

History of Science 339, Fall 2006
Technology and Its Critics Since World War II

TTh 1:00-2:15, 159 Van Hise

Professor:	Eric Schatzberg	Office Hrs:	2:30-3:30 Tue. or by appt.
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Description:

The course examines the ideas of people who questioned American technology and its consequences after World War II. The dramatic technologies of World War II, especially the atomic bomb, encouraged a powerful technological enthusiasm, a profound belief in the ability of technology to achieve almost any task assigned to it. From the beginning of the postwar era, however, some people challenged this faith in technology. At first, the strongest criticism of technology was directed against the dangers of nuclear war and the hazards of fallout from atomic testing. A few intellectuals also criticized the consumer society of the 1950s, with its bland suburbs, conformist white-collar bureaucracies, and mind-numbing advertising. In the early 1960s, critics shifted ground to other technologies, such as synthetic pesticides and the automobile. These critics helped inspire a new environmental movement concerned with protecting humans as well as wilderness. Critics of technology also drew strength from protest against the Vietnam War and the counterculture of the 1960s, both of which encouraged activism against large-scale technologies like nuclear power. The counterculture also inspired groups seeking to create counter-technologies, such as organic farming and solar energy. Even in the midst of today's enthusiasm for every new gadget, critics continue to expose the dark side of technological change.

Most critics of technology did not reject modernity and yearn for romantic primitivism. Instead, as this course will stress, the most cogent criticism of postwar technology came from technical experts--scientists, engineers, physicians and others.

Requirements:

Your grade in the course will be based on three one-page reading responses, active participation in discussion, and three short take-home essay exams. Doing well in this course requires both doing the readings and attending lectures; neither the lectures nor the readings stand on their own.

Due dates: readings responses, 9/21, 10/26, 11/30; essays, 10/10, 11/14; take-home final, 12/22. Also be prepared for full-period discussions on Thursdays when readings responses are due and before the take-home essays are due: 9/21, 10/5, 10/26, 11/9, and 11/30.

Graduate students MUST register concurrently for Hist Sci 639, 9:55-10:45 Wed. This is a requirement of the Divisional Committee that the department cannot waive. Hist Sci 639 requires additional readings and a small research paper.

Honors students, that is, students registered for honors credit, have two choices. They can either join the separate graduate discussion section, Hist Sci 639, which meets 9:55-10:45 Wednesdays. Or they can write a research paper on a topic directly relevant to the course as long as it focuses

on the period from 1945 to 1980. Honors students should contact me promptly to indicate which option they will choose.

Lecture and Discussion Etiquette:

This is a relatively small class, and I'd like to keep things pretty relaxed. But there are a couple points of etiquette that I'd like everyone to follow. Please sit near the front of the class. Please do not read newspapers or have private conversations during lectures. Feel free to discuss with me any problems you have with the course; I'll fix them if I can. This is an evolving course and it still has some rough edges. During discussion, address your remarks to the class, not to me. Try to respond to your classmates by name. Always respond respectfully to your classmates, even if they say something you disagree with strongly.

Grades:

Discussion, 16%; reading responses, 24%, essays, 60%.

The *discussion* grade will be based on attendance and class participation, particularly during the full-period discussions indicated in the syllabus. I would like to see one or two halfway intelligent comments from every member of the class in each full-period discussion.

The *readings responses* are informal writing assignments, but I do expect correct grammar and punctuation. They will be graded as follows: some evidence that reading was done but little else: BC; basic summary: B; good summary with some analysis: AB; particularly perceptive analysis of the readings: A. If writing problems are serious enough to make the response difficult to read, the response will receive a 1/2 letter grade reduction.

The *essays* will be graded roughly equally on writing and content. In order to receive an A, the essay must have the following: 1) a clearly stated thesis making a non-trivial point in response to the questions posed; 2) properly focused paragraphs each contributing to the thesis; 3) specific evidence, drawn from the readings, supporting the thesis; 4) direct, concise prose that conveys your meaning with specific, carefully chosen words; 5) generally correct spelling, grammar and punctuation.

