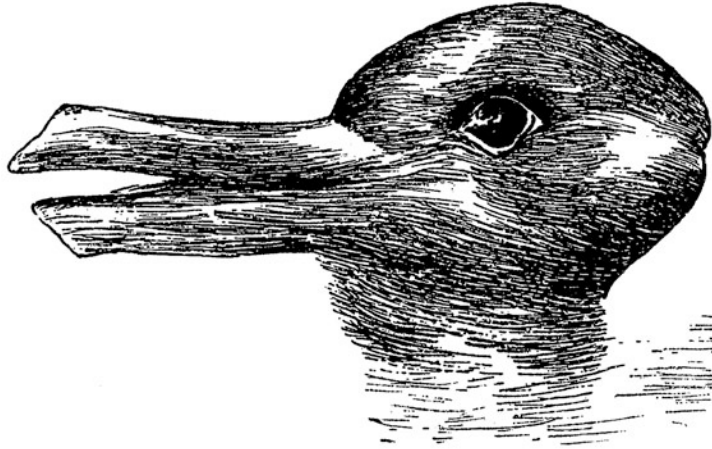


Harvard University
History of Science 97
Sophomore Tutorial



Spring 2011
Lecture: Monday, 4-5pm
(plus a two-hour weekly discussion section)

Instructor
Alex Wellerstein

Course description

Sophomore tutorial is an introductory course that emphasizes the development of critical reading and discussion skills in the context of the study of the history of science. Students will read key texts written by prominent scholars in the broader discipline of science studies, highlighting critical theoretical and methodological issues in the understanding of science, technology, and medicine from the past fifty years.

Grades

The final grade for students will be calculated based on section participation and attendance (50%) and performance on assignments (50%). There are no exams.

Note that attendance is *necessary but not sufficient* for a good participation grade. Participation means active engagement with the discussion sections, and demonstration that you have done the reading. Showing up to section without having done the assigned reading is equivalent to non-attendance for grading purposes.

If you are at any time unclear about the expectations of section participation or assignments, you should get in touch with your section leader for clarification sooner rather than later.

Lectures

Lectures will be given once a week, are mandatory, and will provide background material to contextualize the “big questions” you will be grappling with before you go into section and as you complete your reading. Please refrain from using Facebook, e-mail, web browsing, chatting, texting, Tweeting, blogging, playing Solitaire, and other computer activities not directly related to lecture, as they are distracting to you and others in your vicinity. Numerous studies have shown that although nearly everybody *thinks* they are a good multitasker, everybody is actually quite poor at it when faced with the many distractions of the web. Your TF may have their own laptop policies for your section.

Sections

The heart of this course is the section experience. Active and continuous participation in the overall discussions is mandatory and will be the core of your section grade. Reading of *all* assigned material for a given week *before* section that week is *absolutely required*. We will not be enforcing this with “response papers” unless there is strong indication that the appeal to honesty is not by itself enough.

Section conduct should be courteous and respectful of your fellow students. You should also consider it an official mandate to learn the names of your fellow students and ask them about their hobbies. You will not be tested on this, but it is good form.

Section attendance is mandatory. If you absolutely *must* miss section for a week, arrange with your TF to sit in on another TF’s section for that week. If you absolutely must miss out on sectioning altogether for a week, you should arrange for an alternative assignment with your TF in order to make up your lost participation grade for that week.

While attendance is mandatory, it is not sufficient for a full participation grade. Actual participation and active, contributing discussion is necessary. Please talk with your TF if you are unclear as to what the expectations for section participation are.

Books to purchase

The following books will be available for purchase at the Harvard Coop, and can also be purchased online at Amazon for a song if you do so in advance. Copies are also on reserve at Lamont. Please make sure to get the editions listed below:

- Thomas S. Kuhn, *The Structure of Scientific Revolutions*, 3rd. edn. (University of Chicago Press, 1996).
- Bruno Latour and Steve Woolgar, *Laboratory Life: The Construction of Scientific Facts* (Princeton University Press, 1986).

Other course readings will be posted on the course website where possible.

