

History of Science 339, Spring 2003
Technology and Its Critics Since World War II

TTh 1:15-2:30, 104 Van Hise

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

The course examines thinkers and social movements in the United States that challenged the dominant faith in technology after World War II. The course begins with the tremendous enthusiasm for science and technology that emerged after World War II, an enthusiasm inspired by the dramatic new military technologies created by scientists and engineers, especially the atomic bomb.

From the beginning of the postwar era, however, some people challenged this faith in the inevitable benefits of technological change. At first this challenge was limited to a few intellectuals who criticized the consumer society of the 1950s, with its bland suburbs, conformist white-collar bureaucracies, and mind-numbing advertising. By the late 1950s, this critique was taken up by new social movements that attacked the most dramatic technological achievement of World War II, the atomic bomb. In the early 1960s, critics shifted ground to new technologies, most importantly synthetic pesticides and the automobile, and made connections with the new environmental movement. Critics of technology also drew strength from the counterculture of the 1960s, which encouraged political and social activism against large-scale technologies like nuclear power. The counterculture also strengthened groups seeking to create counter-technologies, such as organic farming or solar energy. Even in the midst of today's enthusiasm for everything digital, technology's critics continue to expose the dark side of technological change.

Note that this course is new, and I may make adjustments to the course during the semester, especially after spring break.

Requirements:

The course will require four one-page reading responses, participation in discussion, and three short take-home essays. Discussions will normally be held during the Thursday class.

Due dates: readings responses, 2/6, 3/13, 4/24, and one week of your choosing; essays: 2/25, 4/8, 5/12.

Graduate students MUST register concurrently for Hist. Sci. 639, 9:55-10:45 Fridays. This is a requirement of the Divisional Committee that the department is not permitted to waive.

Lecture and Discussion Etiquette:

This is a huge classroom for a small class; please sit at the front of the classroom. Do not read newspapers or have private conversations during lectures. At least pretend to be paying attention. Feel free to discuss with me any problems you have with the course. This is a new course and it's bound to have 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 stupid, which all of us do on occasion.

Grades:

Discussion, 20%; reading responses, 30%, essays, 50% (subject to some adjustment).

Discussion will be evaluated based on attendance and class participation. Depending on the length of discussion, I would like to see one or two at least halfway intelligent comments from every member of the class.

The *readings responses* are informal writing assignments, but I do expect correct grammar and punctuation. They will be graded as follows: minimal evidence that reading was done: BC; basic summary: B; good summary with some analysis: AB; real insight into 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) sufficient specific evidence supporting the thesis, drawn from the readings; 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 a both primary and secondary sources. Much of the history covered by this course has yet to be written, so I use a fair amount of primary sources. Primary sources refer to works from the historical period we are studying, in contrast to secondary sources, which are works written by later historians.

The following books are available from the Rainbow Bookstore Cooperative, 426 West Gilman Street (off State St.), 257-6050, open 10-6 MWF, 10-8 TuTh, 12-5 SaSu.

Rachel Carson, *Silent Spring*. (Houghton Mifflin, 1994 [orig. 1962]).

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

Part 1 of the course packet (see contents at end of syllabus) is available for purchase from the History of Science department office, 7143 Social Science (262-1406). Normal office hours are 7:30-3, but call first if you are making a special trip. The cost is \$16.25, check or cash. NO RETURNS PERMITTED, so be sure that you will stay in the class before buying the packet.

All readings will be on reserve at College Library.

Email lists and WebCT:

I will use an email list server to communicate with the class, including sending assignments for reading responses and essays. The address of the list is histsci-339@lists.students.wisc.edu. Students can also use the list to send comments to the class, but please only use the list for messages directly relevant to the course. I am also experimenting with WebCT, which will provide students with course materials on the web, but the site is not yet operational.

War with Iraq:

I believe that the probable U.S. war with Iraq will be a pivotal event in American and world history. In order to encourage healthy democratic involvement in our government's decisions, students will receive one automatic excuse during the semester to attend the demonstration of their choice, whether in support of or in opposition to government policy. Any work missed must be made up as soon as practical. In the event of war, we will devote at least one full class to discussing issues related to the war.

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 I can't avoid it, I'll give observant students an alternative but equivalent assignment.

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.

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/ex/counseling/>.

Course Outline

Week 1 (1/21, 1/23): Understanding Technology and Its Critics

Overview of the course. The nature of technology, relationship between technology and science. Be prepared for discussion Thursday.

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

Week 2 (1/28, 1/30): From War to Peace: The A-bomb and Postwar Science

World War II was one of the great turning points in modern history, especially for science and technology.

