

**Confluence:  
Environmental History and  
Science & Technology Studies**

**SHUM 4811 / STS 4181 / BSOC 4181 / HIST 4811**

**Fall 2008**

**M, 10:10 – 12:05  
110 A.D. White**

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**Course description**

This course uses water to examine the confluence of two fields: environmental history and the social and historical studies of science and technology (STS). Although preliminary scholarship has begun to demonstrate the fruitful integration of these fields, a number of methodological and theoretical tensions remain. Some of these tensions include the social construction of “nature;” nature as a historical actor or agent; accounts of the emergence of “environmental” “problems;” constructivist models of science and technology; and scholars’ use of scientific and technical sources to assess environmental change. This class therefore examines a number of scholarly debates about key terms, definitions, and categories (both historical actors’ and analysts’), knowledge-making about “nature” and human interactions with non-human nature, and the concept of agency.

Weekly seminars are organized around readings in environmental history, science studies, and/or their intersection that explore these issues in diverse ways while usually (although not always) addressing various aquatic environments in comparative historical and cultural perspective. For instance, scientific investigation of the deep ocean in the mid-nineteenth century helps us consider the conceptualization and construction of distinct environments while river management in the twentieth-century United States raises important questions about the definitions of nature and technology.

Over the semester, students will have the opportunity to engage with these issues through readings, an academic journal, discussion, collaborative small-group work, oral presentations, and formal assignments. Students will investigate a particular topic or theme of their choice in a final research paper. This class is designed as a reading- and discussion-intensive seminar for advanced undergraduate and graduate students in Science & Technology Studies, History, and other related departments such as Development Sociology and Natural Resources.

**Required readings**

The following books are required. They are available at the Cornell Store. One copy of each book has also been put on 2-hour reserve at Olin Library.

- Scott Frickel, *Chemical Consequences: Environmental Mutagens, Scientist Activism, and the Rise of Genetic Toxicology* (Rutgers University Press, 2004);
- Bruno Latour, *Politics of Nature: How to Bring the Sciences into Democracy* (Harvard University Press, 2004);
- Helen Rozwadowski, *Fathoming the Ocean: The Discovery and Exploration of the Deep Sea* (Harvard University Press, 2005);
- Joseph E. Taylor III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (University of Washington Press, 1999);
- Richard White, *The Organic Machine: The Remaking of the Columbia River* (Hill & Wang, 1995).

In addition, two course readers will be available at the Cornell Store. Book chapters included in the reader are preceded by [CR1] (= course reader, part I) or [CR2] (= course reader, part II) on the syllabus.

Required articles can be accessed (for free!) through Cornell Library's e-journals collection. These readings are preceded by [EJ] on the syllabus.

Several recommended readings are also listed on the syllabus (REC.).

### Assignments and grading

The following assignments are required for undergraduates enrolled in the course; modifications for graduate students are listed below.

#### Academic reading journal (30%)

All students are required to keep an academic reading journal. Your journal should include *eight* entries (one entry = a *critical* response to the reading(s) for that week). Each entry should be *no more than two* typed, doubled-spaced pages and composed of the following:

1. An abbreviated list of the reading(s) on which it comments;
2. A brief **summary** of the main argument in that day's reading(s);
3. Several paragraphs that **synthesize** and **analyze** that day's readings, relating them to one another as well as previous readings and discussion;
4. Several **questions** that might help spark class discussion.

Your journal entries should be completed *before* the class session on which they comment. You are asked to complete *eight* entries over the semester, but you can choose which sessions/readings. A word to the wise: I recommend that you "save" your "freebie" weeks for the second half of the semester. I will collect the entries each week so please bring yours (if you wrote one) to class. Besides, you may want to refer to your entry during discussion.

As you can probably guess, the goal of the academic journal is to ensure that you come to class prepared – that is, having not only completed the readings, but also reflected upon them so that you are ready to discuss them in class. Although the entries are not expected to be formal papers, their quality should be more substantial than rambling stream of consciousness.

#### Discussion (35%)

This is a senior seminar so class meetings will be organized around discussion. We will generally meet as an entire class, but we may break into smaller groups. All students are expected to participate in discussion, but a student's discussion grade will be based foremost on quality and secondarily on quantity. In addition, I value students who listen to one another, ask follow-up questions, synthesize others' comments, and pose questions to the entire class. In other words, these kinds of contributions also "count" toward your discussion grade.

