

**STSC 308: Science, Technology, and Global Capitalism**

Dr. David Singerman  
University of Pennsylvania  
Spring 2016

Williams Hall 318  
Wednesdays 3:30-6:30  
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Office hours: 373 Claudia Cohen Hall, by appointment

**Description**

Modern capitalism has been defined by the circulation of “commodities,” from gold in the 16th century to sugar in the 17th, tobacco in the 18th, cotton in the 19th, oil in the 20th, and financial derivatives in the 21st. But the world is always messy and complex, rather than neatly divided into products and goods. How, why, and for whose benefit do we divide nature into the abstractions of the marketplace? Who holds power over where, why, and how that happens? In this seminar, we’ll draw on a range of scholarship from the humanities, social sciences, and the sciences, along with primary texts and other sources, in order to understand the close links among global capitalism, science and technology, and the natural world.

**Policies**

*Participation*

This course depends on you! Participation, in the most basic sense, means you are required to attend every class and to contribute to class discussions.

Each unexcused absence after the first will result in a deduction (2% per class missed) from your final grade. For an absence to count as “excused” you must produce, within one week, a note from a dean, doctor, coach, etc., explaining why you could not attend. (Note that being excused from a day’s class does *not* excuse you from the work your classmates did. You are still responsible for completing the assigned readings and producing a response paper. You are also responsible for any material covered in the class you miss, which means finding a classmate who will lend you their notes, not asking me for mine.)

Our class runs from 3:30-6:30, but I understand that Penn’s is not a small campus. I will begin class **promptly at 3:35**.

*Readings*

You are expected to complete all the readings each week and come to class prepared to talk about them. Readings will be supplied as PDFs, except for Sidney Mintz, *Sweetness and Power: The Place of Sugar in Modern History*, which you are required to purchase (ISBN 0140092331).

#### *Electronic devices*

Laptops, tablets, e-readers, and phones **are not allowed** in class unless otherwise specified by me. If there is a reason you are unable to take notes on paper, and need to use an electronic device, get in touch with me. "Attendance," therefore, does not only include showing up, but also bringing the readings in hard copy to class, as we will often refer to specific passages. This means printing them if they are not already printed.

#### *Learning Resources Center*

The Office of Learning Resources at the Weingarten Learning Resources Center offers individualized instruction and a variety of workshops to guide Penn students towards more efficient and effective academic study skills and strategies. Professional staff provides free and confidential instruction in areas such as time/project management, academic reading and writing, exam preparation and test-taking strategies, and study strategies. The office is located in Stouffer Commons, 3702 Spruce Street. Stop by to use the study lounge or computer lab or to pick up self-help brochures and semester calendars. To schedule an appointment with a Learning Instructor, call (215) 573-9235 or visit in person. To learn more about Weingarten's services, visit [www.vpul.upenn.edu/lrc](http://www.vpul.upenn.edu/lrc).

#### *Academic integrity*

There is **no alternative** to adhering to strict standards of academic integrity. This means properly acknowledging what work and words are yours and what is the work of others. **You are responsible for adhering to Penn's Code of Academic Integrity** (<https://provost.upenn.edu/policies/pennbook/2013/02/13/code-of-academic-integrity>) and I strongly encourage all of you to read it. **A violation of that Code will result in a failing grade.** If you have any doubts or questions as to whether something counts as plagiarism, **ask me.**

#### *Students with disabilities*

Penn provides reasonable accommodations to students with disabilities who have self-identified and been approved by the office of Student Disabilities Services (SDS). Please make an appointment to meet with me as soon as possible in order to discuss your accommodations and your needs. If you have not yet contacted SDS, and would like to request accommodations

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or have questions, you can make an appointment by calling SDS at 215.573.9235. The office is located in the Weingarten Learning Resources Center at Stouffer Commons, 3702 Spruce Street, Suite 300. All services are confidential.

*Conflicts*

Once you have your schedule for the semester, have a look at the syllabus for each of your other classes. If you see any conflicts with another class's exams, projects, etc., let me know as soon as possible, and I'll try to make an accommodation. The sooner you let me know, the better.

