Today it’s a truism that we live in an age of science and technology. How has that come to pass, and what has it meant for our lives? To answer those questions, this course reviews the social history of science and technology in the colonies and in the United States. It focuses on constructing an understanding of how American society has influenced and in turn been influenced by the development of science and technology. The majority of our time will be spent on technology, rather than science.

Classes

Classes meet Monday and Thursday afternoons, 1:10 - 2:15. With a few exceptions, they consist of discussion of assigned readings. Class participation is essential for arriving at clarification and qualification of ideas in the texts and in the discussion.

For the few lengthy reading assignments use skimming skills; it is not necessary to know every detail.

Workload

Six times during the semester, students are to submit a short paper [2-3 pp], dealing with a topic in the reading, or one suggested by it. The purpose of these papers is to stimulate and focus discussion, and to practice writing. All 6 papers are to be written and handed in by Monday, November 24, the 23rd class session. There will be a midterm hour exam, a second hour exam after Thanksgiving, and a final short quiz.

Grades will be based on class participation [attendance, quality and frequency of interaction], papers, and exams, in proportions respectively of 30%, 30%, and 40%.
The following are the textbooks for the course:

R. S. Cowan  A Social History of American Technology
T.P. Hughes  American Genesis: A History of the American Genius for Invention
C. Pursell  The Machine in America: A Social History of Technology

In addition to the textbooks, there are a series of required and some recommended readings [articles, excerpts and chapters from books] available in a packet obtainable at cost, $ 10.00 (443 pp) from Ms. Kate Fletcher, Administrative Assistant, 189 Bronfman:

Smith/Clancey, “What is Technology?”
Winner, “Brandy, Cigars, and Human Values”
R. S. Woodbury, "The Legend of Eli Whitney and Interchangeable Parts"
Cross and Szostak, "Iron, Steam, Rails"
Cross and Szostak, "Machines on the Farm… 1800 - 1920"
B. Hindle and S. Lubar, “Farming and Raw Materials Processing: Causes and Effects of Mechanization”
Cross and Szostak, "Americans confront a Mechanical World"
D.E. Nye, "The American Sublime"
J. Kasson, "The Emergence of Republican Technology" [Ch. 1 of Kasson]
J. Kasson, "Technology and Utopia" [Ch. 5 of Kasson]
G. Basalla, "Keaton and Chaplin: The Silent Film’s Response to Technology"

D. A. Hounshell, "The Ethos of Mass Production & Its Critics"
L. Marx, "Alienation and Technology"
L. White, Jr., "Dynamo and Virgin Reconsidered"
Fallows, "The American Army and the M-16 Rifle"

Abbate, "Cold War and White Heat: the Origins and Meanings of Packet Switching"
Smith/Clancey, "The Pest War: The Shifting Use and Meaning of Insecticides, 1940 - 1990"
Marcus  "Unanticipated Aftertaste: Cancer, The Role of Science, and the Question of DES Beef…"
Marcus/Segal  "Public and Private: Technology as a Social Question: The Later 1960s to the1990s"
Marcus/Segal  "Private and Public: Technology and Individual Autonomy: The Later 1960s to the 1990s"
Classes and Reading Assignments

1. 9/4 R  Introduction. Social History of Science and Technology. The American Context. Science, Technology, and "Values"

   Rec.: Smith/Clancey, Ch. 1 (1-25) “What is Technology? Packet Winner, Ch. 9 (155-163) “Brandy, Cigars, and Human

   From the Colonial Period to the Early Republic.

2. 9/8 M  Colonial Technology

   Pursell, Ch. 1 (9-33), “The Tools Brought Over”
   Cowan, Ch. 1 (5-27)  “The Land, the Natives, and the Settlers”; Ch. 2 (28-43) “Husbandry and Huswifery in the Colonies”; Ch. 3 (45-65) “Colonial Artisans”

3. 9/11 R  Science in the Colonies and Early Republic

   The Nineteenth Century; Technology to the Civil War

4. 9/15 M  The American System of Manufacturing - The Industrial Revolution Comes to America

   Pursell, Ch. 2 (35-63) “Importing the Industrial Revolution”
   Cowan, Ch. 4 (69-91)  “The Early Decades of Industrialization”
   Pursell, from Ch. 4 (87-97): “The Expansion of American Manufactures” American System, mass production

