



STS 190: HONORS SEMINAR Spring 2007

Thursdays, 1:15-3:05
Building 370 Conference Room

Rebecca Slayton, PhD
Lecturer in Science, Technology and Society
rslayton@stanford.edu, 650-725-0123

Office hours by appointment, Bldg. 370-212

Objectives

The relationship between science, technology, and society presents us with a myriad of puzzles and dilemmas. In Stanford's Science, Technology, and Society program, honors students choose one important question, tackle it with carefully formulated research methods, and publish their conclusions in an honors thesis. Honors theses represent unique contributions to our understanding of science, technology and society, and have been a source of pride for students and advisors alike. For a list of past thesis topics, see <http://cgi.stanford.edu/group/STS/cgi-bin/theses.pl>.

But how and where do you begin honors research in STS? What is a research method? What is a literature review? How do you write an original thesis? In this course we will learn the skills necessary to start and finish an STS honors thesis by helping you write a research proposal. These skills include:

- Organizing and developing research questions and methods;
- Searching and reviewing relevant literature quickly and efficiently, abstracting the details that are most important to your own project;
- Situating your work within theoretical perspectives on STS;
- Finding and working with an advisor.

We will learn these general skills through practice. In particular, we will walk through the process of writing a research proposal – including formulating research questions and hypotheses, developing theoretical perspectives in STS, and preparing to use quantitative and qualitative methods. At the end of the course, you will have written a proposal to conduct original research on your own area of interest. You can use this proposal to apply to the STS Honors program (see <http://sts.stanford.edu/forms/Honors.pdf>), and will also have a good start on applying for funding from the Undergraduate Research Program (see details

below).

Structure

Our reading, discussion, and writing will progress on two related levels:

- First, we will review major themes and theoretical perspectives in science and technology studies, and use them to inform our own research interests. Many, but not all, of these reviews will be based upon chapters in the *Handbook of Science and Technology Studies* (1996).
- Second, we will develop our own research proposals, one step at a time. We will refer selectively to a book by John W. Creswell: *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, Second Edition. This book is intended to be a useful reference rather than a primary text for reading. It will be most useful if you read related assignments first, and then refer to Creswell to help you complete the assignment.

All course materials may be found in CourseWork.

Requirements and Grading

This course does not have a midterm or in-class final examination. Instead, grades will be based on following assignments, which are described in more detail in the schedule that follows. Please note that the assignments are due either before the class dates under which they are listed.

- **Reviews (30%)** Each week we will examine a major theme in science, technology and society, and respond in writing. For most weeks (April 19-May 22), you will write a one-paragraph summary of each assigned reading, and conclude with an additional paragraph summarizing its implications for your own research topic (i.e. imagine how the author of the review(s) would approach your topic, or apply his/her insights to your project). The goal of this assignment is to learn how to skim effectively for the most important point of the reading, and to apply it to your own work (something you will do regularly in your research). So try *not* to get bogged down in details. These reading reviews are due on CourseWork's discussion forum by midnight the day before class meets, and will be discussed in class.
- **Proposal work (30%)** A short assignment related to your proposal will be due each week. These assignments will help you write your proposal at a reasonable and measured pace, and will form the basis for our in-class discussion. These assignments are also due on CourseWork's discussion forum by midnight the day before class meets.
- **Final proposal (20%)** At the conclusion of the course, you will submit a 10-20 page double-spaced research proposal. This will consolidate and improve upon the work you put into proposal writing throughout the class. Your proposal will include a specific research question, a basic literature review that articulates the significance of the question, a set of methods, and a summary of data to be collected. For guidelines on writing your proposal, and especially if you wish to apply for a grant from Stanford's undergraduate research office, consult: <http://www.stanford.edu/dept/undergrad/urp/PDFLibrary/grantstuff/ProposalWriting.pdf>. Your proposal is due before midnight on the last day of finals period.