**Grading breakdown**

25% Participation  
15% Reading journals  
10% Reading presentations  
15% Follow your food paper  
35% Final paper

**Assignments**

*Reading journals*

This assignment has two parts. First, by **noon each Tuesday**, please post a journal entry of about 500 words to our class's Canvas site. This entry should represent your thoughtful, reasoned engagement with the assigned reading for that week. You may consider a single reading in depth, weigh multiple readings against each other, identify a contradiction, or expand upon a point—these are just some of the approaches you may take, and you should experiment over the course of the semester. Second, by **noon on Wednesday**, you should also respond (in about 250 words) to someone else's entry.

*Reading presentations*

Each week one of you will give a short (3 minute) presentation on the readings. This doesn't mean summarizing or recapitulating them, but rather analyzing them: what elements did you find convincing or unconvincing, and why? What are some questions they raise for the class to discuss? You will have the opportunity to sign up for these during our second class meeting.

*Follow your food paper*

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This assignment will ask you to take some item of food that you find at Penn or in the Philadelphia area and follow it back to its origin, discovering and describing what kinds of scientific knowledge, technologies, and expertise turn “nature” into “food.” What were the transformations and movements that that particular ingredient took to becoming the food you ate? What were the choices—political, economic, scientific, technological, and moral—that shaped **one** of those transformations or movements? Whose labor (and the labor of which animals or microbes) was necessary to that transformation? **This paper will be due Friday, March 18.**

*Final paper*

You will be responsible for an original research paper of 10-12 pages. This paper assignment will also include intermediate elements (e.g., topic, a bibliography, and an outline) and successfully completing those will make up part of the grade for the assignment as a whole. Further details on this assignment will be provided as the class progresses, but our final day of class will be a conference, where you will present your preliminary findings and comment on each others’ work. **This paper will be due Saturday, May 7.**

## **Schedule and readings**

*Note: You will receive notice of any changes to the readings by email at least two class sessions in advance, and I will also explain the change the following class.*

### **Week 1 (January 20): Introductions**

#### **Week 2 (January 27): Accounting for commodities**

— William Cronon, “Pricing the Future: Grain,” “The Wealth of Nature: Lumber,” and “Annihilating Space: Meat,” in *Nature’s Metropolis: Chicago and the Great West* (W. W. Norton, 1991)

#### **Week 3 (February 3): Linking Consumers and Producers**

— Sidney Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (Penguin, 1985), chapters 1-4

#### **Week 4 (February 10): Inventing commodities**

— Simon Schaffer, “Golden Means: Assay Instruments and the Geography of Precision in the Guinea Trade,” in *Instruments, Travel, and Science: Itineraries of precision from the seventeenth to the twentieth century*, ed. Bourguet, Licoppe, and Sibum (Routledge, 2002)  
— Peter Linebaugh, *The London Hanged: Crime and Civil Society in the Eighteenth Century* (Verso, 2001), chapters 1, 4, 5, & 8

#### **Week 5 (February 17): Sugar and slaves**

— Eric Otremba, “Inventing ingenios: experimental philosophy and the secret sugar-makers of the seventeenth-century Atlantic,” *History and Technology* (2012).  
— Richard Dunn, *A Tale of Two Plantations: Slave Life and Labor in Jamaica and Virginia* (Harvard, 2014), Prologue, Chapter 4, Appendices 14-21  
— Maria Portuondo, “Plantation Factories: Science and Technology in Late-Eighteenth-Century Cuba,” *Technology and Culture* (2003)

#### **Week 6 (February 24): Stimulants**

— Fernando Ortiz, *Cuban Counterpoint: Tobacco and Sugar* (1940), pp. 3-93  
— James Benn, *Tea in China: A Religious and Cultural History* (University of Hawai’i Press, 2015), chapters 1 & 3  
— Anonymous, “The Women’s Petition Against Coffee” and “The Men’s Answer to the Women’s Petition Against Coffee” (London, 1674)

#### **Week 7 (March 2): Food**

—Heather Paxson, *The Life of Cheese: Crafting Food and Value in America* (University of California, 2012), chapters 2, 4, & 5

