

History of Science 222, Summer 2003
Technology and Social Change in History

Lecture: 9:55-11:55 , 6104 Social Science
Discussions: 1:10-2:05, 4314, 5322, 6224 Social Science

Professor:	Eric Schatzberg	Office Hrs:	By appointment
Office:	7129 Social Science	Telephone:	262-3973
		Email:	eschatzb@wisc.edu

Description:

Why has *technology* become such a powerful idea at the beginning the 21st century? Why do people invest so many hopes and fears in this strange concept? Why do inventions seem like an unstoppable force, when they are human creations? Why are some people thrilled by the latest digital devices yet repelled by genetically-modified foods?

This course attempts to demystify technology, using historical examples to cut through the common misperceptions that surround this concept. The course focuses on a series of episodes from the past that illuminate the nature of technological change and the relationship between technology and other human endeavors.

There are three major parts to the course. The first part focuses on the factors that shape technological change. The second part examines the social effects of technology in relation to gender, work, the military, and international politics. The third part deals with ethical issues, using the *Challenger* disaster and enthusiasm for computers as case studies.

Requirements:

General. It is quite difficult to fit a full 3-credit, semester-long course into 14 days of classes over three weeks. You should be prepared to work as hard in this course as you would when taking a full load during the semester.

Lectures. There are two 55-minute lecture periods every day, with a ten-minute break between them.

Discussion. Discussion is a central part of this course. There will be one 50-minute discussion session every afternoon. Discussion sessions are limited to 20 students. Please come prepared to talk; participation is an important part of your grade.

Quizzes. There will be a brief, multiple-choice quiz at the beginning of each discussion section, based on the day's readings. The questions will be distributed in advance.

Take-home essays and final exam. There will be two short take-home essay exams during the semester (due the first two Mondays, June 2 and 9) and an in-class final during the last day of class.

WebCT and email class lists. I have created a WebCT site for this course, which all registered students in this course can access. (You can access WebCT at <https://uwmad.courses.wisc.edu>. Sign in with your network ID and password.) I will post the quiz questions and lecture outlines on WebCT. I will also send out the quiz questions by email, but not the lecture outlines.

Grades:

Take-home essays and final, 60%; quizzes, 20%; discussion, 20%. Students will do well in this course by reading carefully, paying attention to the lectures, thinking critically about the ideas presented in the course, and participating actively in discussion. Do not expect a good grade if you miss class or skip readings.

Course Book and Packet:

The following book will be available at Rainbow Bookstore Cooperative, 426 West Gilman Street (off State St.), 257-6050, open 10-6 MWF, 10-8 TuTh, 12-5 SaSu.:

Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (New York: Basic Books, 1985);

A course packet of other assigned readings is available for purchase from the History of Science department office, 7143 Social Science (262-1406). Normal office hours are 8-3, but call first if you are making a special trip. The cost is \$18.00, cash preferred.

All readings will be on reserve at College Library.

Course Etiquette:

Here's a few simple rules to insure a good atmosphere for learning. Do not read newspapers during lectures and discussion. Refrain from private discussions in class. Turn off or mute cell phones and pagers. Come to class on time. Feel free to ask questions during lecture. Inform your TA immediately if you miss a class due to illness or injury

Religious Holidays and ADA Notice:

You can take off any religious holidays you want, as long as you make up the work.

If you have a disability that might adversely affect your performance in this course, let me know and I'll do my best to accommodate you. For more information, contact the McBurney Disability Resource Center, 263-2741.

Handling Stress:

College life often involves a lot of stress. If you feel like things are getting out of hand, either for personal or academic reasons, please contact the Counseling and Consultation Service, part of the University Health Service, 905 University Avenue, 265-5600. For more information, see <http://www.uhs.wisc.edu/ex/counseling/>.

Academic Integrity:

You are expected to know what constitutes academic dishonesty. If you are unclear about this, speak to me or your teaching assistant. The two most common types of academic dishonesty are cheating and plagiarism. *Cheating* is the act of obtaining or attempting to obtain academic work through the use of dishonest, deceptive or fraudulent acts. *Plagiarism* is representing the work of someone else as one's own and submitting it to fulfill academic requirements. The following list contains common examples of academic dishonesty:

Cheating: Copying from someone else's exam, altering or interfering with grading, using or consulting any outside sources during an examination unless given explicit permission.