University policies and regulations

We uphold University policies and regulations on the observation of religious holidays, sexual harassment, racial or ethnic discrimination, and assistance available to students with disability issues. Any students requiring special accommodation should talk to the Head TF as soon as possible. We also uphold University policy with respect to cases of plagiarism. Students should make themselves familiar with the respective University regulations and are encouraged to bring any questions or concerns to the attention of the teaching staff.

Collaboration with other students is permitted for section preparation, so long as it is not used as a means to get out of doing assigned reading. Student written work must be individual and without collaboration, with the exception of discussion of general approaches to assignments or assistance with proofreading.

Assignments

Throughout the course there are three short assignments. These should be taken serious as papers (and these, along with your participation in section, are what your final grade will be based on). Emphasis should be put on writing clearly and concisely, and making strong arguments on the assignments which call for arguments. (It does not matter whether you agree with the authors we read, or the lecturer, or the TFs—but the argumentation must be strong, whatever you argue for or against.) Instructions as to the specific requirements of the assignments will be given out a number of weeks before they are due.

All assignments should be printed in Times New Roman (*not* Calibri, not Arial, not Courier!), 12-point font, double-spaced, with one-inch margins on all sides. The page lengths given are not set in stone — if you go a little over, or a little under, don't waste time fretting about it. Going extremely over or under the limits may result in a bad grade; TFs retain the option to stop reading lengthy papers whenever they are over the limit.

Written assignments are due *at the beginning* of lecture on the weeks specified in the schedule. Assignments brought in by flustered students at the middle and end of lecture will be judged to be one day late, and “the printer ran out of toner” will *not* be accepted as a valid excuse.

Each day an assignment is late means it will lose a third of its final grade (from A to A-, from B+ to B, etc.). This adds up quickly. Be aware and use good judgment. It is always a good idea to be in contact with your TF if you believe that an assignment will be late.

Whatever your current confidence in your writing ability, if you are interested in boosting your writing skills to another level, please don't hesitate to take advantage of the Harvard College Writing Center. All great writers rely on editors and the eyes of others. Writing is a skill that can be learned and improved upon over time. Even good writers can and do get better.

Use good citation practices. It is recommended that you use the Turabian citation style guidelines (which will be posted to the course website). Whenever referencing specific quotes or ideas from a work, cite it, including the page number. (The page number is rather important—it tells us that you probably didn't just get this off of Wikipedia.) If the assignment only pertains to a single book (e.g. Kuhn), you can make it clear in the beginning that you are talking about the book, and just use parenthetical page numbers to cite specific passages afterwards.

You have the opportunity to revise and resubmit one essay (your choice) during reading period for a better grade, but you will not be required to do so. Your grade cannot go down when submitting a revision, but there is no guarantee of it going up.

Lecture and Reading Schedule

Note: All assigned readings for a given lecture must be read by the *discussion section* held that week. Instructions for what to focus on in the readings will be given in lecture. All readings may be found online, with the exception of the Kuhn and Latour books, which must be purchased.

WEEK 1 (1/24): Introduction: Why study the history of science?

- Thomas Kuhn, *The Structure of Scientific Revolutions* (1962, 1996) (start)

ASSIGNMENT #1 HANDED OUT

NOTE: No section this week (section assignments being made).

WEEK 2 (1/31): Kuhn's "revolution": The dynamics of scientific change

- Thomas Kuhn, *The Structure of Scientific Revolutions* (1962, 1996) (finish)

WEEK 3 (2/7): Philosophical demarcations: What is "science"?

- Karl Popper, *Conjectures and Refutations* (1963): prefaces and ch. 1
- Paul Feyerabend, *Against Method* (1975): introduction, ch. 1-6 and 15
- Robert K. Merton, "The Normative Structure of Science" (1942)

ASSIGNMENT #1 DUE IN LECTURE

WEEK 4 (2/14): Making facts, part 1

- Bruno Latour and Steve Woolgar, *Laboratory Life* (1979) (first half)

ASSIGNMENT #2 HANDED OUT

WEEK 5 (2/21): Making facts, part 2

NO LECTURE (President's Day)... but there is still section:

- Bruno Latour and Steve Woolgar, *Laboratory Life* (1979) (the rest)
- Bruno Latour, "Give me a Laboratory and I will Raise the World" (1983/1998)