If this class is a large seminar, I may start a discussion board on the course website. Contributions there would also “count” toward your discussion grade. Please note: electronic discussion should complement, not replace, discussion during our seminar!

### **Final paper (35%)**

More information will be distributed later in the semester, but the final paper in this course is a 12 – 15-page, synthetic paper that allows you to explore some of your particular interests. However, it does need to engage *clearly* with the major themes of the class. You will draw primarily upon course readings for the paper, but identify 3 – 6 additional sources (books, book chapters, journal articles, historiographical essays, etc.) that complement the assigned readings while helping you develop your particular topic.

The precise topic and format of the final paper are extremely flexible and generally up to you. Here are several options:

- Historiographical essay that synthesizes and analyzes scholarly literature in environmental history, science studies, and/or their intersection on a particular topic or approach;
- Analytic essay that considers in greater depth a specific question, theme, or approach raised in the course;
- A research paper centered on a case study that explores and develops one or more issues raised in the class;
- A “traditional” research paper based on primary or secondary sources (or both) that is informed by one or more course themes;
- An essay providing a close reading of several relevant primary sources in light of a few key questions, methods, and/or issues raised in the class;
- TBA (I will consider other ideas, but you need to discuss them with me *in advance*).

I encourage papers that *build on* some of your current interests and work (e.g., investigating a prospective topic for your senior thesis, helping develop a section of your honors thesis, synthesizing a chunk of your graduate field exams, etc.), but we need to discuss the parameters of your project for this class and how it relates to your other academic work *in advance*.

You will give a short presentation about your research during our final class meeting or university-scheduled final exam slot. The final draft is due during our final exam, which is tentatively scheduled for 9:00 – 11:30am Monday, December 15, 2008 (location TBA).

To encourage progress on the final paper over the semester, I have developed several intermediate deadlines. They count towards your final grade as specified below.

October 6	Preliminary topic	2%
October 27	Revised topic and bibliography	3%
November 17	Tentative thesis and two-page outline	5%
December 1	Peer review of rough drafts	8%
December 1 or 15	Presentation of final paper	5%
Nov 3; Dec 1 or 15	Questions and feedback on others' preliminary and final presentations	2%
December 15	Final draft	75%

### **Graduate student requirements**

Grad student requirements are essentially the same as undergrad requirements (e.g., an academic reading journal, discussion, and the final paper). However, I will expect “grad level” work in the journal entries and the final paper. Any graduate students enrolled in or auditing the course will be asked to meet with me (as a group) during the first week of class. Two additional discussions will be scheduled during the semester for the graduate students. Grad students are encouraged to complete recommended readings listed on the course syllabus.

### **Course policies and other legalese**

A Blackboard course website will be set up to facilitate communication and to coordinate the peer review process. All students enrolled in the class are expected to sign up in a timely fashion.

Unless otherwise noted, all assignments are due in class and must be submitted in order to earn a passing grade in the course. Electronic submissions are not accepted, unless specified on the assignment or alternative arrangements have been made due to an emergency. Late assignments will be penalized one-third of a letter grade (e.g., B+ to B) immediately, and one-third of a letter grade for each subsequent day the assignment is late. Make-up assignments as well as extensions will **only** be given for legitimate extenuating circumstances – that is, medical conditions, family emergencies, and religious holidays. They will also require proper documentation from the appropriate official(s). That said, if an emergency comes up, *please contact me as soon as possible*. Alternative arrangements will not be made for those students departing early for winter break. Cliff-hanging final grades will be decided by the degree of improvement over the semester and participation during discussion.

### **Academic conduct and honesty**

Each student in this course is expected to abide by the Cornell University Code of Academic Integrity, which states the following: “Absolute integrity is expected of every Cornell student in all academic undertakings... A Cornell student’s submission of work for academic credit indicates that the work is the student’s own. All outside assistance should be acknowledged, and the student’s academic position truthfully reported at all times. In addition, Cornell students have a right to expect academic integrity from each of their peers.” The complete Code is available at: <http://www.cuinfo.cornell.edu/Academic/AIC.html>.

