GEOG/HIST 432

Problems in Environmental History: Science, Technology, and Nature in the Modern World

Simon Fraser University
Spring 2018

Meetings: Wednesdays 1:30–5:20 pm, WMC 2501
Canvas: https://canvas.sfu.ca/courses/37255

Instructor: Dr. Tina Adcock (tina.adcock@sfu.ca)
Office hours: Wednesdays and Fridays 12:00–1:00 pm, AQ 6236

Course description

In spring 2018, GEOG/HIST 432 will examine the confluence of environmental history and the histories of science and technology. While these thematic fields may seem to have much in common, they have often been reluctant to engage with each other. Historians of science have long privileged laboratory-based and experimental sciences over those taking place in the field. Meanwhile, environmental historians have often viewed "science" and "scientific knowledge" as static categories, rather than the products of material practices and social hierarchies that change over time, and that require situation in specific historical and geographical contexts. Recently, environmental historians have begun to apply conceptual and analytical tools from scholarship on science and technology to their investigations of the reciprocal relationships between humans and the nonhuman world in the past. This has resulted in new, hybrid fields of inquiry, including "envirotech" (envirotechnical history) and evolutionary history.

In this seminar, we'll read widely and somewhat eclectically across the fields of environmental history and the histories of science and technology, with a little bit of historical geography thrown in as well. We will examine how different disciplines engage with established and emerging topics in the study of science, technology, and nature since ~1500 CE, including the body, the field, situated and mobile knowledges, climate, and energy. Using specific case studies, mostly but not exclusively drawn from the Americas and Europe, we will also contemplate a broader set of questions throughout the semester. How have different individuals and societies gained knowledge about and represented the nonhuman world across time and space? How have scientific practices and technological artifacts and systems reshaped nonhuman environments and ecosystems, intentionally and accidentally? And how have nonhuman actors or factors confounded, or pushed back against these interventions? Through readings, discussions, and assignments designed to help answer these questions, we'll gain a deeper, richer understanding of the relationships between science, technology, nature, and society in the past, and perhaps in the present, too.

Course objectives
By the end of this course, you will be able:

- To assess how human and nonhuman actors and factors, scientific practices, and technological artifacts have altered local, transnational, and global environments over time, and with what consequences
- To explain how specific combinations of bodies, artifacts, practices, and spaces have produced and transmitted knowledge about the nonhuman world at particular times and in particular places since ~1500 CE
- To discuss different disciplinary approaches to the study of science, technology, and the environment, including key questions, concepts, and approaches
- To practice and hone the skills of analyzing, synthesizing, and evaluating scholarship about science, technology, and the environment in oral and written forms.

Course organization
This is a discussion-based course. For ease of discussion, the class will be split into two halves; each will meet for 110 minutes per week from the second week of the semester onward. For the first half of the semester, Group A will meet from 1:30–3:20 pm, and Group B from 3:30–5:20 pm. Halfway through the term, on Wednesday, February 28, the groups will switch meeting times. Group B will then meet at 1:30 pm for the rest of the semester, and Group A at 3:30 pm.

Course readings
There are no required texts for this course. All assigned readings are available on, or linked to from the course's Canvas website.

Readings should be completed for the date under which they are listed. To ensure the success of our meetings, you must build into your schedule enough time to read all of the articles carefully each week. With this in mind, I have striven to keep reading loads manageable.

The following books may also provide useful historical and historiographical context to help you prepare for meetings or assignments. Copies of all these books are, or will shortly be on reserve at Bennett Library, either in hard copy [HC] or as an e-resource [ER].

