

Hist 410, History of Science: The Experiment
CRN 37025
Monday Wednesday, 10:00-11:20
185 LIL
Prof. Vera Keller
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Office Hours: Tuesday, 10:00-12:00

This course explores the origins of experimental science in early modern Europe. Science (*scientia*) once meant knowledge proven by sure reasoning, as distinguished from mere opinion based upon fallible human senses. How then, did the human manipulation and observation of nature come to be



Margret Eicher, *Das Experiment*, 2003.

regarded as a source of dependable knowledge? We will question the role of art, craft, alchemy, magic, law, travel, collecting, entertainment, the church, and universities in changing practices and epistemologies of natural philosophy. We will engage with recent debates in the historiography of science concerning the relationship between science and locality, society, gender, professionalization, communication and technology. We will experiment with early modern laboratory receipts and practices, and we will trace how cultures of wonder and exploration have continued to flourish outside of professionalized science. Drawing on works from Special Collections, we will participate in a group project resulting in a collaborative exhibition.

4/1 Introductions

(in class) Ambroise Paré, *On Monsters and Marvels*, trans. Janis L. Pallister (Chicago: University of Chicago Press, 1982), 3-13 and 107-129.

4/3 James Secord, "Knowledge in Transit," *Isis* 95 (2004), 654-72.

Class Visit: Special Collections, Knight Library.

Assignment, 500-1000: Choose a book from Special Collections and write a paper on it drawing on upon at least one secondary source. This is due 5/1.

4/8 Steven Shapin, "'A scholar and a gentleman': The problematic identity of the scientific practitioner in early modern England," *History of Science* 29 (1991), 279-327.

4/10 Culture of Travel:

Justin Stagl, *A History of Curiosity: The Theory of Travel, 1550-1800* (Australia: Harwood Academic Publishers, 1995), 95-153.

4/15 Bernadette Bensaude-Vincent and William R. Newman, "Introduction: the Artificial and the Natural," *The Artificial and the Natural: An Evolving Polarity* (Cambridge: MIT Press, 2007), 1-10.

4/17 Culture of Natural Magic

Stuart Clark, "Chapter Fourteen: Natural Magic," *Thinking with Demons: the idea of Witchcraft in early modern Europe* (Oxford: Oxford University Press, 1997).

4/22 Culture of Craft

Pamela Smith, *The Body of the Artisan: Art and Experience in the Scientific Revolution* (Chicago: University of Chicago Press, 2004), Chapter Three.

Class Visit: Jordan Schnitzer Art Museum

4/24 Bernard Palissy, *Admirable Discourses*, Aurèle La Rocque, trans. (Urbana: University of Illinois Press, 1957), 26-7, 146-180, 188-203.

Case: Seignette's Salt (Potassium Sodium Tartrate).

4/29 Culture of the Laboratory

Ursula Klein, "The Laboratory Challenge: Some Revisions of the Standard View of Early Modern Experimentation," *Isis* (Focus), 99 (2008), 769-782.

Case: Distillation.

5/1 Culture of God

John L. Heilbron, *The Sun in the Church: Cathedrals as Solar Observatories* (Cambridge, Mass: Harvard University Press, 1999).

5/6 Culture of the University:

Mordechai Feingold, *The Mathematicians' Apprenticeship: Science, Universities and Society in England, 1560-1640* (Cambridge: Cambridge University Press, 1984), 166-189.

5/8 Paula Findlen, "Jokes of Nature and Jokes of Knowledge: The Playfulness of Scientific Discourse in Early Modern Europe," *Renaissance Quarterly* 43:2 (1990), 292-331.

5/13 Independent Work in Special Collections.

Assignment. 250-500. Revisit Special Collections and your chosen book. Write a jargon-free description of what is interesting about the work/edition in relationship to the themes we have discussed in course and your previous paper. This is due by 5/20.

5/15 Independent Work.

Barbara J. Shapiro, *A culture of fact: England, 1550-1720* (Ithaca: Cornell University Press, 2000), selection.

5/20 Culture of Law:

Francis Bacon, *Two Bookes of the proficience and advancement of Learning, divine and humane* (London: Henrie Tomes, 1605), Book II, 25-36.

Be prepared to discuss Shapiro as well.