Please note that standards for academic integrity are not necessarily the same in the United States as in other academic systems. International students are strongly encouraged to review carefully the definition of academic integrity at Cornell. In particular, using text from authoritative sources without proper acknowledgement can be a violation of academic integrity.

In short, by enrolling in this class, I am assuming that you are familiar with and agree to abide by the University’s standards with respect to academic integrity and conduct. If you have any questions or concerns, please see me!

## **COURSE SCHEDULE**

**9/8 The ocean in/as environmental history**

Readings: [CR1] Alfred W. Crosby, "Ecological Imperialism: The Overseas Migration of Western Europeans as a Biological Phenomenon," *The Ends of the Earth*, edited by Donald Worster (Cambridge University Press, 1988), 103 – 117;  
 [EJ] David Igler, "Diseased Goods: Global Commodities in the Eastern Pacific Basin, 1770 – 1850," *American Historical Review* 109:3 (June 2004);  
 [EJ] W. Jeffrey Bolster, "Opportunities in Marine Environmental History" *Environmental History* 11:3 (July 2006);  
 [CR1] Donald Worster, "Appendix: Doing Environmental History," *The Ends of the Earth*, edited by Donald Worster (Cambridge University Press, 1988), 289 – 307;  
 [EJ] Douglas R. Weiner, "A Death-Defying Attempt to Articulate a Coherent Definition of Environmental History," *Environmental History* 10:3 (July 2005).

**9/15 The politics of n/Nature**

Readings: Bruno Latour, *Politics of Nature: How to Bring the Sciences into Democracy* (Harvard University Press, 2004).

REC.: [CR1] Steven Yearley, "The Environmental Challenge to Science Studies," in *Handbook of Science and Technology Studies*, edited by Sheila Jasanoff, et.al. (Sage Publications, 1995), 457 – 479.

**9/22 Constructing environments**

Readings: Helen Rozwadowski, *Fathoming the Deep: The Discovery and Exploration of the Deep Sea* (Harvard University Press, 2005), entire, but read either Chapter 4 or 5;  
 [EJ] Stephen Bocking, "Science and Spaces in the Northern Environment," *Environmental History* 12:4 (October 2007): 867 – 894.

**9/29 Constructing environmental problems**

Readings: Scott Frickel, *Chemical Consequences: Environmental Mutagens, Scientist Activism, and the Rise of Genetic Toxicology* (Rutgers University Press, 2004).

REC.: Kevin Dann and Gregg Mitman, "Essay Review: Exploring the Borders of Environmental History and the History of Ecology," *Journal of the History of Biology* 30:2 (June 1997).

**10/6 The agency of nature and the nature of agency**

Readings: [CR2] Michel Callon, "Some Elements of a Sociology of Translation: Domestication of Scallops and the Fishermen of St. Brieuc Bay," in *Power, Action, and Belief: a New Sociology of Knowledge?*, edited by John Law (Routledge and Kegan Paul, 1985), 196 – 233;  
 [CR1] John Law, "Technology and Heterogeneous Engineering: The Case of Portuguese Expansion," in *The Social Construction of Technological Systems:*

*New Directions in the Sociology and History of Technology*, edited by Wiebe E. Bijker, et.al. (MIT Press, 1987), 111 – 134;

[CR1] Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (University of California Press, 2002), 19 – 53;

[EJ] Linda Nash, “The Agency of Nature and the Nature of Agency,” *Environmental History* 10:1 (January 2005);

[EJ] Paul Sutter, “Nature’s Agents or Agents of Empire? Entomological Workers and Environmental Change during the Construction of the Panama Canal,” *Isis* 98:4 (2007).

→ **Preliminary topic due.**

10/13 **No class (Sara at SHOT)**

10/20 **Modeling nature**

Readings: [CR2] Henry Lowood, “The Calculating Forester: Quantification, Cameral Science, and the Emergence of Scientific Forestry Management in Germany,” in Tore Frangsmyr, J.L. Heilbron, and Robin E. Rider, eds., *The Quantifying Spirit in the Eighteenth Century* (University of California Press, 1991), 315 – 342;

[EJ] Matthew Klinge, “Plying Atomic Waters: Lauren Donaldson and the ‘Fern Lake Concept’ of Fisheries Management,” *Journal of the History of Biology* 31:1 (March 1998);

[CR2] Douglas R. Weiner, *Models of Nature: Ecology, Conservation, and Cultural Revolution in Soviet Russia* (University of Pittsburgh Press, 2000), excerpt.