- J. Donald Hughes. *What is Environmental History?*. London: Polity Press, 2006. [HC]
- Andrew C. Isenberg, ed. *Oxford Handbook of Environmental History*. Oxford: Oxford University Press, 2014. [HC]
- J.R. McNeill and Erin Stewart Maudlin, eds. *A Companion to Global Environmental History*. Chichester: Wiley Blackwell, 2015. [HC]
- Carolyn Merchant. *The Columbia Guide to American Environmental History*. New York: Columbia University Press, 2005. [ER]
- *The Cambridge History of Science*. 7 vols. [ER] Volumes 3-6 will be of most use for this course.
- Bernard Lightman, ed. *A Companion to the History of Science*. Chichester: Wiley Blackwell, 2016. [HC]
- Martin Reuss and Stephen H. Cutcliffe, eds. *The Illusory Boundary: Environment and Technology in History*. Charlottesville, VA: University of Virginia Press, 2010. [HC]
- Ulrike Felt et al., eds. *The Handbook of Science and Technology Studies*. 4th ed. Cambridge, MA: MIT Press, 2017. [ER]

Course evaluation

Your final grade will be determined as follows:

Participation	15%
Discussion leadership	15%
"Deep cuts" x 2	30%
Term essay/project	
First draft & peer review	5%
Final draft	35%

Participation

Please plan to attend every meeting. If you have to be absent unexpectedly, please let me know as a courtesy. If you know in advance that you will have to miss a meeting (i.e. due to religious observances/practices, athletic competitions, interviews for professional programs), please let me know as soon as possible.

Please come to class with hard copies of the readings, or with the files easily accessible on a laptop or tablet. You should be prepared to reflect critically on readings and other material that we shall encounter. I also expect you to listen to your peers and engage with their viewpoints, and to practice expressing your ideas and arguments clearly, concisely, and convincingly.

As part of your participation in this course, you are expected to do the following:

- **Prepare for and participate in seminar discussions.** You should come to class prepared to discuss the thesis and main arguments of each reading. You should also consider, as best you can, the merits and demerits of each article's engagement with and proposed contributions to the scholarly literature on science, technology, and the environment, its theoretical/methodological approaches, and its use and deployment of evidence and source material. You may also wish to reflect upon how these readings shed relevant light upon current events or issues, or connect usefully to material you have learned in other courses.
- **Lead or co-lead one seminar discussion**, for which you will sign up at our second meeting. I will outline the expectations related to this task in a separate handout.
- **Post discussion questions or comments** each week to your group's "Discussion" thread on Canvas no later than Wednesday at 12 pm. Please prepare one interpretive question or comment per reading; you may also write a paragraph of commentary that touches upon all the readings. Your questions or comments might raise points of clarification or contention, identify points of comparison or contrast with other readings, or query specific authorial decisions with respect to sources, methods, and so on. Questions should be designed to open up rather than close down discussion among your classmates, so you should eschew questions with "yes/no" answers or ones that simply ask readers to recall or unearth particular facts or arguments. Your questions or comments are then yours to raise during that week's discussion, so don't forget to bring them to class with you in some form.

Course assignments

For each week of the course save the first, I will offer you a **"deep cut"** on the prevailing theme or topic—an extra reading or two that allows you to explore the material more deeply, or from a slightly (or radically) different perspective, and a question or questions that will usually ask you to juxtapose that reading in some way against one or more of the others assigned for that

week. You will choose any **two "deep cuts"** and respond to the prompts in essays of **4-6 pages each** (that is, 4-6 pages per deep cut). Please submit your essay on the day of the relevant class meeting—so, if you choose the deep cut for week 5, you should be prepared to submit your essay on Wednesday, January 31. You can submit it any time that day, but I encourage you to have it ready before class, so that you can share the fruits of your deeper reading in the topic with your classmates. On the two weeks in which you explore these deep cuts, you don't need to post discussion questions or comments on Canvas.

