

History of Science 339, Spring 2010
Technology and Its Critics Since World War II

MW 2:30-3:45, 120 Ingraham

Professor:	Eric Schatzberg	Office Hrs:	2:30-3:30 Tue. or by appt.
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Description: This 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 profound technological enthusiasm, a powerful faith in the ability of technology to achieve almost any goal. From the beginning of the postwar era, however, some people challenged this faith in technology. At first, this challenge was directed against the dangers of nuclear war and the hazards of atomic fallout. In the 1950s, a few intellectuals began criticizing consumer society with its bland suburbs, conformist white-collar bureaucracies, and mind-numbing advertising. In the early 1960s, new critics took aim at other technologies, such as synthetic pesticides and the automobile. These critics helped inspire a new environmental movement and a renewed consumer movement. A broader critique emerged from philosophers and activists connected with the New Left, many of whom argued that modern technology was a barrier to true liberation. By the early 1970s, the emerging counterculture inspired groups seeking to create counter-technologies, such as organic farming and solar energy. Even in the midst of today's enthusiasm for every supposed technological breakthrough, critics continue to expose the dark side of technological change.

Most critics of technology did not reject modernity in order to embrace romantic primitivism. Instead, as this course will stress, the most cogent critiques of postwar technology came from technical experts themselves—scientists, engineers, and physicians.

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: reading responses, 2/3, 3/10, 4/21; essays, 2/22, 4/12; take-home final, 5/10. Also be prepared for full-period discussions on Wednesdays when reading responses are due and the class before the take-home essays are due.

Graduate students MUST register concurrently for Hist Sci 639, 4:35-5:25 Wednesdays. 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 credit students are encouraged to join the separate graduate discussion section, Hist Sci 639. Or they can write a major research paper on a topic directly relevant to the course, focusing on the period 1945 to 1980. Honors students should contact me promptly to indicate which option they will choose.

Grades: Take-home essays, 60%; reading responses, 24%; discussion, 16%. Grading is on a 4-point scale, with A=4, AB=3.5, B=3, BC=2.5, C=2, D=1, F=0. Boundaries between grades fall at the numeric midpoints.

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 meaningful comments from every member of the class in each full-period discussion.

The *reading responses* are informal writing assignments, but I do expect correct grammar and punctuation. They will be graded as follows: evidence that reading was done but little else: C; 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) correct spelling, grammar and punctuation.

A note about writing. Writing is not just for English courses. I grade the essays on quality of prose as well as content. Help with writing is available from the Writing Center, <http://www.wisc.edu/writing/>.

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 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.)

Rachel Carson, *Silent Spring*. (Houghton Mifflin, 2002 [orig. 1962]).

A **course packet** (see contents at end of syllabus) is available for \$33.85 from the Social Science Copy Center, 6120 Social Science (M-F 7:45am-11:45am, 12:30pm-4:00pm). Ask for packet #26. Payment is by check, cash or WiscCard.

All readings will be on reserve at College Library.

Email Class List and Web Site: I use the email list for this course extensively, so please check your email regularly. I will use the email list to distribute questions for the reading responses and essays, as well as other important information. The list is open to all members of the class, and students should feel free to contribute postings, as long as the contributions are directly relevant to the course. The address of the list is histsci339-1-s10@lists.wisc.edu.

I am also creating a course website, where I will post the assignments, lecture outlines and presentations. The address is <https://chatter.lss.wisc.edu/moodle/course/view.php?id=101>.

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 (the room is much larger than the class size). Please do not read newspapers or have private conversations during lectures. You may take notes on your laptop, but save Facebook and net surfing for after class. 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.

How to Read (in history courses): History courses have a lot of reading, and this course is no exception. There are no broad historical works that cover the topics in this course. Authors of primary sources wrote for their own time, not for future undergraduate courses. As a result, you should not expect everything in each reading to be directly relevant to the course.

When approaching historical readings, especially longer ones, you need to keep specific questions in mind to help you focus on the relevant details. To this end, each week I will email the class a brief introduction to the readings and some questions to ponder.

Academic Integrity and Plagiarism: Each student is responsible for knowing the rules about academic misconduct, that is, what counts as cheating. A good overview is here:
<http://www.wisc.edu/students/saja/misconduct/UWS14.html>.

For this course, the most important rules concern written work done outside of class. Here's a quick summary. 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 more details, see
<http://www.wisc.edu/writing/Handbook/QuotingSources.html>.

Wikipedia is not a reliable source, but it can sometimes be useful for an overview. If you insist on using Wikipedia or other web sites in your work, you must cite them.