WEEK 6 (2/28): Bodies, diseases, and knowledge

- Michel Foucault, *Discipline and Punish* (1977): ch. 2 and 3
- Charles Rosenberg, *Framing Disease* (1992): introduction
- Charles Rosenberg, "The Tyranny of Diagnosis" (2002)
- Charles Rosenberg, "Managed Fear" (2009)

WEEK 7 (3/7): Fact-makers

- Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump* (1985): ch. 1, 2, and 8, plus the intros of ch. 3, 4, and 6

ASSIGNMENT #2 DUE IN LECTURE

SPRING BREAK (3/12-3/20)

WEEK 8 (3/21): Feminist critiques

- Donna J. Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective" (1972)
- Donna J. Haraway, "Race: Universal Donors in a Vampire Culture" (1997)
- Evelyn Fox Keller, "Gender and Science: An Update" (1992)

WEEK 9 (3/28): The Science Wars and relativism

- Paul R. Gross and Norman Levitt, *Higher superstition* (1994): ch. 3
- Alan D. Sokal, "A Physicist Experiments with Cultural Studies" (1996)
- Ian Hacking, *The Social Construction of What?* (2000): preface and ch. 1
- Bruno Latour, "Why has Critique Run Out of Steam?" (2004)

WEEK 10 (4/4): Reading science, writing science

- James Secord, *Victorian Sensation* (2000): prologue, ch. 1, 4, 5, 10, and 13, and epilogue
- Timothy Lenoir, “Inscription Practices and Materialities of Communication” (1998)
- Lorraine Daston, “The Language of Strange Facts in Early Modern Science” (1998)

WEEK 11 (4/11): Considering technology

- Thomas P. Hughes, “Technological Momentum” (1969/1994)
- Langdon Winner, “Do Artifacts Have Politics?” (1986)
- Leo Marx, “Does Improved Technology Mean Progress?” (1987)
- Rosalind Williams, “The Political and Feminist Dimensions of Technological Determinism” (1994)

ASSIGNMENT #3 HANDED OUT

WEEK 12 (4/18): Co-production: Beyond science vs. politics

- Sheila Jasanoff, “Ordering Knowledge, Ordering Society” (2004)
- Sheila Jasanoff, *States of Knowledge*, “Afterword” (2004)

WEEK 13 (4/25): Wrapping it all up

ASSIGNMENT #3 DUE IN LECTURE

NO SECTION THIS WEEK

Assignment #1

Hardcopy due at the beginning of lecture on February 7, 2011

Your assignment is to write a concise, analytical summary of Thomas Kuhn's book, *The Structure of Scientific Revolutions*. Your summary should give a general idea of the purpose and argument of the book. Your summary must contain a discussion of Kuhn's use of all of the following terms and how they relate to one another:

- *paradigm*
- *paradigm shift*
- *normal science*
- *revolutionary science*
- *incommensurability*

Your summary should not offer up a point of view towards Kuhn's arguments, but instead endeavor to simply be *descriptive*, albeit in your own words. The goal of the assignment is *not* to learn your "feelings" about the text. You do not need to contextualize the book itself — you are tasked only with describing its contents.

Your paper should be written in a straightforward, narrative style ("In chapter 5, Kuhn argues..."), with a priority on clear expression. Your goal is to demonstrate your ability to synthesize a difficult text into a short, clear description. You should not turn in a loose outline or a set of stream-of-consciousness notes. If there are points of confusion in the text (if a term is unclear, or used in many different ways), you may feel free to indicate such, but do not let this become a jumbled "response paper."

You are welcome to quote from the book, but do so judiciously, and do not allow your paper to become simply a string of quotations. Make sure you parenthetically cite the page for each quote you use, e.g. "This is a quote," (5). If you are *not* using the 3rd edition of the book, indicate what edition you are using in a footnote early on in the paper.

Your paper should be no more than 3 pages in length at the maximum (2 pages are acceptable as well, if you are gifted with great pithiness). Please format your paper to have a 12-point font, in Times New Roman, with 1-inch margins on all sides. Please include page numbers at the bottom of the page. Remember to put your name on the top of the paper.

Assignment #2

Hardcopy due at the beginning of lecture on **March 7, 2011**

Your assignment is to write a 5-7 page essay which describes how **Thomas Kuhn, Paul Feyerabend, and Bruno Latour** might read and critique the chapter on the history of evolution by Jonathan Hodge (posted on the course website). (Optional modification: If you desire, you may choose any two of the three authors rather than writing about all three of them, but the overall length of the paper must remain the same.)