Course Books and Readings:

Readings for this course will be drawn from both primary and secondary sources. Much of the history covered by this course has yet to be written, so I use a fair number of primary sources. "Primary sources" refer to works from the historical period we are studying, in contrast to secondary sources, which are works written well after the events they recount.

The following required book is available from the Rainbow Bookstore Cooperative, 426 West Gilman Street (off State St.), 257-6050, open 10-6 MWFSa, 10-8 TuTh, 12-5 Su. (Please support your local independent bookstores.)

Allan M. Winkler, *Life Under a Cloud: American Anxiety About the Atom* (Urbana: University of Illinois Press, 1999).

A **course packet** (see contents at end of syllabus) is available for purchase from the History of Science department office, 7143 Social Science (262-1406). Packets are sold between 8 am and 6 pm through Thursday 9/7, 8 to 5 until Thursday 9/14, and until 3 pm thereafter. The cost is \$40.00, check or cash. Note that **NO RETURNS ARE PERMITTED**, even if you drop the class.

All readings are on reserve at College Library.

How to Read (in history courses):

This course has a fairly heavy reading load, but one appropriate for an advanced upper-level humanities course. You will be able to handle the readings if you approach them properly. The key to reading for history courses is to focus on the main ideas and relevant details of each reading. To help you focus on these key ideas, I will email a brief introduction to the readings each week.

Email lists:

I will use an email list to communicate with the class, including sending assignments for reading responses and essays. The address of the list is histsci339-1-f06@lists.wisc.edu. Students should feel free to use the list to send comments to the class, but please limit postings to messages directly relevant to the course.

Academic Integrity and Plagiarism:

Don't copy stuff without 1) citing the original source you used for the ideas, and 2) putting it in quotation marks if you use the exact words. For details, see the Writing Center web page on quoting and paraphrasing, <http://www.wisc.edu/writing/Handbook/QuotingSources.html>.

You can study and discuss things with your classmates and friends, but your writing must be your own. Once you start writing, stop talking with classmates. You can, however, ask friends outside the class to check your written work for clarity and grammar.

Religious Holidays and ADA Notice:

You can take off any religious holidays you want, as long as you make up the work. Instructors are not supposed to schedule tests on the more popular religious holidays. If necessary, I'll give observant students an alternative but equivalent assignment.

If you have a disability that might 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.

Freaking Out:

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/>; click on "Counseling Services" on the left side of the page.

Course Outline

Week 1 (9/5, 9/7): Understanding Technology and Its Critics

Overview of the course; major themes. Readings include a short essay explaining how scholars think about technology, and an example of a critique of technology from the late 1950s.

Readings: "Introductory Essay: The Social Shaping of Technology," in *The Social Shaping of Technology*, 3-16;

Aldous Huxley, "Over-Organization," chap. 3 in *Brave New World Revisited* (London: Vintage, 2004 [orig. 1958]), 25-37.

Assignment: Be prepared for an informal discussion of the Huxley reading on Thursday.

Week 2 (9/12, 9/14): WWII, the Atomic Bomb, and the Postwar Era

World War II was one of the great turning points in modern history, especially for science and technology. The postwar era brought profound social and political changes.

Readings: Godfrey Hodgson, "The 1940s," chap. 2 in *America in Our Time*, 17-47;

Winkler, *Life Under a Cloud*, 9-56 (chaps. 1-2);

Ellen Schrecker, *The Age of McCarthyism*, 20-30, 38-47, 177-82, 271-74.

Week 3 (9/19, 9/21): Fear and Hope in the Early Atomic Age

The atomic bomb encouraged tremendous optimism for the future of technology, while creating deep anxieties about whether human civilization would survive to see it.

