, Writings, and Interpretations
Michael H. Shank
History of Science, UW-Madison
Fall 2004

Tuesdays and Thursdays 4-5:15 p.m. in Social Science 6116
Lecture and discussion

Office hour: W 2:30-3:30 and by appointment (mhshank@wisc.edu; office phone: 262-3972; dept fax: 262-3984)

Required Books

Dava Sobel, Galileo's Daughter: A Historical Memoir of Science, Faith, and Love (New York: Penguin, 1999).

Stillman Drake, trans., Discoveries and Opinions of Galileo (Anchor, 1957).

Stillman Drake, Galileo at Work: His Scientific Biography [1978] (New York: Dover, 1995).

Galileo on the World Systems: A New Abridged Translation and Guide, trans and ed. by Maurice Finocchiaro (Berkeley: U. of California Press, 1997).

Richard J. Blackwell, Galileo, Bellarmine, and the Bible (Notre Dame: University of Notre Dame Press, 1987).

Maurice Finocchiaro, ed., The Galileo Affair (Berkeley: Univ. California Press, 1989).

A course reader is available for \$8.50 in 7143 Social Science (NOTE: there are no refunds for course packets if you drop the course). All articles except the asterisked ones are in the reader, almost all in order of appearance.

A good reference for the conceptual history of physics and astronomy during the Scientific Revolution is I. Bernard Cohen, The Birth of a New Physics (Norton).

A reliable website is The Galileo Project (started by Al van Helden) at Rice University: <http://es.rice.edu/ES/humsoc/Galileo/>

Requirements

The course is a kind of "conference course," a format combining lecture and discussion (in variable proportion).

Reading the assigned selections before class is very important, as is oral participation by way of informed questions and comments.

A one-page evaluative and analytical "reader's response" paper will be due in class for almost every week in which you are handing in no other writing assignment. This weekly assignment is meant (1) to stimulate your thinking and your ability to contribute to the discussion, and (2) to give me feedback on areas that you find problematic; (3) to keep you thinking and writing (together). These papers will be marked sat/unsat and will not necessarily be marked or returned every week.

Everyone:

In-class participation and one-page "reader's response" papers (15%)

Two of the three analytical papers listed (5 pp. each): 10% each (due in the relevant class period).

Take-home midterm essay (20%)--due at latest Sunday Oct. 24. at 7 p.m.

Review of Dava Sobel, Galileo's Daughter (5 pp.)--due at the latest Sunday Nov. 28. at 7 p.m (15%).

Final (with review questions), Saturday December 18 at 5:05 p.m. (30%)

Extra-credit options available (including rewriting the midterm, writing a third analytical paper, doing a special reading assignment, etc). Honors projects may include observation projects, in-class reports, as well more traditional work.

Grad students:

The above (excluding exams). In addition:

One research paper (15 pages min.; 40%; due by the final) or two critical essay-reviews (5-8 pp. each) of substantive books on Galileo or his context (20% each). The first due by the midterm; the second due by the final. Talk to me about this!

One in-class 15 min. report, including a handout (10%)--an exercise in teaching; clarity and intelligibility are at a premium (suggestions week by week)

I expect scrupulous academic honesty in the course. All written work should be your own in concept and execution. Use quotation marks to distinguish the words of others from your own; give credit to the sources of your ideas. If you are unsure about proper citation practice, talk to me about it (in person, phone, email).

Reference: note the chronology in The Galileo Affair (297-312) and the helpful casts of characters in ibid (313-324) and Galileo at Work, 437-471.

Schedule

Week 1: Introduction to Course/Sixteenth-Century Background

Th 9/2: Introduction

Readings: Galileo on the World Systems, pp. 1-38.

Recommended for general background (HS Reading Room and UW libraries): Thomas Kuhn, The Copernican Revolution, ch. 1-4; I. B. Cohen, The Birth of A New Physics; S. Drake, Galileo Galilei (Oxford/Hill and Wang); L. Geymonat, Galileo Galilei: A Biography and Inquiry into his Philosophy of Science.