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. If necessary, I'll give observant students an alternative but equivalent assignment. Please let me know in advance which days you will miss. For more detail see:
<http://www.secfac.wisc.edu/governance/ReligiousObservancesMemo.htm>.

If you have a disability that might affect your performance in this course, do not hesitate to let me know; 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, 333 East Campus Mall, 265-5600. For more information, see http://www.uhs.wisc.edu/home.jsp?cat_id=36.

Course Outline

Week 1 (1/20): Understanding Technology and Its Critics

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

Reading: "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 Monday 1/25.

Week 2 (1/25, 1/27): 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 experienced profound social and political changes.

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

Alan 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 (2/1, 2/3): Fear and Hope in the Early Atomic Age

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

Reading: 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 2/3): one-page reading response; see email for instructions. Be prepared for discussion Wednesday.

Week 4 (2/8, 2/10): Conflicts among Experts: Debating Atomic Fallout

Scientific experts played a key role in the debate over radiation dangers, on both sides of the issue.

Readings: A. Constandina Titus, *Bombs in the Backyard*, 36-85 (chaps. 4-6);

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 (2/15, 2/17): 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.

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

Lewis Mumford, "Gentleman, You Are Mad!" *Saturday Rev. of Literature*, 2 Mar. 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 Monday 2/22): take-home essay on the bomb and its critics. Be prepared for discussion Wednesday, 2/17.

Week 6 (2/22, 2/24): Mass Consumption, Mass Communication, and Mass Society

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 suburb.

Reading: 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 Wednesday: *Selling the American Way*, based on David Halberstam's *The Fifties*.

Week 7 (3/1, 3/3): 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.

Reading: 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 (3/8, 3/10): Perils of Consumption: Ralph Nader and Auto Safety

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

Reading: 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 3/10): one-page reading response; be prepared for discussion Wednesday.

Week 9 (3/15, 3/17): 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.

Reading: Linda Lear, "Introduction" in Rachel Carson, *Silent Spring*, x-xix;

Rachel Carson, *Silent Spring*, 1-172 (see email for guidance).

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

Week 10 (3/22, 3/24): Environmental Consciousness, II

Reception and influence of *Silent Spring*.

Reading: Carson, *Silent Spring*, 173-297;

Michael B. Smith, "'Silence, Miss Carson!' Science, Gender, and the Reception of *Silent Spring*," *Feminist Studies* 27 (2001): 733-52.

Assignment: be prepared for discussion Wednesday.

Spring Break

Week 11 (4/5, 4/7): The Broadening Critique: Questioning Nuclear Power

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

Reading: James M. Jasper, "The Triumph of Technological Enthusiasm in the United States," 41-63;

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 Monday 4/12): short essay on consumer and environmental critiques; discussion Wednesday, 4/7.

Week 12 (4/12, 4/14): 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;

Gabriel Kolko, "The War on Campus: Untangling the Alliances," *The Nation* 205 (Dec. 18, 1967): 645-8;

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

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

Week 13 (4/19, 4/21): 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 a few 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).

Optional: "One-Dimensional Philosopher," *Time*, March 22, 1968, available at <http://www.time.com/time/printout/0,8816,828491,00.html>.

Assignment (due 4/21): one-page reading response; be prepared for discussion Wednesday.

Week 14 (4/26, 4/28): Appropriate and Alternative Technology

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

Reading: E. F. Schumacher, *This I Believe and Other Essays* (Foxhole, Dartington Totnes, Devon: Green Books, 1997), 130-142, 35-43, 97-116 (chaps. 13, 3, 10-11);

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 (5/3, 5/5): Present-Day Critiques of Technology

Critiques of technology continued through the Internet boom of the 1990s and into the 21st century, when concerns about global warming and globalization became central. Current debates draw heavily on the themes of the postwar era, even when this legacy remains unappreciated. We will read an article by a leading environmentalist who proposes some radical responses to global warming.

Reading: Bill McKibben, "Reversal of Fortune," *Mother Jones* 32, no. 2 (March/April 2007): 33-43, 87.

Assignment: as a class project, we will create an online database of present-day critiques of technology.

Final Exam, due Monday, May 10, 4 pm

Hand in the take-home final at my office, 224 Bradley Memorial.

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. Allan M. Winkler, *Life Under a Cloud: American Anxiety About the Atom* (Urbana: University of Illinois Press, 1999), 9-56, 215-223 (chaps. 1-2).
5. 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.
6. Winkler, *Life Under a Cloud*, 57-83, 223-228 (chap. 3).
7. Alan Dunn, "Utopia--1955," *Saturday Evening Post*, 30 Dec. 1944, 36-37.