Readings: Winkler, *Life Under a Cloud*, 57-83 (chap. 3);

Alan Dunn, "Utopia--1955," *Saturday Evening Post*, 30 Dec. 1944, 36-37;

Paul Boyer, *By the Bomb's Early Light*, 109-30 (chaps. 10-11);

Selections from "Peacetime Benefits of Atomic Energy" in *The Atomic Bomb* (1946), 241-52, 277-88.

Assignment (due 9/21): one-page reading response; see email for instructions. Be prepared for discussion Thursday.

Week 4 (9/26, 9/28): Conflicts among Experts: Debating Atomic Fallout

Experts played a key role in the debate over radiation dangers. Many of these experts criticized the U.S. government for downplaying the dangers of fallout.

Readings: Winkler, *Life Under a Cloud*, 84-135 (chaps. 4-5);

Carolyn Kopp, "The Origins of American Scientific Debate over Fallout Hazards," 403-22;

Pat Ortmeyer and Arjun Makhijani, "Worse Than We Knew," 46-50.

Week 5 (10/3, 10/5): Opposing the Bomb: From the Manhattan Project to the SANE

More than any other technology in history, atomic weapons have faced determined opposition, from technical experts, public intellectuals, and popular movements.

Readings: Milton S. Katz, *Ban the Bomb: A History of SANE*, 1-44 (chaps. 1-2);

Lewis Mumford, "Gentleman, You Are Mad!" *Saturday Review of Literature*, 2 March 1946, 5-6;

Linus Pauling, *No More War!* (1958), 133-56 (chap. 7);

Pauling, "An Appeal by American Scientists to the Governments and People of the World," *Bulletin of the Atomic Scientists* 13 (Sep. 1957): 264-66.

Assignment (due Tuesday 10/10): short essay on the bomb and its critics. Be prepared for discussion Thursday.

Week 6 (10/10, 10/12): Mass Consumption, Mass Communication, and Mass Society--The Suburbs as a Technological System

The 1950s and early 1960s saw rapidly rising standards of living in the United States, creating a new type of consumer society. Supporting this consumer society was a new technological system, the automobile-centered suburbs.

Readings: Michael Schaller, Virginia Scharff, and Robert D. Schulzinger, "America At Home, 1945-1960," chap. 3 in *Present Tense: The United States since 1945*, 92-137;
Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States*, 231-271 (chap. 13-14);
William Blum, "Guatemala 1953-1954: While the World Watched," chap. 10 in *Killing Hope: U.S. Military and CIA Interventions Since World War II*, 72-83.

Video Thursday: *Selling the American Way*, from David Halberstam's *The Fifties*.

Week 7 (10/17, 10/19): The Critique of Consumer Society

In the 1950s and early 1960s, social critics launched attacks on the new consumer society, condemning the suburbs, advertising, and the American obsession with the automobile.

Readings: William H. Whyte, "Introduction," chap. 1 in *The Organization Man* (1956), 3-14;
John Kenneth Galbraith, *Affluent Society* (1958), 1-6, 152-160 (chaps. 1, 11);
Vance Packard, *The Hidden Persuaders* (1957), 3-37, 46-56, 72-83; (chaps. 1-3, 5, 7).

Week 8 (10/24, 10/26): Perils of Consumption: Ralph Nader and Auto Safety

Consumer society gave people the goods, but not necessary the good (or safe) life. Ralph Nader helped transform the postwar consumer movement into a powerful critic of corporate misdeeds.

Readings: Ralph Nader, *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* (1965), vii-x, 1-32, 65-118 (preface, chaps. 1, 3);
Marti Mueller, "Nader: From Auto Safety to Permanent Crusade," *Science* n.s. 166 (21 Nov. 1969): 979-983.

Assignment (due 10/26): one-page reading response; be prepared for discussion Thursday.