Readings: Godfrey Hodgson, "The 1940s," chap. 2 in *America in Our Time*, 17-47;
Winkler, *Life Under a Cloud*, 9-56 (chaps. 1-2);
Alan Dunn, "Utopia--1955," *Saturday Evening Post*, 30 Dec. 1944, 36-37.

Week 3 (2/4, 2/6): Fear and Hope in the Early Atomic Age

The atomic bomb encouraged tremendous optimism about 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);

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), 241-53, 277-88;

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

Assignment (due 2/6): one-page reading response; see email for questions.

Week 4 (2/11, 2/13): Conflicts among Experts: Debating Atomic Fallout

Dissident experts played a key role in the debate over radiation safety. 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 the American Scientific Debate over Fallout Hazards," 403-22;

Linus Pauling, "Fact and Fable of Fallout," *The Nation* 186 (14 June 1958): 537-42;

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

Week 5 (2/18, 2/20): 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);

Linus Pauling, *No More War!* (1958), 133-78 (chaps. 7-8).

Assignment (due 2/25): short essay on the bomb and its critics.

Week 6 (2/25, 2/27): Consumer Society and the Rise of Suburban America

The 1950s and early 1960s saw rapidly rising standards of living in the United States, creating a new type of consumer society. In the U.S., this mass affluence was centered in the new automobile 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*, 91-137;

Elaine Tyler May, "Explosive Issues: Sex, Women, and the Bomb," 154-70;

Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States*, 231-271 (chaps. 13-14).

Week 7 (3/4, 3/6): 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," "The Classlessness of Suburbia" and "Inconspicuous Consumption," chaps. 1, 23 and 24 in *The Organization Man* (1956), 3-14, 298-329;
Vance Packard, *The Hidden Persuaders* (1957), 3-37, 46-56, 72-83; 123-35 (chaps. 1-3, 5, 7, 12).

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

Week 8 (3/11, 3/13): 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 against the public interest.

Readings: Ralph Nader, *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* (1965), vii-x, 65-137, 240-81 (preface, chaps. 3-4, 8);
Marti Mueller, "Nader: From Auto Safety to Permanent Crusade," *Science* n.s. 166 (21 Nov. 1969): 979-983.

Assignment (due 3/13): one-page reading response.

Spring Break

Week 9 (3/25, 3/27): Rachel Carson and the Rise of Environmental Consciousness, 1

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

Readings: Donald Worster, selection from *Nature's Economy: A History of Ecological Ideas*, 342-59;
Rachel Carson, *Silent Spring*, 1-127 (chaps. 1-8).

Week 10 (4/1, 4/3): Environmental Consciousness, 2

Carson's attitude to science and technology; the impact of her work.

Readings: Carson, *Silent Spring*, 128-297 (chaps. 9-14);
Linda J. Lear, "Bombshell in Beltsville: The USDA and the Challenge of Silent Spring," 151-70.

Assignment (due 4/8): short essay due on *Silent Spring*.

Week 11 (4/8, 4/10): 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);
Jerome Price, *The Antinuclear Movement*, 1-77 (chaps. 1-3).

Film: Evening screening of *The China Syndrome*.

Week 12 (4/15, 4/17): Counterculture, Science and Technology

Opposition to the Vietnam War, disillusionment with the Soviet Union, and the emergence of the counterculture all combined to help undermine postwar faith in Cold War science and technology. Note that the 4/17 class falls on Passover.

Reading: Howard Zinn, "The Impossible Victory: Vietnam," chap. 18 in *A People's History of the United States, 1492-Present*, 460-92;

Robert Gottlieb, "The Sixties Rebellion," chap. 3 in *Forcing the Spring: The Transformation of the American Environmental Movement*, 81-114;

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

Week 13 (4/22, 4/24): 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 4/24): one-page reading response.

Week 14 (4/29, 5/1): 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, *Small is Beautiful: Economics as if People Mattered* (1973), 13-66 (chaps. 1-4);

Amory B. Lovins, "Energy Strategy: The Road Not Taken," *Foreign Affairs* 55 (Oct. 1976): 65-96.

Week 15 (5/6, 5/8): Beyond the Digital: Recent Critiques of the Computer Age

Debates over technology continue to rage today. This week looks at current debates over the role of computers in modern life. Note: this week's topic may change.

Readings: Esther Dyson, George Gilder, George Keyworth and Alvin Toffler, "Cyberspace and the American Dream: A Magna Carta for the Knowledge Age," Aug. 22, 1994 (<http://www.pff.org/position.html>);

Langdon Winner, "Technology Today: Utopia or Dystopia," *Social Research* 64 (1997): 989-1017;

Bill Joy, "Why the Future Doesn't Need Us," *Wired*, April 2000.