10/27 **Thinking about nature and technology**

Readings: Richard White, *The Organic Machine: The Remaking of the Columbia River* (Hill & Wang, 1995).

REC.: [EJ] Jeffrey K. Stine and Joel A. Tarr, “At the Intersection of Histories: Technology and the Environment,” *Technology and Culture* 39 (1998): 601-640.  
→ **Revised topic and bibliography due.**

11/3 **Evolutionary history**

Readings: [EJ] Edmund Russell, “Evolutionary History: Prospectus for a New Field,” *Environmental History* 8:2 (April 2003);

[CR2] Edmund Russell, “Introduction – The Garden in the Machine: Toward an Evolutionary History of Technology,” in *Industrializing Organisms*, edited by Susan R. Schrepfer and Philip Scranton (Rutgers University Press, 2004), 1 – 16.

→ **Short discussion of everyone’s paper topics in class.**

→ **Individual meetings with Sara this week.**

**11/10 Making nature**

Readings: Joseph E. Taylor, III, *Making Salmon: An Environmental History of the Northwest Fisheries Crisis* (University of Washington Press, 1999).

**11/17 The state, technoscience, and the environment**

Readings: [CR2] Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (Oxford University Press, 1985), 19 – 60;  
 [CR2] James C. Scott, *Seeing Like a State* (Yale University Press, 1998), 11 – 52;  
 [EJ] Arne Kaijser, “System Building from Below: Institutional Change in Dutch Water Control Systems,” *Technology and Culture* 43:3 (2002);  
 [EJ] Chandra Mukerji, “The Great Forest Survey, 1669 – 1671,” *Social Studies of Science* 37:2 (April 2007);  
 [EJ] Heather Hoag and May-Britt Ohman, “Turning Water Into Power: Debates over the Development of Tanzania’s Rufiji Basin, 1945 – 1985,” *Technology and Culture* 49:3 (July 2008).  
 → *Tentative thesis and two-page outline due.*

**11/24 Fluid inequalities: Knowledge(s), expertise(s), and power**

Readings: [CR2] Matthew Klinge, *Emerald City: An Environmental History of Seattle* (New Haven: Yale University Press, 2007), Chapter 6;  
 [EJ] Barbara L. Allen, “Shifting Boundary Work: Issues and Tensions in Environmental Health Science in the Case of Grand Bois, Louisiana,” *Science as Culture* 13:4 (December 2004);  
 [EJ] Christopher Sellers, “The Artificial Nature of Flouridated Water: Between Nations, Knowledge, and Material Flows,” *Osiris* 19 (2004): 182 – 200;  
 [EJ] Giovanna Di Chiro, “‘Living Is For Everyone’: Border Crossings for Community, Environment, and Health,” *Osiris* 19 (2004): 112 – 129.

REC.: [EJ] Gregg Mitman, Michelle Murphy, and Christopher Sellers, “Introduction: A Cloud Over History,” *Osiris* 19 (2004): 1 – 17;  
 [EJ] David J. Hess, “Health, the Environment, and Social Movement,” *Science as Culture* 13:4 (December 2004).

**12/1 Ecology as conceptual metaphor**

Readings: [EJ] Susan Leigh Star and James R. Griesmer, “Institutional Ecology, ‘Translation,’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907 – 1939,” *Social Studies of Science* 19 (1989): 387 – 420;  
 [EJ] Arthur F. McEvoy, “Working Environments: An Ecological Approach to Occupational Health and Safety,” *Technology and Culture* 36, suppl. (1995): 145-173;  
 [EJ] Atsushi Akera, “Constructing a Representation for an Ecology of Knowledge: Methodological Advances in the Integration of Knowledge and its Various Contexts,” *Social Studies of Science* 37:3 (June 2007).

- *Student presentations of final papers.*
- *Peer review: swap rough drafts (pairs TBA).*

12/15

9:00 – 11:30am (location TBA)

- *Student presentations of final papers.*
- *Final papers due.*