Week 9 (10/31, 11/2): Rachel Carson and the Rise of Environmental Consciousness

The publication of Rachel Carson's *Silent Spring* in 1962 marked a turning point in modern environmentalism.

Readings: Linda Lear, "Introduction" in Rachel Carson, *Silent Spring*, x-xix;
Rachel Carson, *Silent Spring*, 1-17, 187-297.

Video: Selection from *Rachel Carson's Silent Spring*, PBS, 1992.

Week 10 (11/7, 11/9): The Broadening Critique: Questioning Nuclear Power

The origins of the most powerful movement against a specific civilian technology in postwar America and Europe.

Reading: Winkler, *Life Under a Cloud*, 136-64 (chap. 6);

A. J. Ackerman, "Atomic Power -- Who Looks After Public Safety," *IEEE Transactions on Aerospace and Electronic Systems* AES-5 (1969): 363-375;

Daniel F. Ford and Henry W. Kendall, "Nuclear Safety," *Environment* 14 (Sep. 1972): 2-9, 48;

David Burnham, "3 Engineers Quit G.E. Reactor Division and Volunteer in Antinuclear Movement," *New York Times*, Feb. 3, 1976, 12.

Film: Excerpts from *The China Syndrome*.

Assignment (due Tuesday 11/14): short essay due on consumer and environmental critiques; be prepared for discussion Thursday.

Week 11 (11/14, 11/16): The New Left, Vietnam, and Technology

Opposition to the Vietnam War and the emergence of the counterculture all combined to help undermine postwar faith in Cold War science and technology.

Reading: Students for a Democratic Society, *The Port Huron Statement*, 1962, 6-36;

Mario Savio, conclusion of speech before Free Speech Movement sit-in, Dec. 3, 1964;

Marilyn B. Young, "The War In America (1965-1967)," 192-209;

Bryce Nelson, "M.I.T.'s March 4: Scientists Discuss Renouncing Military Research," *Science* n.s. 163 (14 Mar. 1969): 1176-78.

Week 12 (11/21): Questioning Computers

Another journey from enthusiasm to fear, as computers came to symbolize social regimentation.

Reading: Paul Edwards, "Why Build Computers: The Military Role in Computer Research," 42-73;

Steven Lubar, "'Do Not Fold, Spindle or Mutilate': A Cultural History of the Punch Card," 43-55.

11/23 – Thanksgiving Break

Week 13 (11/28, 11/30): The Radical Critique of Technology

During the 1960s, a number of radical intellectuals developed a powerful and wide-ranging critique of modern technology in general, although some radicals defended technology as a potential source of liberation.

Readings: Lewis Mumford, selection from "The New Megamachine," chapter 10 in *The Pentagon of Power* (1970), 263-281;

Murray Bookchin, "Towards a Liberatory Technology," in *Post-Scarcity Anarchism* (1971, orig. 1965), 85-139 (skim 95-129);

Herbert Marcuse, *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society* (1964), ix-xvii, 1-18 (Introduction and chap. 1).

Assignment (due 11/30): one-page reading response; be prepared for discussion Thursday.

Week 14 (12/5, 12/7): Appropriate and Alternative Technology

Some critics went beyond condemnation of postwar technology to propose alternative technological paths intended to create a more humane world.

Readings: E. F. Schumacher, *This I Believe and Other Essays* (Foxhole, Dartington Totnes, Devon: Green Books, 1997), 35-34, 67-83, 97-116, 130-142 (chaps. 3, 6, 10-11, 13); Amory B. Lovins, "Energy Strategy: The Road Not Taken," *Foreign Affairs* 55 (Oct. 1976): 65-96; Andrew Kirk, "Machines of Loving Grace: Alternative Technology, Environment and the Counterculture," in *Imagine Nation*, 353-79.

Week 15 (12/12, 12/14): Recent Critiques of Contemporary Technology

Debates over technology continued through the Internet boom of the 1990 and beyond. Reading for this week focus on this debate, now more than 10 years old, over the consequences of the Internet.

