

Experiment

HC 431 History
W 2-4:50 pm
201 Chapman Hall

Office Hours:
208 Chapman Hall
M 1-3 pm
T 2-4 pm



Margret Eicher, *Das Experiment*, 2003, tapestry.

This course explores the origins of experimental science in early modern Europe (15th to 18th centuries). 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 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. Informed by historiography, we will read primary texts of early modern science and ourselves experiment with early modern laboratory receipts and practices.

Course Objectives

- Develop a "Historian's Habits of Thought" (see attached)
- Gain an awareness of what the history of science entails (hint: it is not the same as current science)
- Read and analyze historical scholarship on a challenging subject
- Learn to contribute actively in seminar discussions
- Identify an independent research topic
- Complete a polished, historical research paper

Your Objectives

You've just heard about what I want you to get out of the course. Take a few minutes and list three objectives of your own for the course.

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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! If you cannot attend the designated office hours, you can email me to set up an appointment for another time. This should be the main use of email in this course.

Please allow at least 24 hours for a response to email.

Electronic Gadget Policy

I strongly prefer no laptops or tablets in class. As we will discuss, they shouldn't really be necessary for note-taking in this class. If you need one for medical reasons, please discuss it with me. No cellphone use in class.

Readings

There is only one text to be purchased, available in the Duck Store: William Eamon, *Science and the Secrets of Nature: Books of Secrets in Medieval and Early Modern Culture* (Princeton: Princeton University Press, 1994). A copy will also be available on reserve at Knight Library for a four-hour loan period. Other readings are posted on the course Canvas site.

Assignments

Attendance and Contribution: 20 points

(1 pt per class for full attendance and 1 point for contribution)

Absences are excused with a doctor's note. 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. In-class assignments will also count toward class contributions.

Blog posts: 20 points

Blog Posts should be uploaded by 11:59 am on the class day, or as specified.

Each post is worth a possible 2 points. A post of any kind will be worth .5 points. A post that engages critically with the reading will be worth 1 point. A post that also poses a discussion question will be worth 1.5 points. A post (other than the first post of the week) that also engages a peer's post will earn 2 points. Posts should be no longer than 2 paragraphs. Repetitions of previous comments by others will not receive full credit, so it is in your interest to post early. Blog posts should offer fodder for discussion drawn from the reading, but should not be merely questions of fact (such as "what is a book of secrets?"). For questions of fact, either consult reputable reference works or your professor.

First Short Paper, 10 points: Due April 22

Write a 3-4 page paper relating between one and three recipes from BnF Ms. Fr. 640 Minimal Edition:

<https://cu-mkp.github.io/2017-workshop-edition/>, to the sections of Eamon's *Science and the Secrets of Nature* we have read so far. Papers should be double-spaced, 1-inch margins, Times New Roman, 12-point font, with page numbers. Footnotes should be single-spaced in 10-point font. Use Chicago style (we will discuss) for footnotes and bibliography (note that footnotes and bibliography have different formats).

Second Short Paper, 10 points: due May 6 at 11:59 pm as an emailed Word document to vkeller@uoregon.edu

Use one primary source (other than BnF Ms. Fr. 640) and one secondary source we have read to write a 4-5 page paper.

Experimental Report: 5 points (in class)

Describe our demonstration of Boyle's Law in period terms

Review of Experiment Report: 5 points (in class)

Grade a peer's experimental report for historicity. With reference to our course readings, describe what was and what wasn't historical and why.

Boyle Reading Questionnaire: 5 points

*Making and Knowing Virtual Visit Questions: 4 points
due May 21 by 11:59 pm in Canvas*

*Making and Knowing Virtual Visit Reflection: 3 points
due May 25 by 11:59 pm in Canvas*

Final Paper: 20 points: due June 13 by 11:59 pm as a Word document via email to vkeller@uoregon.edu

Write a 7-10 page paper using at least one primary source and at least two secondary sources we read this term. They cannot be the same sources you used for your short papers. The paper should be double-spaced, 1-inch margins, Times New Roman, 12-point font, with page numbers. Footnotes should be single-spaced in 10-point font. Use Chicago style (we will discuss) for footnotes and bibliography (note that footnotes and bibliography have different formats).

Good papers will display an analytical engagement with primary and secondary literature, 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). Please proofread.

Part I: Experience

Week I, April 4:

Pamela H. Smith and The Making and Knowing Project, "Historians in the Laboratory: Reconstruction of Renaissance Art and Technology in the Making and Knowing Project," *Art History* 39:2 (2016), 210-233.

Week II, April 11:

William Eamon, *Science and the Secrets of Nature: Books of Secrets in Medieval and Early Modern Culture* (Princeton University Press: Princeton, 1994), 1-90.

Brian Copenhaver, trans. *Hermetica*, 1-8.

Week III, April 18:

Eamon, *Science and the Secrets of Nature*, 93-167.

Read the description of BnF Ms. Fr. 640: http://www.makingandknowing.org/?page_id=23

And skim the English translation of the manuscript:

<https://cu-mkp.github.io/2017-workshop-edition/translation/>

Case: Begin Seignette Salt growth

In-class exercise: Write an early modern recipe for Seignette Salt

First Short Paper Due: April 22 at 11:59 pm via email to vkeller@uoregon.edu as a Word Document. Write a 3-4 page paper relating between one and three recipes from BnF Ms. Fr. 640 to the sections of Eamon's *Science and the Secrets of Nature* we have read so far.