   Rec:
   Smith/Clancey, Ch. 5 (144-189) “Inside Factory Systems, 1820 - 1885"
   Woodbury, “The Legend of Eli Whitney and Interchangeable Parts”
5. 9/18 R  Transportation

Pursell, Ch. 3 (65-83) “Improving Transportation”
Cowan Ch. 5 (93 - 118) "Transportation Revolutions"
Cross/Szostak Ch. 6 (82 - 103) "Iron, Steam, Rails" Packet

Rec:
Smith/Clancey, Ch. 6 (191-232) “Second Nature’: Steam, Space, and a New World Order, 1840-1900" Packet

6. 9/22 M  Agriculture, from colonial times to the later 19th century

Pursell Ch. 5 (109-128) “The Mechanization of Farming”
Cowan (173-178) "Farmers and Unexpected Outcomes"
Cross/Szostak Ch. 8 (120 - 130) " Machines on the Farm… 1800 - 1920" Packet

Rec:

7. 9/25 R  Engineers and Engineering; Changing Urban Environments

Pursell, from Ch. 4 (97 – 107) "The Expansion of American Manufactures": patents and engineers
Pursell, Ch. 6 (131 -153) “Creating an Urban Environment”
Cowan, Ch. 6 (119 -147) “Inventors, Entrepreneurs, and Engineers”

8. 9/29 M  Expanding Frontiers: Westward Ho! A Rising Empire.

Pursell, Ch. 7 (155 -178) “Westward the Course of Industry”
Pursell, Ch. 8 (179 - 199) “Export, Exploitation, and Empire”

9. 10/2 R  From Amateur to Professional: Science and Scientists in the Nineteenth Century  (A lecture, interrupted by questions)

Rec:
Bruce, R. V. The Launching of Modern American Science, 1846-1876

10. 10/6 M  Late 19th Century Attitudes to Technology

Cowan Ch. 9 (201-218) “American Ideas about Technology”
Kasson, “Technology and Utopia” (183-234) Packet
Cross and Szostak, Ch. 9 "Americans confront a Mechanical
Rec: Nye, "The American Sublime" (17 - 43) Packet  
Kasson, Ch. 1, “The Emergence of Republican Technology” (3 - 51) Packet

11. 10/9 R  "Systems"

Pursell, Ch. 9 (203-228) “The Coming of Science and Systems”  
Cowan Ch. 7 (150-171) “Industrial Society and Technological Systems”

-------------------------------READING PERIOD-------------------------------

12. 10/16 R  Midterm Examination

From 1865 to 1918: Between the Wars

13. 10/20 M  The Age of Heroic Invention.

Hughes, Ch. 1-2 (13-95): “A Gigantic Tidal Wave of Human Ingenuity”; “Choosing and Solving Problems”

14. 10/23 R  Military Invention, and Industrial Research Laboratories

Hughes, Ch. 3-4 (96-183) “Brain Mill for the Military”; “No Philanthropic Asylum for Indigent Scientists”

15. 10/27 M  Taylorism and Fordism (Scientific Management, Assembly Lines, and the Gospel of Efficiency)

Hughes, Ch. 5-6 (184-248; 249-294) “The System Must Be First”; “Taylorismus + Fordismus = Amerikanismus”

Rec: Smith/Clancey, Ch. 8 (267-311) “Inventing Efficiency: Scientific Management, ca. 1900 - 1939”  
Smith/Clancey, Ch. 9 (312-354) “Ford, Automobility, and Mass Production, 1908 - 1941”

16. 10/30 R  American Life in Transformation: Industrialization, Prosperity, Consumption, Depression (1870s - 1930s)

Cowan, (178-200) “Daily Life and Mundane Work” (Workers, Housewives, Servants)  
Pursell, Ch. 10 (229-250) “The Decade of Prosperity and Consumption”  
Pursell, Ch. 11 (251-269) “Depression: Study and Subsidy”

Post WWI and the Depression
17. 11/3  M  Critical Reflections on Technology.