Your final assignment will be a **term essay or project**, for which you have several options:

- A 10-12 page research essay on a topic of your choice that aligns with the historical and thematic remit of this course, i.e. the histories and geographies of science, technology, and the environment after roughly 1500 CE. I encourage you to draw ideas from required or reserved readings, from pertinent material or topics encountered in other courses, and from your own intellectual interests. I will also provide a list of suggested topics early in the semester.
- A 10-12 page "technoscienvironmental" auto/biographical research essay, in which you situate and analyze aspects of your life, or that of a relative (a parent, a grandparent, etc) within the larger histories and geographies of science, technology, and the environment of the times and places in which they lived. I will provide more details about this option in a separate handout.
- A non-research essay/project (or "unessay") that engages creatively and compellingly with one or more topics of this course in a manner of your choosing. If you are interested in pursuing this option, you must meet with me before Reading Week for an informal chat about your topic(s) and proposed approach.

In all cases, please feel free to come discuss potential topics and approaches with me early on in the term, before or after class or during office hours.

Beginning work on your essay or project early will help ensure that you produce a well thought-out and well-researched product. First, you will write a **proposal**, which should consist of the research question or subject that your essay or project intends to address and a list of at least five primary or secondary sources that you intend to cite in your bibliography, or use to create your project. Your proposal will not be graded, but if you do not submit one, I will subtract 5% from the final grade on your term essay or project. Your proposal is due **Friday, March 2**.

A first draft of your essay or project will be due in hard copy at the beginning of class on **Wednesday, April 4**. If you have chosen to write a research essay, this should be approximately **10-12 pages long** and should include all the attributes of a finished piece of formal writing, including foot- or endnotes and a complete bibliography. It is important that you complete this draft on time, as that day in class you will be trading essays/projects with a classmate. Each of you will critique the other's draft in class, using guidelines I will provide. In order to obtain the 5% of your course grade assigned to this exercise, you must submit a draft essay or project for review *and* complete a peer review of a classmate's essay or project. You will need to upload your draft essay or project-related document(s) and your peer review to Canvas by the end of the day, so that I can refer to them when reading and grading your final essay or project.

Having considered your peer reviewer's comments, you will then incorporate whatever changes you believe are necessary into your final draft. I am also happy to provide feedback on one draft of your essay or project submitted any time before or on Wednesday, April 11. Your final essay or project will be due on **Wednesday, April 18**.

Policies regarding assignments
Please submit assignments as follows:

- Deep cuts: Upload to Canvas or submit hard copy in class
- Research proposal: Upload to Canvas or leave hard copy in my mailbox (by AQ 6026A)
- First draft of essay/project: Bring hard copy to class **and** upload a copy to Canvas
- Peer review of classmate's essay/project: Upload to Canvas
- Final draft of essay/project: Upload to Canvas or leave hard copy in my mailbox.

For all assignments except unessays (for which we will negotiate expectations separately), please include your name, the date, and some kind of descriptive title on the first page. A separate title page is not necessary. Please also number the pages of the assignment. All assignments must be word-processed, using standard 1-inch margins, at least 1.5-inch spacing, and 11- or 12-point font. Please use Chicago style (notes and bibliography) for footnotes or endnotes, and for lists of works cited. If you are not familiar with this style of citation, here is a quick general guide:
http://www.chicagomanualofstyle.org/tools_citationguide.html

I am committed to helping you succeed in this course. I understand that personal, medical, or other circumstances sometimes arise that inhibit your ability to submit the best work of which you are capable. If this should happen to you, I will entertain requests for extensions of a reasonable length, i.e. normally no more than 3 business days. Extensions must be requested at least a day in advance of an assignment's due date.

If no arrangement for an extension has been made, a late assignment will have **3%** of its final mark subtracted for each day it is late, including weekends, up to a maximum of **seven days** or **21%**. After that point, assignments will not be accepted except by prior arrangement.

Academic honesty
By enrolling in classes at SFU, you have consented to a student contract that includes a commitment to academic honesty:
http://www.sfu.ca/students/calendar/2015/spring/fees-and-regulations/student-contract/academic-honesty.html

It is your responsibility to ensure that you understand what constitutes academic dishonesty, which includes but is not limited to plagiarism. This guide clarifies what actions are considered academically honest and dishonest at SFU:
http://www.sfu.ca/students/academicintegrity/resources/academichonestyguide.html

Classroom etiquette
Please arrive to class in a timely fashion. Please also do not leave the room during our meeting unless it is absolutely, physically unavoidable. We will have a 10-minute break each week in which you can go to the washroom, fill your water bottle, get food or coffee, and so on.