Plagiarism: Incorporating ideas, words, sentences, or paragraphs of another person's writing (including material from the Internet) into one's own work, without appropriate credit (use of footnotes and quotation marks). Submitting a paper purchased from a research or term paper service, or turning in another person's paper as your own. (For more information on how to use sources correctly, see the Writing Center handout, "Quoting and Paraphrasing," <http://www.wisc.edu/writing/Handbook/QuotingSources.html>.)

Other Bad Things: Giving your homework, term paper, or other assignment to another to copy, lying to an instructor to improve your grade (i.e., about the nature of absences), altering graded work after it has been returned, stealing examinations or tests.

Consequences of Academic Dishonesty: In most cases, the assignment at issue will receive a grade of "F," although more serious penalties can apply. See University of Wisconsin-Madison Disciplinary Guidelines, <http://www.wisc.edu/students/amsum.htm>. (The text of this policy is based on Prof. Nancy Rose Marshall, UW-Madison Art History 202 syllabus, Spring 2003.)

Course Outline

Part 1: Understanding Technical Change

Day 1 (5/27) Introduction - The Fallacy of Technological Determinism

Outline of course; definitions of technology; technological determinism.

Reading: "Exxon Mobil Meets Amazon.Com," *New York Times*, Dec. 5, 1998, A25;
Langdon Winner, "Prophets of Inevitability," *MIT's Technology Review* 101 (Mar/Apr 1998): 62.

Assignment: read the articles in preparation for the Tuesday afternoon discussion.

Day 2 (5/28) Invention as a Social Process

Invention and creativity; the telegraph as a case study.

Reading: Brooke Hindle, *Emulation and Invention*, 85-142.

Day 3 (5/29) Development and Innovation

From concept to market.

Reading: Stuart W. Leslie, "Charles F. Kettering and the Copper-Cooled Engine," 283-307;

Paul A. David, "Understanding the Economics of QWERTY: The Necessity of History," 30-49.

Day 4 (5/30) Science and Technological Change

The invention of the steam engine as a case study.

Reading: D. S. L. Cardwell, *Turning Points in Western Technology*, 51-59, 66-72;

L. T. C. Rolt, *Thomas Newcomen*, 9-15, 30-41;

Svante Lindqvist, *Technology on Trial*, 108-17.

Assignment: First take-home essay, due Monday 6/2.

Part 2: Technology and Society

Day 5 (6/2) Technology, Production and Work

Managers, workers, and control of the labor process.

Reading: Harry Braverman, "Scientific Management," 85-123;

Joyce Shaw Peterson, "Auto Work," 30-45;

Henry Ford, "The Terror of the Machine," 103-111.

Day 6 (6/3) Technology and Gender 1: Who Does the Dishes?

The industrialization of housework.

Reading: Cowan, *More Work for Mother*, 3-68 (chaps. 1-3).

Day 7 (6/4) Technology and Gender 2: Technologies of Consumption

Failed alternatives and the dominance of the postwar suburbs.

Reading: Cowan, *More Work for Mother*, 102-150, 192-219 (chaps. 5, 7, epilogue).

Day 8 (6/5) Technology and Politics: From the Suburbs to 9/11

International implications of American dependence on petroleum.

Readings: Michael T. Klare, "Oil, Geography and War," 27-50;

Michael T. Klare, "The Geopolitics of War," 11-15;

Zbigniew Brzezinski, "The True U.S. Interests in the Gulf," *Washington Post*, Aug. 16, 1990, A23;

Barbara Conry, "Time Bomb: The Escalation of U.S. Security Commitments in the Persian Gulf Region," *Cato Policy Analysis* No. 258 (Aug. 29, 1996).

Day 9 (6/6) The Military and Technological Change

Military roots of key modern technologies; computers as a case study.

Reading: Stephen Segaller, *Nerds 2.0.1: A Brief History of the Internet* (New York: TV Books, 1999), 29-96 (chaps. 1-3).

Assignment: Second take-home essay due Monday, 6/9.

Part 3: Computer Critics and Engineering Ethics

Day 10 (6/9) De-hyping the Digital Age

Contrasting views on digital technology.

Reading: Paul A. Strassmann, "Will Big Spending on Computers Guarantee Profitability?" 75-85;

Langdon Winner, "Technology Today: Utopia or Dystopia," 989-1017.

Day 11 (6/10) Automobiles, Engineers and Corporate Responsibility

Ralph Nader's critique of auto safety.

Reading: Ralph Nader, *Unsafe at Any Speed*, 3-41, 170-209 (chaps. 1, 5).