- **Presentation (10%)** On the last day of class, you will present a ten-minute summary of your research proposal.
- **Seminar response (10%)** Stanford's seminar on Science, Technology, and Society will meet several Fridays this spring, from 12:00 - 1:30 pm (see schedule online). Plan to attend one and write a 1-2 page response, describing:
 - The methods used by the researcher
 - Major conclusions of the researcher
 - Your own questions and reactions provoked by the seminar.

Grant Proposals

Stanford's Undergraduate Research Program offers research funds in the form of quarterly grants (fall, winter, and spring deadlines). This course will teach you necessary methods and help you write a proposal for admission to the STS Honors program. But note that you must complete additional requirements for a student grant application, such as obtaining a letter of recommendation from a faculty member and learning about restrictions on research related to human subjects. If you are interested in applying for a grant, you should review the application process at <http://www.stanford.edu/dept/undergrad/urp/StudentGrants/index.html> .

DISCUSSION, READING AND WRITING SCHEDULE

Thursday, April 5

Introduction to STS Honors Research

Thursday, April 12

❖ **Review: What's in a Method?**

- *Handbook*, Gary Bowden, "Coming of Age in STS: Some Methodological Musings," pp 64-79.
- Creswell, Chapter 1, "A Framework for Design," pp 3-24.
- Choose an STS Honors thesis and write an analysis of its methods. (Note that selected theses are available in the course materials section of coursework, as well as in Building 370). Your analysis should include the following:
 - Do the methods suggest a multidisciplinary, interdisciplinary, or transdisciplinary vision of STS? (see Bowden)
 - Describe the three elements of inquiry, as outlined by Creswell (types of knowledge claims, strategies of inquiry, and specific data collection methods).

❖ **Finding Your Research Question**

- Use three readings that you find provocative – news articles, book chapters, or scholarly articles – to develop one or more potential questions for research. Write 2-3 paragraphs articulating your question(s), and suggest the types of methods you might use for exploring it further.
- Identify between 1-3 professors at Stanford who you might be able to contact about your proposal.

Thursday, April 19

❖ **Review: The Social Construction of Science and Technology**

- Trevor J Pinch, Wiebe E Bijker, "The Social Construction of Facts and Artefacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other," *Social Studies of Science*, Vol.14, No. 3 (Aug 1984), 399-441.
- Michel Callon, "Some elements of a sociology of translation: domestication of the scallops and the fishermen of St Brieuc Bay," in J. Law, *Power, action and belief: a new sociology of knowledge?* London, Routledge, 1986, pp.196-223.

❖ **Searching the Literature**

- Develop a working title for your research proposal.
- Conduct a search of scholarly works and summarize your results as follows:
 - Electronic databases searched (minimum of three)
 - Describe each keyword search used. For each keyword search, list the number of hits and the most relevant articles. If none of the articles seem relevant, explain why and try another set of keywords.
 - Skim the ten articles and/or books that seem most important for your project, summarize their arguments and explain their relevance to your project.
- Schedule meetings with 1-3 potential mentors to discuss your research interests and to get suggestions for further reading in your area of interest.

Thursday, April 26

❖ Review: Momentum in Large Technological Systems

- Thomas P. Hughes, “The Evolution of Large Technological Systems,” in *The Social Construction of Technological Systems* (pg. 49 – 82)
- Langdon Winner, “Do Artifacts Have Politics?” *The Whale and the Reactor: A Search for Limits in an Age of High Technology*. (Chicago: The University of Chicago Press, 1986.) pp. 19-39.
http://www.courses.psu.edu/phil/phil403_pam208/winner/index.html

❖ Mapping the Literature

- Continue reviewing the literature, using footnotes in articles and books found to date. Add another ten references to your list of most important works, and write 1-3 sentences explaining their argument and relation to your project.
- Draw a map of literature related to your topic. Consider possible extensions of the map, and propose some sites for finding additional literature.
- By this time, you should have met with at least one potential mentor to discuss additional areas of reading and research design. If the mentor appears to be a good match for you, schedule a further meeting to discuss your final proposal. If the mentor does not seem to be a good match for you, schedule meetings with other mentors.