Hughes, Ch. 7 (295-352) “The Second Discovery of America”
Basalla "Keaton and Chaplin: The Silent Film's Response to Technology" (192-201) Packet
Hounshell Ch. 8 "The Ethos of Mass Production & Its Critics" (303 - 330) Packet
Marx, "Alienation and Technology" (121-130) Packet
White, "Dynamo and Virgin Reconsidered" (57-73) Packet
Recommended Films: “Modern Times”; “Metropolis”

18. 11/6  R  The TVA, Electricity, and the Atomic Bomb

Hughes, Ch. 8 (353-442) “Tennessee Valley and Manhattan Engineer District”

19. 11/10  M  From little science to BIG SCIENCE: Science, Scientists, and Institutions in the Twentieth Century

From "pure science" to entrepreneurial science, from collaboration to teamwork, from freely sharing to patenting, science has become "a national resource."
(No assigned reading; questions instead)

   Cowan, Ch. 11 (250-270) “Taxpayers, Generals, and Aviation”
   Pursell, Ch. 12 (271-297) “Wars and the American Century”
   Fallows, "The American Army and the M-16 Rifle"
   (382 - 394) Packet


   From WWII to Y2K: Modern to Postmodern Technology

21. 11/17 M Communications, Computers, and Information: A Revolution?

   Cowan, Ch. 12 (273-298) “Communications Technologies and Social Control”
   Abbate "Cold War and White Heat: the Origins and Meanings of Packet Switching" (351 - 371) Packet

22. 11/20 R  Biotechnology: Postwar Expansion. Farm Pest Control.

   Cowan, Ch. 13 (301-326) “Biotechnology”
   Smith/Clancey, Ch. 11 (383-426) “The Pest War: The Shifting Use and Meaning of Insecticides, 1940 - 1990”
   Packet
   Marcus (191 - 205) "Unanticipated Aftertaste: Cancer, The Role of Science, and the Question of DES Beef…” Packet

23. 11/24 M  2nd Hour Examination

Note: The deadline for all 6 papers is 5:00 pm today, Monday 11/24

------------------------THANKSGIVING RECESS------------------------
24. 12/1 M  Making Sense of the Past 40 Years: Limits, Controls, Prognoses.

Marcus/Segal  Ch. 10 (299 - 333) "Public and Private: Technology as a Social Question: The Later 1960s to the 1990s" Packet
Marcus/Segal  Ch. 11 (334 - 381) "Private and Public: Technology and Individual Autonomy: The Later 1960s to the 1990s" Packet

25. 12/4 R  Countercultural Reactions and Alternative Technology Suggestions for the Future  Quiz (very brief). SCES

Pursell Ch. 13 (299-319) “Challenge, Defense, and Revolution in a Postmodern World”
Hughes, Ch. 9 (443-472) “Counterculture and Momentum”

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Selected Readings in the History of American Science and Technology

Boorstin, D.  The Americans: the Democratic Experience
Bruce, R. V.  The Launching of Modern American Science, 1846-1876
Cassedy, J. H.  Medicine in America : a Short History
Cowan, R. S.  More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave, 1983
Cravens, H.,  Technical Knowledge in American Culture: Science, Technology, and Medicine since the Early 1800s  1996
Katzman, P.M., eds.  Cross, G. and Technology and American Society: A History 1995
Szostak, R.
Daniels, G.  American Science in the Age of Jackson
Daniels, G.  Science in American Society  1971
Dupree, A. H.  Science in the Federal Government
Elliott, Clark A., comp.  Biographical Index to American Science: The Seventeenth Century to 1920.  1990
Fogel, R.  Railroads and American Economic Growth  1964
Hindle, B.  The Pursuit of Science in Pre-Revolutionary America
Hounshell, D.  From the American System to Mass Production, 1800-1932
Hunter, L.  Steamboats on Western Rivers  1949
Kasson, J. F.  Civilizing the Machine  1976
King, L. S.  Transformations in American Medicine : from Benjamin Rush to William Osler
Layton, E., ed. Technology and Social Change in America 1973
Marcus, A. and Segal, H.P. Technology in America: A Brief History 1989
Marx, L. The Machine in the Garden 1964
Nye, D. The American Technological Sublime 1994
Pursell, C., ed. Technology in America: A History of Individuals and Ideas 81
Pursell, C. The Machine in America: A Social History of Technology 95
Rae, J. B. The American Automobile
Reingold, N., ed. Science in Nineteenth Century America, a Documentary History
Shryock, R. H Medicine and Society in America, 1660-1860.
Smith, M. R. and Clancey, G. eds Science in the British Colonies of North America
Stearns, R. P. Yankee Science in the Making
Winner, L. The Whale and the Reactor