Consider how the authors would read this article on the history of evolution. What approaches would they take in analyzing the historical events discussed, and what would their comments and criticisms be on the manner in which Hodge tells the story? What type of narrative would Kuhn, Feyerabend, and Latour use instead? What kinds of evidence would they look for? How would each characterize the goals of their project? What would make their approaches distinctly “Kuhnian,” “Feyerabendian,” or “Latourian”?

Please also describe the merits and detriments of each of these research programs and/or philosophical positions as applied to this particular historical case? (Try to find merits *and* detriments for each of them—do not simply argue that one is better or worse than the others.)

It is not intended that you will try to figure out how each of them may have *actually* characterized the history of evolution. Instead generalize their *methodological and philosophical approaches* to this particular case study. What we are looking for in grading this is your ability to *succinctly describe, synthesize, and apply* the ideas in the texts we have read. We do not expect you to provide a *comprehensive* account of the details of each methodological and philosophical position. It is further not expected that you will do any original research on the history of evolution.

Your paper should be written in a straightforward, narrative style, with a priority on clear expression. Write for a general, intelligent audience that has not necessarily read the authors in question and is not intimately familiar with their ideas. (You can imagine you are writing for *The New Yorker* or the *New York Review of Books* or something similar.)

Please cite any and all sources used. It is recommended that you use the Turabian citation format (Google it for examples), but it is not required. Whatever you use, be consistent. If you bring in any external sources (which is not required), you must cite them appropriately.

Please format your paper to have a 12-point font, in Times New Roman, double-spaced, with 1-inch margins on all sides. Please include page numbers at the bottom of the page. Remember to put your name and your Teaching Fellow's name on the top of the paper. Please staple your paper together (unstapled pages may be lost!).

Assignment #3

Hardcopy due at the beginning of lecture on April 25, 2011

Your assignment is to choose and read **one** of the books below, which you will then discuss in the context of our course. The works below are divided into themes based on the lecture structure of the course itself. Please do not choose a book you have already read for another course — the goal of this assignment is to have you read something *new*.

<p style="text-align: center;">KUHN</p> <ul style="list-style-type: none">• Thomas Kuhn, <i>The Copernican Revolution: Planetary Astronomy in the Development of Western Thought</i> (1957)• Thomas Kuhn, <i>The Road Since Structure: Philosophical Essays, 1970-1993</i> (2000)• Ludwik Fleck, <i>Genesis and Development of a Scientific Fact</i> (1935)
<p style="text-align: center;">POPPER AND FEYERABEND</p> <ul style="list-style-type: none">• Imre Lakatos and Paul Feyerabend, <i>For and Against Method</i> (1999)
<p style="text-align: center;">LATOUR</p> <ul style="list-style-type: none">• Bruno Latour, <i>We Have Never Been Modern</i> (1993)• Bruno Latour, <i>The Pasteurization of France</i> (1988)• Bruno Latour, <i>Science in Action: How to Follow Scientists and Engineers Through Society</i> (1987)• Bruno Latour, <i>Aramis, or, the Love of Technology</i> (1996)
<p style="text-align: center;">FOUCAULT</p> <ul style="list-style-type: none">• Michel Foucault, <i>The Birth of the Clinic</i> (1963)• Michel Foucault, <i>The History of Sexuality, Vol. 1: An Introduction</i> (1978)
<p style="text-align: center;">HISTORY OF MEDICINE</p> <ul style="list-style-type: none">• Charles Rosenberg, <i>The Cholera Years</i> (1962)• Charles Rosenberg, <i>The Care of Strangers: The Rise of America's Hospital System</i> (1987)• Shigehisa Kuriyama, <i>The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine</i> (1999)
<p style="text-align: center;">SHAPIN AND SSK</p> <ul style="list-style-type: none">• Steven Shapin, <i>The Scientific Life: A Moral History of a Late Modern Vocation</i> (2008)• Donald A. MacKenzie, <i>Statistics in Britain, 1865-1930</i> (1980)
<p style="text-align: center;">FEMINIST CRITIQUES</p> <ul style="list-style-type: none">• Donna Haraway, <i>Primate Visions: Gender, Race, and Nature in the World of Modern Science</i> (1989)• Evelyn Fox Keller, <i>A Feeling for the Organism: The Life and Work of Barbara McClintock</i> (1983)• Evelyn Fox Keller, <i>Reflections on Gender and Science</i> (1985)