—Theodore Bestor, *Tsukiji: The Fish Market at the Center of the World* (University of California, 2004), chapters 1, 2, & 4

*March 9 - no class*

**Week 8 (March 16): Cotton**

—Walter Johnson, *River of Dark Dreams: Slavery and Empire in the Cotton Kingdom* (Harvard, 2013), chapters 6 & 9

—Sven Beckert, “Emancipation and Empire: Reconstructing the Worldwide Web of Cotton Production in the Age of the American Civil War,” *American Historical Review* (2004), and “From Tuskegee to Togo: The Problem of Freedom in the Empire of Cotton,” *Journal of American History* (2005)

—Alan L. Olmstead and Paul W. Rhode, “Biological Innovation and Productivity Growth in the Antebellum Cotton Economy,” *Journal of Economic History* (2005)

**Week 9 (March 23): People**

—Walter Johnson, *Soul by Soul: Life Inside the Antebellum Slave Market* (Harvard, 2001), chapters 4-6

—Dan Bouk, *How Our Days Became Numbered: Risk and the Rise of the Statistical Individual* (Princeton, 2015), chapters 1-3

**Week 10 (March 30): Animals**

—Rebecca J. H. Woods, “Breed, culture, and economy: The New Zealand frozen meat trade, 1880–1914,” *Agricultural History Review* (2012)

—Lukas Rieppel, “Prospecting for Dinosaurs on The Mining Frontier: The Value of Information in America’s Gilded Age,” *Social Studies of Science* (2015)

—W. Jeffrey Bolster, *The Mortal Sea: Fishing the Atlantic in the Age of Sail* (Harvard, 2014), chapters 1, 3, and 5

**Week 11 (April 6): Coal**

—Peter A. Shulman, *Coal and Empire: The Birth of Energy Security in Industrial America* (Johns Hopkins, 2015), Introduction and chapters 2 & 3

—Paul Lucier, *Scientists and Swindlers: Consulting on Coal and Oil in America, 1820-1890* (Johns Hopkins, 2008), chapters 5-8

**Week 12 (April 13): Nuclear Energy**

—Gabrielle Hecht, *Being Nuclear: Africans and the Global Uranium Trade* (MIT Press, 2012), chapters 1, 2, 7, 8

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—Doug Brugge and Rob Goble, “The History of Uranium Mining and the Navajo People,”  
*American Journal of Public Health* (September 2002)

—Doug Brugge and Rob Goble, “The Radiation Exposure Compensation Act: What is Fair?,”  
*New Solutions* (2003)

**Week 13 (April 20): Money**

—Vincent Lépinay, *Codes of Finance: Engineering Derivatives in a Global Bank* (Princeton, 2011),  
Preface, Prologue, Introduction, Chapters 1 & 3

—Donald Mackenzie, “Dark Pools,” *London Review of Books* (4 June 2015)

**Week 14 (April 27): Final paper workshops**

—Read each other’s work

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Follow Your Food paper (1000-1200 words)

**Due:** Friday, March 18<sup>th</sup>, at 11:59pm to Canvas

**Optional draft deadline:** Monday, March 14<sup>h</sup>, 5pm by email

**Value:** 15% of final grade

**Questions?** rothda@sas.upenn.edu

### Goal

The goal of this assignment is to provide you with an opportunity to think through the ways that processes and systems of commodification shape the food Americans eat in 2016.

### Project

Choose a food object that you've eaten in the past week: a piece of broccoli, a slice of pizza, a can of Red Bull. Pick an ingredient of that food object. Drawing on your own research, follow that ingredient back to its ultimate natural source, and then trace how that source in nature was transformed and reshaped until it became the food you ate. Use our readings of Paxson and Bestor, but also Mintz and Cronon, as guides, inspirations, and models.

In 1000-1200 words, your paper should answer two questions:

- (1) What were the transformations and movements that that particular ingredient took to becoming the food you ate?
- (2) What were the choices—political, economic, scientific, technological, and moral—that shaped **one** of those transformations or movements? Whose labor (and the labor of which animals or microbes) was necessary to that transformation?