Readings: Langdon Winner, "Technology Today: Utopia or Dystopia," *Social Research* 64 (1997): 989-1017; Esther Dyson, George Gilder, George Keyworth and Alvin Toffler, "Cyberspace and the American Dream: A Magna Carta for the Knowledge Age," Aug. 22, 1994; Richard Moore, "Cyberspace Inc. and the Robber Baron Age: An Analysis of PFF's 'Magna Carta,'" 315-323.

Assignment: [finish--current stuff; use last assignment].

Final Exam, due Monday Dec. 22, 12:30 pm

Hand in the take-home final at my office, 7129 Social Science.

Course Packet Contents

1. "Introductory Essay: The Social Shaping of Technology," in *The Social Shaping of Technology*, ed. Donald MacKenzie and Judy Wajcman, 2nd ed. (Buckingham: Open University Press, 1999), 3-16.
2. Aldous Huxley, "Over-Organization," chap. 3 in *Brave New World Revisited* (London: Vintage, 2004 [orig. 1958]), 25-37.
3. Godfrey Hodgson, "The 1940s," chap. 2 in *America in Our Time* (New York: Vintage, 1976), 17-47.
4. Ellen Schrecker, *The Age of McCarthyism: A Brief History with Documents*, 2nd ed. (Boston: Bedford/St. Martin's, 2002), 20-30, 38-47, 177-82, 271-74.
5. Alan Dunn, "Utopia--1955," *Saturday Evening Post*, 30 Dec. 1944, 36-37.
6. Paul Boyer, *By the Bomb's Early Light: American Thought and Culture at the Dawn of the Atomic Age*, repr. ed. (Chapel Hill: University of North Carolina Press, 1994), 109-30, 385-89 (chaps. 10-11).
7. Selections from "Peacetime Benefits of Atomic Energy" in *The Atomic Bomb*, comp. Julia E. Johnson (New York: H. W. Wilson, 1946), 241-52, 277-88.

8. Carolyn Kopp, "The Origins of the American Scientific Debate over Fallout Hazards," *Social Studies of Science* 9 (1979): 403-22;
9. Pat Ortmeyer and Arjun Makhijani, "Worse Than We Knew," *Bulletin of the Atomic Scientists* 53 (Nov/Dec 1997): 46-50.
10. Milton S. Katz, *Ban the Bomb: A History of SANE, the Committee for a Sane Nuclear Policy, 1957-1985* (New York: Greenwood Press, 1986), 1-44 (chaps. 1-2).
11. Lewis Mumford, "Gentleman, You Are Mad!" *Saturday Review of Literature*, 2 March 1946, 5-6.
12. Linus Pauling, *No More War!* (New York: Dodd, Mead & Co., 1958), 133-56 (chap. 7).
13. Pauling, "An Appeal by American Scientists to the Governments and People of the World," *Bulletin of the Atomic Scientists* 13 (Sep. 1957): 264-66.
14. Michael Schaller, Virginia Scharff, and Robert D. Schulzinger, "America At Home, 1945-1960," chap. 3 in *Present Tense: The United States since 1945*, 2nd ed. (Boston: Houghton Mifflin, 1996), 92-137.
15. Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States* (Oxford: Oxford University Press, 1985), 231-271, 368-77 (chaps. 13-14).
16. William Blum, "Guatemala 1953-1954: While the World Watched," chap. 10 in *Killing Hope: U.S. Military and CIA Interventions Since World War II* (Monroe, ME: Common Courage Press, 1995), 72-83, 393-95.
17. William H. Whyte, "Introduction," chap. 1 in *The Organization Man* (New York: Simon & Schuster, 1956), 3-14.
18. John Kenneth Galbraith, *Affluent Society*, (Boston: Houghton Mifflin, 1958), 1-6, 152-160 (chaps. 1, 11);
19. Vance Packard, *The Hidden Persuaders* (New York: D. McKay, 1957), 3-37, 46-56, 72-83 (chaps. 1-3, 5, 7).
20. Ralph Nader, *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* (New York: Grossman, 1965), vii-x, 1-32, 65-118 (preface, chaps. 1, 3).
21. Marti Mueller, "Nader: From Auto Safety to Permanent Crusade," *Science* n.s. 166 (21 Nov. 1969): 979-983.
22. Linda Lear, "Introduction" in Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 2002), x-xix.
23. Rachel Carson, *Silent Spring* (Boston: Houghton Mifflin, 2002 [1962]), 1-17, 187-297.
24. A. J. Ackerman, "Atomic Power -- Who Looks After Public Safety," *IEEE Transactions on Aerospace and Electronic Systems* AES-5 (1969): 363-375.
25. Daniel Ford and Henry W. Kendall, "Nuclear Safety," *Environment* 14 (Sep. 1972): 2-9, 48.
26. David Burnham, "3 Engineers Quit G.E. Reactor Division and Volunteer in Antinuclear Movement," *New York Times*, Feb. 3, 1976, 12.
27. Students for a Democratic Society, *The Port Huron Statement, 1962* (Chicago: Charles H. Kerr, 1990), 6-36.
28. Mario Savio, conclusion of speech before Free Speech Movement sit-in, Dec. 3, 1964, http://www.fsm-a.org/stacks/mario/mario_speech.html.

