ST297: Technology and Revolution

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Technology and Revolution: Computers, Culture and the Internet
Fall 2001. Meets 2:30-3:45, Tu – Th, Keyes 103

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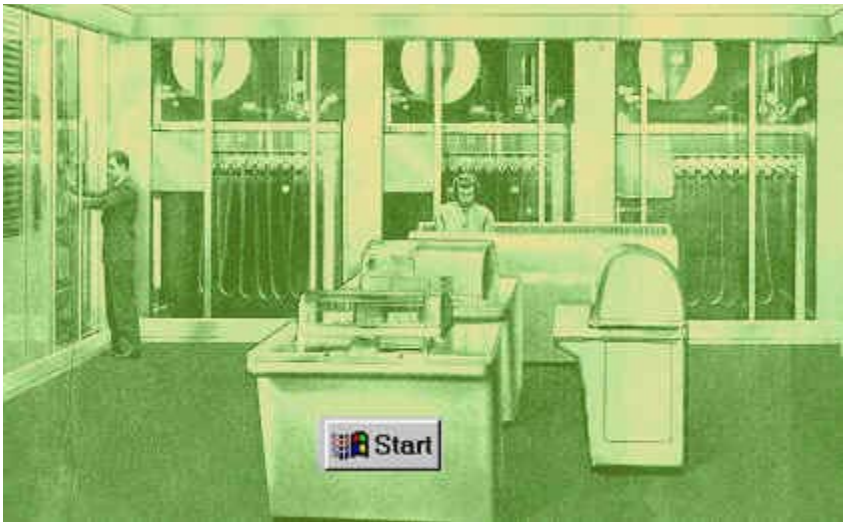
Miller Library 312, Phone x3535
Office Hours: Monday 10am to 12pm & Wednesday 1pm to 2:15 pm

This is a course offered in the Science, Technology and Society program of Colby College.



The Schedule Page includes list of readings and links full discussion questions and resources for each set.

What's New:
11/29 Paper topic and guidelines added, for voluntary class-participation makeup.

11/07 More information added to About page, including helpful summary of themes and topics for use when planning your papers and projects.

10/30 More information on group projects.

10/10 Website redesigned. Information added about the individual projects, including some general advice on writing your papers.

10/04 Having trouble keeping all the facts and dates sorted out? Wondering what happens when? Try the new on-line time-line and see how all the stuff you are reading about fits together.

09/08 Discussion questions and additional resources for the second session are now posted. In future, look for links to these by the entry for each week in the "week by week" view of the course.

09/06 Personal information form is now available from project page.

About

Course Description

Certain new technologies are greeted with claims that, for good or ill, they must transform our society, the two most recent being the personal computer and the Internet. An examination of what made these technologies seem revolutionary, and how perceptions changed as people began use them as a part of everyday life. Issues such as on-line privacy, the culture of cyberspace, media depictions of technology, hackers, and the rapid rise and fall of internet companies will be discussed in the context of broader historical and cultural perspectives. Students will work in teams to perform research and produce a web site.

Policy

Overall Credit Breakdown:

- 20% Midterm Examination
- 30% Class participation and discussion (see below)
- 20% Class presentation and short paper
- 30% Group Project

Discussion: Classes are based primarily on discussion of the assigned material, with some use of lecture segments to supplement this. It is vital that you prepare for it thoroughly and do all the assigned readings. Discussion questions are posted on the course website for each session -- you should be prepared to give a reasonable answer to any of these. An average of about 70 pages of reading will be set for each meeting.

Attendance: Attendance at class is compulsory. If you miss more than two classes during the semester without a good reason then you will be required to submit a makeup paper of 2 to 3 pages (double spaced, 12 point times, 1 inch margins) covering one or more of the discussion questions for the class you missed. If you are absent for more than five classes without makeup then you will fail the course.

Breakdown of the Participation and Discussion Mark: Between them, attendance and participation count for 30% of the total class mark. The grade for attendance and participation is made up as follows:

- 60% for showing up. Deduct 10% from this for each absence over 2 (unless made up).
- 40% for participation in discussion. A portion of this credit is available for each session, but quality counts as well as quantity. More credit is awarded for contributions which demonstrate an in-depth reading of the assigned material than for those based on general knowledge. A bonus will be applied accordingly.