Week IV, April 25:

Eamon, *Science and the Secrets of Nature*, 194-233.

Thomas Da Costa Kaufmann, "From Mastery of the World to Mastery of Nature: The Kunstammer, Politics, and Science," in *The Mastery of Nature: Aspects of Art, Science, and Humanism in the Renaissance* (Princeton, N.J.: Princeton University Press, 1993), 174-194.

Della Porta, *Natural Magic*, excerpts (read in class)

Part II: Experiment

Week V, May 2:

Meet in Special Collections

Eamon, *Science and the Secrets of Nature*, 269-300.

Barbara J. Shapiro, "The Facts of Nature I," *A culture of fact: England, 1550-1720* (Ithaca: Cornell University Press, 2000), 1-7 and 105-138.

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

Second Short Paper Due: May 6 at 11:59 pm as an emailed Word document to vkeller@uoregon.edu. Use one primary source (other than BnF Ms. Fr. 640) and one secondary source we have read to write a 4-5 page paper. The choice of topic is yours, but do not repeat your first paper.

Week VI, May 9:

Meet in Special Collections (2:00-3:30)

Eamon, *Science and the Secrets of Nature*, 301-360

Charlotte Sleight, "Jan Swammerdam's Frogs," *Notes and Records of the Royal Society of London*, 66:4 (2012), 373-392.

In-class assignment: Choose a book from Special Collections and write a one-page description of what is interesting about the work/edition in relationship to the themes we have discussed in course.

Week VII, May 16:

Meet at Paul Ollum Atrium (Willamette Hall) at 2:15

Steven Shapin, "Pump and Circumstance: Robert Boyle's Literary Technology." *Social Studies of Science* (1984), 14:4, 481-520.

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* (Oxford: Printed by H. Hall for Tho. Robinson, 1662), 48-68.

Henry Power, *Experimentall Philosophy in Three Books* (London: Roycroft, 1664), Book II, Mercurial Experiments (1663), 89-111.

This week, write your blog post only about Shapin.

Pre-class assignment: Boyle Reading Assignment Questionnaire (5 points). Due in Class. Do the separate questionnaire for the primary source reading.

Experiment Report (in-Class) (5 points)

Review of Experiment Report (in-Class) (5 points)

Part III: Reconstruction

Week VIII: May 23:

Excerpt of Leora Auslander, Amy Bentley, Leor Halevi, H. Otto Sibum and Christopher Witmore, "AHR Conversation: Historians and the Study of Material Culture," *The American Historical Review*, Vol. 114, No. 5 (2009), pp. 1354-1404 (read pp. 1354-1381).

Skype into Making and Knowing Project

After-Class Assignment: Making and Knowing Project Reflection (5 points): Due May 25 by 11:59 pm

Week IX: May 30

Hjalmar Fors, Lawrence M. Principe, and H. Otto Sibum, "From the Library to the Laboratory and Back Again: Experiment as a Tool for Historians of Science," *Ambix*, Vol. 63 No. 2, May 2016, 85-97.

Visit from Joel Klein, Molina Curator for the History of Medicine and Allied Sciences, Huntington Library, San Marino, CA

Case study: Seignette Salt

Excerpt, Elie and Pierre Seignette, *Les Utilitez les Plus Remarquables de la Poudre Polychreste* (La Rochelle: Perez, 1675), Vera Keller, trans. (read in class)

M. Geoffroy "Concerning Mr. Seignette's Sal polychrestus Rupellensis, and some other chemical Salts," *Philosophical Transactions* 39 (1738), 37-40. (read in class)

Week X: June 1, 3:30-5:00 Rescheduled Final Course Discussion
Critique of Experiment

In-class performance of excerpt from Thomas Shadwell, *The Virtuoso*
Elizabeth Potter, *Gender and Boyle's law of gases* (Bloomington: Indiana University Press, 2001), 161-185.

Final Paper due June 13 by 11:59 pm as a Word document via email to vkeller@uoregon.edu

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.

Sexual Harassment and Assault

The UO is committed to providing an environment free of all forms of discrimination and sexual harassment, including sexual assault, domestic and dating violence and gender-based stalking. If you (or someone you know) has experienced or experiences gender-based violence (intimate partner violence, attempted or completed sexual assault, harassment, coercion, stalking, etc.), know that you are not alone. UO has staff members trained to support survivors in navigating campus life, accessing health and counseling services, providing academic and housing accommodations, helping with legal protective orders, and more.

Please be aware that all UO employees are required reporters. This means that if you tell me about a situation, I may have to report the information to my supervisor or the Office of Affirmative Action and Equal Opportunity. Although I have to report the situation, you will still have options about how your case will be handled, including whether or not you wish to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need. If you wish to speak to someone confidentially, you can call 541-346-SAFE, UO's 24-hour hotline, to be connected to a confidential counselor to discuss your options. You can also visit the SAFE website at safe.uoregon.edu.

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. 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.