Final Exam, due Monday, April 12, 10:00 am

Hand in the take-home final at my office, 7143 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. Godfrey Hodgson, "The 1940s," chap. 2 in *America in Our Time* (New York: Vintage, 1976), 17-47.
3. Alan Dunn, "Utopia--1955," *Saturday Evening Post*, 30 Dec. 1944, 36-37.
4. 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 (chaps. 10-11);
5. Selections from "Peacetime Benefits of Atomic Energy" in *The Atomic Bomb*, comp. Julia E. Johnson (New York: H. W. Wilson, 1946), 241-53, 277-88.
6. Lewis Mumford, "Gentleman, You Are Mad!" *Saturday Review of Literature*, 2 March 1946, 5-6.
7. Carolyn Kopp, "The Origins of the American Scientific Debate over Fallout Hazards," *Social Studies of Science* 9 (1979): 403-22;
8. Linus Pauling, "Fact and Fable of Fallout," *The Nation* 186 (14 June 1958): 537-42;
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. Linus Pauling, *No More War!* (New York: Dodd, Mead & Co., 1958), 133-78 (chaps. 7-8).
12. 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), 91-137.
13. Elaine Tyler May, "Explosive Issues: Sex, Women, and the Bomb," in *Recasting America: Culture and Politics in the Age of Cold War*, ed. Lary May (Chicago: University of Chicago Press, 1989), 154-70.
14. Kenneth T. Jackson, *Crabgrass Frontier: The Suburbanization of the United States* (Oxford: Oxford University Press, 1985), 231-271 (chaps. 13-14).
15. William H. Whyte, "Introduction," "The Classlessness of Suburbia" and "Inconspicuous Consumption," chaps. 1, 23 and 24 in *The Organization Man* (New York: Simon & Schuster, 1956), 3-14, 298-329.
16. Vance Packard, *The Hidden Persuaders* (New York: D. McKay, 1957), 3-37, 46-56, 72-83; 123-35 (chaps. 1-3, 5, 7, 12).
17. Ralph Nader, *Unsafe at Any Speed: The Designed-In Dangers of the American Automobile* (New York: Grossman, 1965), vii-x, 65-137, 240-81 (preface, chaps. 3-4, 8).

18. Marti Mueller, "Nader: From Auto Safety to Permanent Crusade," *Science* n.s. 166 (21 Nov. 1969): 979-983.
19. Donald Worster, selection from *Nature's Economy: A History of Ecological Ideas*, 2nd ed. (Cambridge: Cambridge University Press, 1994), 342-59.
20. Linda J. Lear, "Bombshell in Beltsville: The USDA and the Challenge of Silent Spring," *Agricultural History* 66 (Spring 1992): 151-70.
21. Jerome Price, *The Antinuclear Movement*, rev. ed. (Boston: Twayne, 1990): 1-77 (chaps. 1-3).
22. Howard Zinn, "The Impossible Victory: Vietnam," chap. 18 in *A People's History of the United States, 1492-Present*, rev. ed. (New York: HarperCollins, 1995), 460-92.
23. Robert Gottlieb, "The Sixties Rebellion," chap. 3 in *Forcing the Spring: The Transformation of the American Environmental Movement* (Washington, DC: Island Press, 1993), 81-114.
24. Bryce Nelson, "M.I.T.'s March 4: Scientists Discuss Renouncing Military Research," *Science* n.s. 163 (14 Mar. 1969): 1176-78.
25. 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.
26. Murray Bookchin, "Towards a Liberatory Technology," in *Post-Scarcity Anarchism* (Berkeley: Ramparts Press, 1971), 85-139.
27. 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).
28. E. F. Schumacher, *Small is Beautiful: Economics as if People Mattered* (New York, Harper & Row, 1973), 13-66 (chaps. 1-4).
29. Amory B. Lovins, "Energy Strategy: The Road Not Taken," *Foreign Affairs* 55 (Oct. 1976): 65-96.
30. Esther Dyson, George Gilder, George Keyworth and Alvin Toffler, "Cyberspace and the American Dream: A Magna Carta for the Knowledge Age," Aug. 22, 1994 (<http://www.pff.org/position.html>).
31. Langdon Winner, "Technology Today: Utopia or Dystopia," *Social Research* 64 (1997): 989-1017.
32. Bill Joy, "Why the Future Doesn't Need Us," *Wired*, April 2000 (http://www.wired.com/wired/archive/8.04/joy_pr.html).