Please turn your cell phones to silent and refrain from using them during class. Feel free to use your laptop, tablet, or netbook to take notes or look up things of relevance to our discussions, but please don't use such devices in ways (Facebook, YouTube, online shopping etc) that will disrupt the attention of others around you. This is particularly important in a seminar setting.

I may make changes to the syllabus during the term. I will notify you promptly if I do so. You will always be able to find the most recent version of the syllabus on the course's Canvas homepage.

Course schedule: Topics, readings, and due dates

Week 1: Introduction
Meeting: Wednesday January 3
Readings: None

Week 2: "Placing the view from nowhere": historical geographies of science, technology, and the environment
Meeting: Wednesday January 10
Readings: Thomas F. Gieryn, "Three Truth-Spots," *Journal of History of the Behavioral Sciences* 38, no. 2 (2002): 113-32
William Cronon, "Kennecott Journey: The Paths out of Town," in *Under an Open Sky: Rethinking America's Western Past* (1992), 28-51
Stephen Bocking, "Nature's Stories? Pursuing Science in Environmental History," in *Method and Meaning in Canadian Environmental History* (2009), 294-308
James C. Williams, "Understanding the Place of Humans in Nature," in *The Illusory Boundary: Environment and Technology in History* (2010), 9-25

Week 3: Early modern natural histories: things that grow
Meeting: Wednesday January 17
Readings: Alix Cooper, "'The possibilities of the land': The Inventory of 'Natural Riches' in the Early Modern German Territories,' *History of Political Economy* 35, Annual Supplement (2003): 129-53
Paula de Vos, "The Science of Spices: Empiricism and Economic Botany in the Early Spanish Empire," *Journal of World History* 17, no. 4 (2006): 399-427
Christopher M. Parsons, "The Natural History of Colonial Science: Joseph-François Lafitau's Discovery of Ginseng and Its Afterlives," *William and Mary Quarterly* 73, no. 1 (2016): 37-72

Week 4: Early modern climate histories: things that blow (and grow)
Meeting: Wednesday January 24
Readings: Sam White, "Unpuzzling American Climate: New World Experience and the Foundations of a New Science," *Isis* 106, no. 3 (2015): 544-66
Alan Mikhail, "Ottoman Iceland: A Climate History," *Environmental History* 20, no. 2 (2015): 262-84
Anya Zilberstein, "Inured to Empire: Wild Rice and Climate Change," *William and Mary Quarterly* 72, no. 1 (2015): 127-58

Week 5: Fieldwork and field sciences

Meeting: Wednesday January 31

Readings: Jane R. Camerini, "Wallace in the Field," *Osiris* 11, no. 1 (1996): 44-65
Robert E. Kohler, "Place and Practice in Field Biology," *History of Science* 40, no. 2 (2002): 189-210
Peder Anker, "Science as a Vacation: A History of Ecology in Norway," *History of Science* 45, no. 4 (2007): 455-79

Week 6: Intemperate and extreme environments

Meeting: Wednesday February 7

Readings: Pey-Yi Chu, "Mapping Permafrost Country: Creating an Environmental Object in the Soviet Union," *Environmental History* 20, no. 3 (2015): 396-421
Gretchen Heefner, "'A tract that is wholly sand': engineering military environments in Libya," *Endeavour* 40, no. 1 (2016): 38-47
Steve Pyne, "Extreme Environments," *Environmental History* 15, no. 3 (2010): 509-13
Dagomar Degroot, "'A Catastrophe Happening in Front of Our Very Eyes': The Environmental History of a Comet Crash on Jupiter," *Environmental History* 22, no. 1 (2017): 23-49