Your paper should be **as specific as possible, spatially and technologically**. That is, if your food object is a carnitas burrito from the Chipotle at 39<sup>th</sup> and Walnut, don't explain how pigs are raised in the U.S. and pork processing works in general; explain how and where Niman Ranch (Chipotle's supplier) raises and slaughters its pigs, and how that pork makes its way to Chipotle through distributors, warehouses, etc. If you can explain how the pork made it to 39<sup>th</sup> and Walnut, even better.

This will require not just research online and in Penn's libraries, but will also almost certainly mean calling up these companies and asking them where to find information on their practices. Don't be shy, and don't be dissuaded if they stonewall you! Instead, think like an investigative reporter as well as an STS scholar: **why is some information public and easy to access, and why is some of it private and proprietary and hard to access?**



Please cite your sources using Chicago Manual of Style footnotes. (You can find the Manual at [chicagomanualofstyle.org](http://chicagomanualofstyle.org), and as always you can ask me any questions about citation.) If you draw from sources online, you're encouraged but not required to embed links in your paper.

Questions? Email me: rothda@sas.upenn.edu.

Have fun!

(Updated February 25, 2016)

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Final paper assignment, spring 2016

**IMPORTANT DATES** (*all assignments to be uploaded to Canvas*)

All deadlines are at MIDNIGHT.

**March 25:** Topic proposal with one possible primary and one secondary source (5% of the total 35%)

**April 8:** Prospectus/annotated bibliography (5% of the total 35%)

**April 22:** Rough draft for discussion (5% of the total 35%)

**April 27:** Paper workshop/conference (incorporated into Participation grade for course)

**May 7:** Final paper (20% of the total 35%)

### Assignment

Identify and answer a historical question using primary and secondary sources, on a topic that relates to our study of the history of science, technology, and commodity capitalism. Now's your chance! Your paper topic could emerge from a theme that has intrigued you as we've read across various approaches, time periods, and subjects. It might come from one of the books or articles we've read—a subject you felt an author left unanswered, for instance. It could built on a point on which you disagreed with one of the scholars we've read. Or it could just be a topic you've always wanted to investigate.

### Goals

Understand how historians of science and capitalism combine primary research and secondary sources into a historical argument; how to position arguments against those of other historians; how to critically assess claims and arguments; and how to place particular people or singular events into greater contexts, systems, causes, forces, and structures, and to use those individual stories to illuminate those larger phenomena.

### Research

Whatever the question you choose, your paper must be built around your own primary source research, framed through your reading in the secondary literature. Penn's library system is an amazing resource—use it, and **not just online**. In particular, Rutgers's reference and research librarians are there to help you find sources that will let you

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answer historical questions. We will meet at least once in the library itself to help facilitate your research.

I strongly suggest you familiarize yourself with the Library's research guides. You should look at the library's Special Collections holdings to see if there are any manuscript collections there that interest you. You may also want to examine historical databases such as America: History and Life, the Congressional Serial Set, ProQuest Historical Newspapers, Eighteenth Century Collections Online, etc. This list is by no means exclusive—there are a lot of resources out there, and you should explore them as you explore a topic.

### Nuts and bolts

- The topic proposal (March 25) should consist of a short paragraph explaining your research question and identifying one primary and one secondary source you will use to answer it. This proposal will be graded on completeness; I will return this to you with comments.
- The prospectus (April 8) should consist of one double-spaced page explaining your argument and how you will use the sources (at least two primary and two secondary) described in your annotated bibliography. The annotation for each source should consist of a few sentences summarizing its importance (and, if a secondary source, its argument) and how it fits into your paper as a whole. This prospectus will be graded on completeness; I will return this to you with comments.
- The rough draft for workshopping should be 8-10 pages, double spaced, 12-pt font. I will read these in advance of the workshop.
- The final paper should be 10-12 pages, double spaced, 12-pt font.
- You must use footnotes formatted according to the Chicago Manual of Style guidelines. See me if you have any questions, especially about how to cite primary sources. Plagiarism will result in a failing grade.
- If you have any questions, ask me—early and often!