Not all students feel comfortable volunteering to take part in class discussion. Participation credit is also available for written answers to discussion questions and from 1:1 discussion during office hours. Such credit can only be awarded within two weeks of the class in question.

Themes

You hear me talk a lot about the "themes" of the class, and how you should address them in your papers and projects. To remind you of them, here they are. There should be something here you can address in your research projects!

- How technologies are shaped by and can incorporate the cultures of the social groups that pioneer them.
- What changes in its apparent meaning and social significance as a technology spreads from one social space to another. (For example, as the PC passed from the hacker culture of the Homebrew Computer Club and into the living rooms of America).
- The idea of an "information revolution" or "information society" and how it can be used by different people for different purposes.
- The relationship between technological change and social change, and the idea that technology does not act in isolation from existing social and cultural contexts.
- The things we can learn about the past and about the present by examining the differences between how we think about familiar technologies now and how they appeared when new.
- That the Internet is not entirely unprecedented -- that only by comparing it to other technologies (electronic and non-electronic) can we truly understand what is different about it.
- The importance of community and place in technological development (and the question of how this can be reproduced on-line).
- The power of existing technological systems to maintain supremacy, sometimes in the face of technologically superior challenges.

Topics

Then there are also the topics we covered. I won't try and be complete here (you have the syllabus and discussion questions for that), but here are some of ones we seem to run into a lot.

- Sources of support for technological research and development. In the early computing period, frequently military or governmental.
- The evolutionary nature of technological progression, and the earlier developments upon which apparently revolutionary achievements such as the Mac, ENIAC or the Internet rest.
- Hacker culture in its different manifestations, from the radio boys of the 1910s through the MIT Hackers to the home computer enthusiasts of the 1980s and today's open source coders. Its good and bad points, its connection to masculinity.
- The enormous difficulty of turning a technological invention into a successful product.

About Me

For more computer history resources, and for my research interests, writings and resume, see my home page.

Course History

I wrote something very close to the current description in the proposal for a course I taught as a graduate student at the University of Pennsylvania. It was great to have the chance to propose and have accepted an entirely new course based on my own research an interests. Here is the original syllabus. I had originally planned to enlist the help of Atsushi Akera, a colleague then finishing his dissertation, who helped early in the planning stages. In the end, however, I co-taught the course with Nathan Ensmenger. This worked out very well -- students enjoyed the extra energy that came from having two instructors, and Nathan helped to select a number of the readings. One resource I found invaluable in constructing the syllabus was the Resource Center for Cyberculture Studies -- full of book reviews and links to online syllabi to do with computers, culture and communications.

For the current version of the course, I cut out a number of readings and shortened others. (You may find this hard to believe). I added a midterm, and created the on-line discussion questions and resources in order to guide students through the reading and help the class discussions. I also added new material on the commercial use of the internet. If you're interested in seeing how a class can evolve, you might want to see Nathan's revised version of the course, which he has adapted from the original seminar format into an introductory lecture-based class.

Schedule

New! On-line timeline summarizes all the major events from the readings in order of occurrence.

06-Sep	Introduction	Apple 1984 Video
Part I		Origins of Computer Technology
11-Sep	The First Computers (questions and links here)	*Computer*, chapters 1, 3 & 4 (pages 9-28, 53 -104) ENIAC Press Release - February 16, 1946.
13-Sep	Computers and Business (questions and links here)	*Computer*, chapters 2, 5 (pages 29-52 and 105-130) Thomas Haigh, "The Chromium Plated Tabulator: Institutionalizing an Electronic Revolution, 1954-1958", IEEE Annals of the History of Computing October-December 2001 Edward Callis Berkeley. *Giant Brains*: *Machines That Think* (NY: New York, John Wiley & Sons, Inc., 1949), pages 180-195. COMPARISON: *Punched Card Machines and Office Technology*
18-Sep	Military Computing (questions and links here)	*Computer*, chapter 7 (pages 157-181) Paul Edwards, *The Closed World: Computers and the Politics of Discourse in Cold War America* (Cambridge, MA: MIT Press, 1996), Chapter 3, "SAGE"
20-Sep	Dr Strangelove (questions and links here)	Movie -- watch it in class
25-Sep	From Mainframes to Minicomputers (questions and links here)	*Computer*, chapter 6 and 9 (pages 131-153, 207-229) (Make a start on Soul of a New Machine)
Part II		The Computer Gets Personal