Week 2: The Early Galileo and his Context

T 9/7: Drake, "Vincenzo Galilei and Galileo," Galileo Studies, pp. 43-62 ; Tim Carter, "Music and Patronage in Late Sixteenth-Century Florence: The Case of Jacopo Corsi, (1561-1602)" in I Tatti Studies: Essays in the Renaissance 1 (1985) 57-79 (skim notes and appendices); Shank, "Setting the Stage," (first part) pp. 1-15 top.

Th 9/9: Blackwell, Galileo, Bellarmine, ch. 1, Appendices 1-3, pp. 5-27, 181-194; Drake, Galileo at Work, ch. 1-2, pp. 1-32.

One-pager due.

Possible report on Vincenzo Galilei and music, using the work of Claude Palisca and translations of V. Galilei's works.

Week 3: The Science of motion to the early Galileo

T 9/14: Lindberg, Beginnings of Western Science, pp. 290-307; Galileo at Work, ch. 3-5, pp. 33-90

Th 9/16: "Comrades in Pursuit of Truth," pp. 597-600; Koyré, "Galileo and Plato," from his Metaphysics and Measurement (Harvard, 1968); Galileo at Work, ch. 6-7, pp. 91-133.

One-pager due.

Possible reports on William Wallace's work, Wallace-Crombie scuffle etc; Lane Cooper on Galileo and the Leaning Tower; Galileo and astrology (Righini; N. Kollerstrom; D. Rutkin; N. Swerdlow)

Week 4: Galileo and the spyglass, 1610

T 9/21: Skim the intro to Discoveries and Opinions (1-19) and read "Starry Messenger" (1610), pp. 23-58;

Th 9/23: Westfall, "Scientific Patronage: Galileo and the Telescope," Isis 76 (1985) 11-30; *Biagioli, "Galileo the Emblem-maker," Isis 81 (1990) 230-258; *Shank, "Galileo's Day in Court," Journal for the History of Astronomy 25 (1994) 236-242; Drake, Galileo at Work, ch. 8-9, pp. 134-176.

One-pager due, or analytical paper #1: Dedication of "Starry Messenger," Drake, D&O, pp. 23-26.

Possible reports: Galileo as instrument maker; the Biagioli-Shank controversy (Biagioli, "Playing with the Evidence," and Shank, "How Shall We Practice History: The Case of Biagioli's Galileo, Courtier," Early Science and Medicine 1 (1996) 69-150.)

Week 5: Galilean Controversies, 1613

T 9/28 : "Letters on Sunspots" (1613) in Drake, D&O, pp. 89-144 (skim the intro, pp. 59-85);

Th 9/30: "Letter to Castelli" (1613), in Blackwell, pp. 195-201; Drake, Galileo at Work, ch. 10-12, pp. 177-230.

One-pager due

Possible report: "Dispute over Bodies in Water," (See Drake, "Dispute over Bodies in Water," Galileo Studies, 159-176); Drake, Cause, Experiment and Science: only introduction and red print (=Galileo's "Bodies that Stay atop Water or Move in it") are required (odd to say, the "dialogue" was composed by Drake!).

Week 6: Natural Philosophy and Religious Knowledge

T 10/5: Read introduction to "Letter to Grandduchess Christina" in Drake, D&O, pp. 145-71; Blackwell, ch. 2-3, pp. 53-110; Drake, Galileo at Work, ch. 13, pp. 231-251.

Th 10/7: Read for discussion "Letter to Grandduchess Christina" in Finocchiaro, Galileo Affair, pp. 87-118 [**not** in Discoveries and Opinions (145-216)--Drake's translation is poorer];

One-pager due, or analytical paper #2: Letter to Grandduchess, in Finocchiaro, The Galileo Affair, pp. 90 ("Now...") to 96 (...necessary demonstrations." 10 lines from the bottom). Due in class.

Possible report: different approaches to the "Letter to the Grandduchess" (de Santillana, Langford, Blackwell, Westfall, etc)

Week 7: Galileo admonished

T 10/12: Galileo on the World Systems, pp. 38-43; Finocchiaro, The Galileo Affair, pp. 119-124, 131-153 (incl. Discourse on tides).
 Th 10/14: Blackwell, chap. 4-5, pp. 87-134, and Appendices 5-9A, pp. 203-273 (includes Foscarini's Letter); Drake, Galileo at Work, ch. 14, pp. 252-288.
 One-pager due.