Reading Week—No meeting on Wednesday February 14

Week 7: Conservation science

Meeting: Wednesday February 21

Readings: Peter S. Alagona, "Species Complex: Classification and Conservation in American Environmental History," *Isis* 107, no. 4 (2016): 738-61
Etienne Benson, "Territorial Claims: Experts, Antelopes, and the Biology of Land Use in Uganda, 1955-75," *Comparative Studies of South Asia, Africa and the Middle East* 35, no. 1 (2015): 137-55
Tina Loo, "Political Animals: Barren Ground Caribou and the Managers in a 'Post-Normal' Age," *Environmental History* 22, no. 3 (2017): 433-59

Week 8: Nonhumans and/as technology: industrializing organisms and evolutionary history

Meeting: Wednesday February 28

Readings: William Boyd, "Making Meat: Science, Technology, and American Poultry Production," *Technology and Culture* 42, no. 4 (2001): 631-64
Edmund Russell, "Evolutionary History: Prospectus for a New Field," *Environmental History* 8, no. 2 (2003): 204-28
Brett L. Walker, "Sanemori's Revenge: Insects, Eco-System Accidents, and Policy Decisions in Japan's Environmental History," *Journal of Policy History* 19, no. 1 (2007): 113-44

***Paper proposal due Friday, March 2**

Week 9: Humans and/as technology: embodied and sensory histories

Meeting: Wednesday March 7

Readings: Michael S. Reidy, "Mountaineering, Masculinity, and the Male Body in Mid-Victorian Britain," *Osiris* 30, no. 1 (2015): 158-81

Nadia Berenstein, "Making a global sensation: Vanilla flavor, synthetic chemistry, and the meanings of purity," *History of Science* 54, no. 4 (2016): 399-424
Joy Parr, "Smells Like?: Sources of Uncertainty in the History of the Great Lakes Environment," *Environmental History* 11, no. 2 (2006): 269-99

Week 10: Toxins and pollutants
Meeting: Wednesday March 14
Readings: Michael Egan, "Chronicling Quicksilver's Anthropogenic Cycle," *Global Environment* 7, no. 1 (2014): 10-37
Janet Ore, "Mobile Home Syndrome: Engineered Woods and the Making of a New Domestic Ecology in the Post-World War II Era," *Technology and Culture* 52, no. 2 (2011): 260-86
Sara B. Pritchard, "The Trouble with Darkness: NASA's Suomi Satellite Images of Earth at Night," *Environmental History* 22, no. 2 (2017): 312-30

Week 11: Water, technology, and nature
Meeting: Wednesday March 21
Readings: Ashley Carse and Christine Keiner, eds., "Panama Canal Forum: From the Conquest of Nature to the Construction of New Ecologies," *Environmental History* 21, no. 2 (2016): 207-21, 231-9, 278-87
Tina Loo and Meg Stanley, "An Environmental History of Progress: Damming the Peace and Columbia Rivers," *Canadian Historical Review* 92, no. 3 (2011): 399-427
Dolly Jørgensen, "An oasis in a watery desert? Discourses on an industrial ecosystem in the Gulf of Mexico Rigs-to-Reefs program," *History and Technology* 25, no. 4 (2009): 343-64

Week 12: Energy, technology, and nature
Meeting: Wednesday March 28
Readings: Alan Mikhail, "Unleashing the Beast: Animals, Energy, and the Economy of Labor in Ottoman Egypt," *American Historical Review* 118, no. 2 (2013): 317-48
Edmund Russell et al., "The Nature of Power: Synthesizing the History of Technology and Environmental History," *Technology and Culture* 52, no. 2 (2011): 246-59
Sara B. Pritchard, "An Envirotechnical Disaster: Nature, Technology, and Politics at Fukushima," *Environmental History* 17, no. 2 (2012): 219-43

Week 13: Peer review & wrap-up
Meeting: Wednesday April 4
Readings: **None—First draft of essay or project due for peer review**

***Final draft of essay or project due Wednesday, April 18**