Thursday, May 3

❖ Review: Engaging with Socio-Technical Networks

- Langdon Winner, “Upon opening the Black Box and Finding it Empty: Social Constructivism and the Philosophy of Technology,” *Science, Technology, & Human Values*, Vol. 18, No. 3. (1993), pp. 362-378.
- Boelie Elzen, Bert Enserink, Wim A. Smit, “Socio-Technical Networks: How a Technology Studies Approach May Help to Solve Problems Related to Technical Change,” *Social Studies of Science*, Vol. 26, No. 1. (Feb., 1996), pp. 95-141.

❖ Developing Your Questions and Hypotheses

- Recommended reading: Creswell, Chapter 5, “The Purpose Statement,” Chapter 6, “Research Questions and Hypotheses,” pp 87-117.
- Formulate a purpose statement using the suggested scripts in Creswell, Chapter 5. Then formulate a more specific set of questions and hypotheses, using the guidelines on p 117 of Creswell. Finally, explain the specific methods you will use to address your questions and hypotheses.

Thursday, May 10

❖ Review: Science, Technology, and Communication

- *Handbook*, Chapter 16, Bruce Lewenstein, “Science and the Media,” pp 343-360.
- *Handbook*, Chapter 17, Brian Wynne, “Public Understanding of Science,” pp 361-388.

❖ Framing Your Proposal

- Building on your literature map and research questions, draft an introduction and literature review for your research proposal. It may help to review Creswell pp 29-32. Include the following elements:
 - Introduce your question and state your purpose.

- Articulate your questions and hypotheses in more detail.
- Explain how your work will contribute to what has already been written. Think of this as entering a conversation. Come up with what you want to say, and explain how it relates to what other people have said, providing references as you go.

Thursday, May 17

❖ Review: Science, Technology, and Controversy

- *Handbook*, Chapter 19, Dorothy Nelkin: “Science Controversies: The Dynamics of Public Disputes in the United States,” pp 444-456.
- *Handbook*, Chapter 20, Steven Yearly, “The Environmental Challenge to Science Studies” p 457-479.
- *Handbook*, Chapter 22, Brian Martin and Evelleen Richards: “Scientific Knowledge, Controversy, and Public Decision-Making,” pp 506-526.

❖ Drafting Your Proposal

- Building on the introduction to your proposal, write a full research proposal, including methods and likely findings. Send it to your advisor as well as to me at (rslayton@stanford.edu)

Thursday, May 24 – NO CLASS – revise proposals

Thursday, May 31

❖ Review: Science, Technology, and the State

- *Handbook*, Chapter 23, Susan E. Cozzens and Edward J. Woodhouse, “Science, Government, and the Politics of Knowledge,” pp 533-553
- *Handbook*, Chapter 24, Bruce Bimber and David Guston, “Politics by the Same Means: Government and Science in the United States,” pp 554-571

❖ Revising Your Proposal

- Submit a revised proposal which incorporates both comments from your advisor (if any are available) as well as my (Rebecca’s) suggestions.

Thursday, June 7

❖ Review: The Global Economy of Science and Technology

- *Handbook*, Chapter 21, “Science as Intellectual Property” pp 480-505.
- *Handbook*, Chapter 28, Vittorio Ancarani, “Globalizing the World: Science and Technology in International Relations,” pp 652-670.

❖ Revising Your Proposal (again)

Final Class (date TBA): Student presentations

The final research proposals are due by **Wednesday, June 13**, midnight, via e-mail to rslayton@stanford.edu. If you wish to apply for the STS Honors program, be sure to complete the full application and send them to Julie Widman at jwidman@stanford.edu (See final 2 pages at <http://sts.stanford.edu/forms/Honors.pdf>)