Day 12 (6/11) The Shuttle Challenger Disaster, 1

From Sputnik to the Shuttle program.

Reading: Walter A. McDougal, *...the Heavens and the Earth: A Political History of the Space Age* (New York: Basic Books, 1985), 302-324, 505-509;

Alex Roland, "The Shuttle: Triumph or Turkey," 29-49.

Day 13 (6/12) The Challenger Disaster, 2

A study in engineering ethics. Reading response.

Reading: Russel P. Boisjoly, Ellen F. Curtis, and Eugene Mellican, "Roger Boisjoly and the Challenger Disaster," 217-30;
Richard P. Feynman, "What Do You Care What Other People Think," 114-188, 212-219.

Day 14 (6/13) Wrap-Up and In-Class Final

This day we will spend the first hour in lecture and the second hour in discussion. The afternoon time slot will be used for the in-class final.

Course Packet Contents

1. "Exxon Mobil Meets Amazon.Com," *New York Times*, Dec. 5, 1998, A25.
2. Langdon Winner, "Prophets of Inevitability," *MIT's Technology Review* 101 (Mar/ Apr 1998): 62.
3. Brooke Hindle, *Emulation and Invention* (New York: Norton, 1981), 85-142, 149-53.
4. Stuart W. Leslie, "Charles F. Kettering and the Copper-Cooled Engine," in *The Engineer in America*, ed. Terry S. Reynolds (Chicago: University of Chicago Press, 1991), 283-307.
5. Paul A. David, "Understanding the Economics of QWERTY: The Necessity of History," in *Economic History and the Modern Economist*, ed. William N. Parker (Oxford: Basil Blackwell, 1986), 30-49.
6. D. S. L. Cardwell, *Turning Points in Western Technology* (New York: Science History, 1972), 51-59, 66-72.
7. L. T. C. Rolt, *Thomas Newcomen: The Prehistory of the Steam Engine* (Dawlish [Eng.]: David and Charles, 1963), 9-15, 30-41.
8. Svante Lindqvist, *Technology on Trial: The Introduction of Steam Power Technology into Sweden, 1715-1736* (Stockholm: Almqvist & Wiksell, 1984), 108-17.
9. Harry Braverman, "Scientific Management," chap. 4 in *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century*, 25th anniversary ed. (New York: Monthly Review Press, 1998), 59-85.
10. Joyce Shaw Peterson, "Auto Work," chap. 3 in *American Automobile Workers, 1900-1933* (Albany: State University of New York Press, 1987), 30-45.
11. Henry Ford, "The Terror of the Machine," chap. 7 in *My Life and Work* (Garden City, NY: Doubleday, Page, 1922), 103-111.
12. Michael T. Klare, "Oil, Geography and War," chap. 2 in *Resource Wars: The New Landscape of Global Conflict* (New York: Metropolitan Books, 2001), 27-50.
13. Michael T. Klare, "The Geopolitics of War," *The Nation* 273 (Nov. 5, 2001), 11-15.

14. Zbigniew Brzezinski, "The True U.S. Interests in the Gulf," *Washington Post*, Aug. 16, 1990, A23.
15. Barbara Conry, "Time Bomb: The Escalation of U.S. Security Commitments in the Persian Gulf Region," Cato Policy Analysis No. 258 (Aug. 29, 1996), <http://www.coato.org/pubs.pas/pa-258.html>.
16. Stephen Segaller, *Nerds 2.0.1: A Brief History of the Internet* (New York: TV Books, 1999), 29-96 (chaps. 1-3).
17. Paul A. Strassmann, "Will Big Spending on Computers Guarantee Profitability?" *Datamation* 43 (Feb. 1997): 75-85.
18. Langdon Winner, "Technology Today: Utopia or Dystopia," *Social Research* 64 (1997): 989-1017.
19. Ralph Nader, *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* (New York: Grossman, 1972 [1965]), 3-41, 170-209 (chaps. 1, 5).
20. Walter A. McDougal, *...the Heavens and the Earth: A Political History of the Space Age* (New York: Basic Books, 1985), 302-324, 505-509.
21. Alex Roland, "The Shuttle: Triumph or Turkey?" *Discover*, Nov. 1985, 29-49.
22. Russel P. Boisjoly, Ellen F. Curtis, and Eugene Mellican, "Roger Boisjoly and the Challenger Disaster," *Journal of Business Ethics* 8 (1989): 217-30.
23. Richard P. Feynman, *What Do You Care What Other People Think* (New York: Bantam, 1988), 114-188, 212-219.