<p style="text-align: center;">RELATIVISM</p> <ul style="list-style-type: none">• Ian Hacking, <i>The Social Construction of What?</i> (2000)
<p style="text-align: center;">READING/WRITING SCIENCE/MATERIAL HISTORY</p> <ul style="list-style-type: none">• James A. Secord, <i>Victorian Sensation</i> (2000)• Lorraine Daston and Katherine Park, <i>Wonders and the Order of Nature, 1150-1750</i> (1998)
<p style="text-align: center;">TECHNOLOGY</p> <ul style="list-style-type: none">• Thomas P. Hughes, <i>Networks of Power: Electrification in Western Society, 1880-1930</i> (1983)• Wolfgang Schivelbusch, <i>The Railway Journey: The Industrialization of Time and Space in the 19th century</i> (1986)• Donald A. MacKenzie, <i>Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance</i> (1990)• Arnold Pacey, <i>Technology in World Civilization: A Thousand-Year History</i> (1990)
<p style="text-align: center;">CO-PRODUCTION</p> <ul style="list-style-type: none">• Sheila Jasanoff, <i>Designs on Nature: Science and Democracy in Europe and the United States</i> (2005)• Yaron Ezrahi, <i>The Descent of Icarus: Science and the Transformation of Contemporary Democracy</i> (1990)

If you wish to read another author or another work, you may, but **only** if you get **prior approval** from your Teaching Fellow by **April 17**. If you are unsure where to start, and would like personalized guidance, contact your Teaching Fellow, and they will be able to find something that will surely pique your interest.

You will then write a 6-8 page essay which does the following three things:

1. Summarizes and describes the book you have chosen and read. Like our Kuhn summary (Assignment #1), this should be concise and focus on the “big picture.”
2. Contextualize the big issues of this work in relation to a few of the Big Ideas discussed in this course. How you do this will depend very much on the book you have chosen. If you choose, for example, a later (or earlier) work of an author we’ve read in this course, your essay might discuss it in the context of the author’s general work (is it an evolution of some sort?). If the work is speaking to a particular question we’ve developed in the course, you might contrast the work with other readings we have read. You might do something like Assignment #2, where you pick a number of authors to contrast with this larger work, or you might only contrast this later or earlier work by this one author with the one work on the syllabus by the same author. It will be up to you to figure out how best to frame your analysis and organize your essay, but the general goal is to situate the new book you will have read in the context of the authors and ideas engaged with in this course, as a way of helping your reader understand the new book and the issues it involves.

3. Consider the stakes of the new book you read. What big question is the author trying to get at? What are the consequences of believing or disbelieving the author? Articulate why the author you have chosen is important, why their book matter (even if they are, in your eyes, wrong). Why might someone agree or disagree with the approach taken by the author?

Your essay need not, and *probably should not*, be arranged in three parts like those described above. Try to write a coherent, well-organized, well-plotted essay that could be read by general, intelligent audience that has not read the book in question. Do not assume your reader knows any of the works in question that you discuss, or understands why the arguments might be important or controversial. The bulk of your essay should be directly engaging with the new work you have read. Your essay should illustrate that you understand the work in question and can contextualize the questions it is asking within the relevant historiography discussed in this course.

You may, in this assignment, pass some of your own judgment on the works in question, e.g. whether you find their account of science compelling or wanting. Do not get carried away in this, however, as it is not the primary purpose of the assignment. Like all of the other assignments, what we are looking for primarily is comprehension and understanding of the works being read, not necessarily your ability to criticize them. But if you have a strong opinion on the benefits or costs to agreeing with the author in question, and can find a way to gracefully insert them into your paper, you should feel free to do so.

Please format your paper to have a 12-point font, in Times New Roman, double-spaced, with 1-inch margins on all sides. Please include page numbers at the bottom of the page. Remember to put your name on the top of the paper and to staple the pages together.