5/22 Case: "Boyle's" Law

Robert Boyle, "A Defence of the Doctrine Touching the Spring and Weight of the Air," *New experiments physico-mechanical touching the spring of the air and its effects (made for the most part in a new pneumatical engine) / written by way of letter to the Right Honorable Charles Lord Vicount of Dungarvan, eldest son to the Earl of Corke by Robert Boyle* (Oxford: Printed by H. Hall for Tho. Robinson, 1662), 48-68.

5/27 Memorial Day. No class.

5/29 Henry Power, *Experimentall Philosophy in Three Books* (London: Roycroft, 1664), Book II, Mercurial Experiments (1663), 89-149.

6/3 Elizabeth Potter, *Gender and Boyle's law of gases* (Bloomington: Indiana University Press, 2001), 161-185.

6/5 Closing discussion.

Final Paper Due. Final Paper instructions: Relate at least one primary source to at least three secondary sources. Between 4,500 and 5,000 words. Numbered pages. Double-spaced. Name on separate page on last page. Use the Chicago citation style.

Course Policies

Office Hours and Email Policy

Office hours are a highly beneficial practice for everyone involved. They allow the professors to prepare a certain block of their time devoted entirely to communicating with students outside of the class. They allow students to get to know their professors better, get better answers to their questions, and invariably receive more guidance and advice than they would in an email. Office hours are there for you. Use them! Email should only be used in case of emergencies when attending office hours is not an option, but do not expect a rapid reply. If you cannot attend the designated office hours, you can email me to set up an appointment for another time.

Assignments

Grades will be based on class contributions (20%), two independent assignments (each 10 %), one short writing assignment (20 %) and a final paper (40%).

Contribution: Being a good contributor to the class means raising questions for discussion, engaging with your fellow students by listening and responding to their points, and respecting your fellow students. In short, contribution means contributing to the vitality and level of seminar discussion. Digressions or merely questions of matters of fact are not contributions. Absences will be counted against the participation grade.

Papers: Good papers will display careful close readings of the text, good grammar, a specific, well-reasoned argument, and will stay within the required length. “Common knowledge” and generalizations are not your friends! An unsupported generalization will drop your grade significantly (at least by A to A minus, A minus to B plus, and so forth). The final paper is an exercise in showing that you have engaged and thought about the issues raised in class, but also that you can produce a fine, finished product. Please proofread. No outside sources are allowed for the papers, particularly Wikipedia, which I will check. Use only the texts provided, in the editions used for the class. Specific page numbers for every quotation should be given, in a footnote.

University of Oregon Affirmation of Community Standards

The University of Oregon community is dedicated to the advancement of knowledge and the development of integrity. In order to thrive and excel, this community must preserve the freedom of thought and expression of all its members. The University Of Oregon has a long and illustrious history in the area of academic freedom and freedom of speech. A culture of respect that honors the rights, safety, dignity, and worth of every individual is essential to preserve such freedom. We affirm our respect for the rights and well-being of all members.

We further affirm our commitment to:

- respect the dignity and essential worth of all individuals
- promote a culture of respect throughout the university community
- respect the privacy, property, and freedom of others
- reject bigotry, discrimination, violence, or intimidation of any kind
- practice personal and academic integrity and expect it from others
- promote the diversity of opinions, ideas, and backgrounds that is the lifeblood of the university

An equal opportunity, affirmative action institution committed to cultural diversity and compliance with the Americans with Disabilities Act.

Students with Disabilities

If you have a documented disability and anticipate needing accommodations in this course, please make arrangements to meet with me soon. Please bring a notification letter from Disability Services outlining your approved accommodations.

Academic Honesty

Students will comply with all policies on Academic Honesty at the University of Oregon.

Plagiarism can often unintentionally become a problem when students are unaware of what it includes, or when they use improper citation. Plagiarism is the inclusion of someone else's product, words, ideas, or data as one's own work. When a student submits work for credit that includes the

product, words, ideas, or data of others (or of their own previous work), the source must be acknowledged by the use of complete, accurate, and specific references, such as footnotes. **Wikipedia will not be accepted as a source.** By placing one's name on work submitted for credit, the student certifies the originality of all work not otherwise identified by appropriate acknowledgements. On written assignments, if verbatim statements are included, the statements must be enclosed by quotation marks or set off from regular text as indented extracts.