Possible report: Bellarmine's Louvain Lectures (ed. U. Baldini and G. V. Coyne (Studi Galileani, vol. 1, #2, Vatican City, 1984); different approaches to the 1616 admonition (Santillana vs. Drake in appendix to Geymonat; Redondi; Fantoli; Feldhay; etc)

Week 8: Galileo on comets

T 10/19: Galileo, The Assayer (D&O, 217-281); Drake, Galileo at Work, ch. 15, pp. 267-289.
 Th 10/21: Galileo, "Reply to Ingoli" (1624) in Finocchiaro, The Galileo Affair, 154-197; plus the anonymous complaint 202-204; Drake, Galileo at Work, ch. 16, pp. 289-305.

Mid-term essay due. 10/24—no one-pager; first review due for grad students
 Possible report: The Redondi thesis (Galileo, Heretic) and Westfall's response (in his Essays on the Trial of Galileo)

Week 9: Galileo's Dialogue (1632) I: change in the heavens?

T 10/26 Galileo on World Systems, "To the Discerning Reader," and Day One, pp. 77-116 including the explanatory notes.
 Th 10/28: Drake, Galileo at Work, ch. 17, pp. 289-329.
 One-pager due.

Possible reports: Galileo as a an anarchist (Paul Feyerabend's Against Method with response by Peter Machamer), or as an empiricist (S. Drake), or as a smart Aristotelian (William Wallace)

Week 10: Galileo's Dialogue (1632) II: might the Earth rotate?

T 11/2: Galileo on World Systems, Day Two, pp. 117-170 including the explanatory notes.
 Th 11/4: Galileo on World Systems, Day Two, pp. 171-220 including the explanatory notes; Drake, Galileo at Work, ch. 18, pp. 330-352.
 One-pager due, or analytical paper #3: Day 2, fourth argument, pp. 155-165 top.

Week 11: Galileo's Dialogue (1632) III—annual motion and tides?

T 11/9: Galileo on World Systems, Day Three, pp. 221-81.
 Th 11/11: Galileo on World Systems, Day Four, pp. 282-308 including the explanatory notes; Drake, Galileo at Work, ch. 19, pp. 353-372.
 One-pager due.

Week 12: Galileo in Trouble

T 11/16: Trial documents in Finocchiaro, ed., The Galileo Affair, pp. 198-255.
 Th 11/18: no class; begin Sobel, Galileo's Daughter.
 One-pager due.
 Possible reports on books by Fantoli or Feldhay

Week 13: Galileo and his daughter

T 11/23: Finish Sobel, Galileo's Daughter (discuss book); review due by Sunday.
 Th 11/25: Thanksgiving Break

Week 14: Galileo and the Roman Inquisition

T 11/30: Finocchiaro, ed., The Galileo Affair, pp. 256-293

Th 12/1: Shank, "Setting the Stage," pp. 15-29; D. P. Walker, Spiritual and Demonic Magic from Ficino to Campanella (Notre Dame, 1958; 1969), pp. 203-212.

One-pager due.

Possible reports: Brecht's Life of Galileo Galilei; Shea and Artigas on the trial.

Week 15: Galileo's mature mechanics

T 12/7: Review Cohen, "Toward an Inertial Physics;" Galileo Galilei, Two New Sciences (Drake transl.), Day 3 (pp. 153-170); Drake, Galileo at Work, ch. 20-22, pp. 373-412.

Th 12/9: Galileo Galilei, Two New Sciences (Drake transl.), Day 4 (217-229); Drake, Galileo at Work, ch. 22, pp. 413-36.

One-pager due.

Possible reports: specific elements of Two New Sciences; Finocchiaro's Retrying Galileo, 1633-1992 (forthcoming)

Week 16: Epilogue

T 12/14: Summation

Final Exam: Saturday December 18 at 5:05 p.m.