29. Marilyn B. Young, "The War In America (1965-1967)," chap. 10 in *The Vietnam Wars, 1945-1990* (New York: HarperCollins, 1991), 192-209, 360-63.
30. Bryce Nelson, "M.I.T.'s March 4: Scientists Discuss Renouncing Military Research," *Science* n.s. 163 (14 Mar. 1969): 1176-78.
31. Paul Edwards, "Why Build Computers: The Military Role in Computer Research," chap 2 in *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge: MIT Press, 1996), 42-73.
32. Steven Lubar, "'Do Not Fold, Spoindle or Mutilate': A Cultural History of the Punch Card," *Journal of American Culture* 15 (Winter 1992): 43-55.
33. Lewis Mumford, "The New Megamachine," chapter 10 in *The Pentagon of Power*, volume 2 of *The Myth of the Machine* (New York: Harcourt Brace Jovanovich, 1970), 263-99.
34. Murray Bookchin, "Towards a Liberatory Technology," in *Post-Scarcity Anarchism* (Berkeley: Ramparts Press, 1971), 85-139.
35. Herbert Marcuse, *One-Dimensional Man: Studies in the Ideology of Advanced Industrial Society* (Boston: Beacon Press, 1964), ix-xvii, 1-18 (Introduction and chap. 1).
36. E. F. Schumacher, *This I Believe and Other Essays* (Foxhole, Dartington Totnes, Devon: Green Books, 1997), 35-34, 67-83, 97-116, 130-142 (chaps. 3, 6, 10-11, 13).
37. Amory B. Lovins, "Energy Strategy: The Road Not Taken," *Foreign Affairs* 55 (Oct. 1976): 65-96.
38. Andrew Kirk, "Machines of Loving Grace: Alternative Technology, Environment and the Counterculture," in *Imagine Nation*, 353-79.
39. Langdon Winner, "Technology Today: Utopia or Dystopia," *Social Research* 64 (1997): 989-1017.
40. Esther Dyson, George Gilder, George Keyworth and Alvin Toffler, "Cyberspace and the American Dream: A Magna Carta for the Knowledge Age," Aug. 22, 1994, available on Aug. 21, 2006 from <http://www.pff.org/issues-pubs/futureinsights/fi1.2magnacarta.html>.
41. Richard Moore, "Cyberspace Inc. and the Robber Baron Age: An Analysis of PFF's 'Magna Carta,'" *Information Society* 12 (1996), 315-323.