8. 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).
9. 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.
10. A. Constandina Titus, *Bombs in the Backyard: Atomic Testing and American Politics* (Reno: University of Nevada Press, 1986), 36-85 (chaps. 4-6), 182-193.
11. Carolyn Kopp, "The Origins of the American Scientific Debate over Fallout Hazards," *Social Studies of Science* 9 (1979): 403-22.
12. Pat Ortmeyer and Arjun Makhijani, "Worse Than We Knew," *Bulletin of the Atomic Scientists* 53 (Nov/Dec 1997): 46-50.
13. 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).
14. Lewis Mumford, "Gentleman, You Are Mad!" *Saturday Review of Literature*, 2 March 1946, 5-6.
15. Linus Pauling, *No More War!* (New York: Dodd, Mead & Co., 1958), 133-56 (chap. 7).
16. Pauling, "An Appeal by American Scientists to the Governments and People of the World," *Bulletin of the Atomic Scientists* 13 (Sep. 1957): 264-66.
17. 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.
18. Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States* (Oxford: Oxford University Press, 1985), 231-271, 368-77 (chaps. 13-14).
19. 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.
20. William H. Whyte, "Introduction," chap. 1 in *The Organization Man* (New York: Simon & Schuster, 1956), 3-14.
21. John Kenneth Galbraith, *Affluent Society*, (Boston: Houghton Mifflin, 1958), 1-6, 152-160 (chaps. 1, 11).
22. Vance Packard, *The Hidden Persuaders* (New York: D. McKay, 1957), 3-37, 46-56, 72-83 (chaps. 1-3, 5, 7).
23. 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).
24. Marti Mueller, "Nader: From Auto Safety to Permanent Crusade," *Science* n.s. 166 (21 Nov. 1969): 979-983.
25. Michael B. Smith, "'Silence, Miss Carson!' Science, Gender, and the Reception of Silent Spring," *Feminist Studies* 27 (2001): 733-52.
26. James M. Jasper, "The Triumph of Technological Enthusiasm in the United States," in *Nuclear Politics: Energy and the State in the United States, Sweden, and France* (Princeton, NJ: Princeton University Press, 1990), 41-63.

27. A. J. Ackerman, "Atomic Power -- Who Looks After Public Safety," *IEEE Transactions on Aerospace and Electronic Systems* AES-5 (1969): 363-375.
28. Daniel Ford and Henry W. Kendall, "Nuclear Safety," *Environment* 14 (Sep. 1972): 2-9, 48.
29. David Burnham, "3 Engineers Quit G.E. Reactor Division and Volunteer in Antinuclear Movement," *New York Times*, Feb. 3, 1976, 12.
30. Students for a Democratic Society, *The Port Huron Statement, 1962* (Chicago: Charles H. Kerr, 1990), 6-36.
31. Mario Savio, conclusion of speech before Free Speech Movement sit-in, Dec. 3, 1964, http://www.fsm-a.org/stacks/mario/mario_speech.html.
32. Gabriel Kolko, "The War on Campus: Untangling the Alliances," *The Nation* 205 (Dec. 18, 1967): 645-48.
33. Bryce Nelson, "M.I.T.'s March 4: Scientists Discuss Renouncing Military Research," *Science* n.s. 163 (14 Mar. 1969): 1176-78.
34. Steven Lubar, "'Do Not Fold, Spindle or Mutilate': A Cultural History of the Punch Card," *Journal of American Culture* 15 (Winter 1992): 43-55.
35. 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.
36. Murray Bookchin, "Towards a Liberatory Technology," in *Post-Scarcity Anarchism* (Berkeley: Ramparts Press, 1971), 85-139.
37. 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).
38. E. F. Schumacher, *This I Believe and Other Essays* (Foxhole, Dartington Totnes, Devon: Green Books, 1997), 130-142, 35-43, 97-116 (chaps. 13, 3, 10-11).
39. Amory B. Lovins, "Energy Strategy: The Road Not Taken," *Foreign Affairs* 55 (Oct. 1976): 65-96.
40. Andrew Kirk, "Machines of Loving Grace: Alternative Technology, Environment and the Counterculture," in *Imagine Nation: American Counterculture of the 1960s and '70s*, ed. Peter Braunstein and Michael William Doyle (New York: Routledge, 2002), 353-79.
41. Bill McKibben, "Reversal of Fortune," *Mother Jones* 32, no. 2 (March/April 2007): 33-43, 87.