27-Sept	Inside the World of the Computer (questions and links here)	*The Soul of a New Machine.* Chapter 1-3, 5, 12-13 and 15-16 (pages 1-66, 86-110, 221-248 and 268-291)
02-Oct	Loving the Machine For Itself, The Much Discussed MIT Hackers (questions and links here)	*Hackers,* Chapters 1-4 Sherry Turkle, "Hackers: Loving the Machine for Itself" from *The Second Self: Computers and the Human Spirit* (New York, NY: Simon and Schuster, 1984) – Chapter 6.
04-Oct	Spreading the Dream in Silicon Valley (questions and links here)	*Hackers*, Chp 8-11 (153-244)
09-Oct	The Personal Computer Grows Up (questions and links here)	*Accidental Empires:* Chapters 4, 7, 9 (pages 48-72 and 119-138 & 159-182) Levy, Steve. "A Spreadsheet Way of Knowledge", in Tom Forester, *Computers in the Human Context*, MIT Press, 1991. Pages 318-326.
11-Oct	The Microcomputer Revolution (questions and links here)	Evans, Christopher. *The Micro Millennium,* Viking, 1979. Chapters 5-7, 10-11 and 15-16 (pages 72-111, 146-175 and 236-262). Winner, Langdon. "Mythinformation", from Winner, Langdon. *The Whale and the Reactor,* University of Chicago Press, 1986.
16-Oct	Wargames (questions here)	Movie -- watch it in class
18-Oct		MIDTERM
25-Oct	Videogames (questions and links here) Presentation: Ross Freedman Presentation: Russel Mink	Stone, Allucquere Rosanne. "The End of Innocence, Part I" in *The War of Desire and Technology at the Close of the Machine Age*, MIT Press, 1995. Pages 123-155. **(Olin reserve)** COMPARISON: Radio - Susan Douglas, "Popular Culture and Populist Technology," in *Inventing American Broadcasting* (Baltimore: Johns Hopkins University Press, 1987), Chapter 6. **(Olin reserve)** *Hackers*, chapters 17 and 18. (Rest of section III is

		optional).
30-Oct	Hackers (the bad kind) (questions and links here)	Landreth, Bill ("The Cracker") with Howard Rheingold, "Out of the Inner Circle: A Hacker's Guide to Computer Security", Microsoft Press, 1985. Prologue, Chapter 1, Chapter 4. (pages 1-24, 57-72) (**Olin reserve)** Markoff., John "A Most-Wanted Cyberthief is Caught in His Own Web" , The New York Times, 16th February 1995. (Front page, main section). Also Markoff, John "Hacker and Grifter Duel on the Net," New York Times, 19th February 1995. Oder, Norman. "Cybercrime - or hype?" , Publishers Weekly 242 (Nov 27, 1995 - n48), page 28.
01-Nov	The Information Society and the Network Revolution (questions and links here)	From Hiltz, Starr Roxanne & Turoff, Murray. *The Network Nation: Human Communication Via Computer*, The MIT Press, 1993. (1st ed: Addison-Wesley, 1978). The Boshwash News - a collection of pages between chapters. **(Olin reserve)** De Lacy, Justine. "The Sexy Computer", in Tom Forester, *Computers in the Human Context*, MIT Press, 1991. Pages 228-236. Originally published in The Atlantic, July 1987. **(Olin reserve)** Mayer, Martin. "The Videotext Revolution", in Tom Forester, *The Information Technology Revolution*, MIT Press, 1985. **(Olin reserve)** Winston, Brian. "The Illusion of Revolution", in Tom Forester, *Computers in the Human Context*, MIT Press, 1991. Pages 71-81. **(Olin reserve)**
06-Nov	Getting GUI: Xerox and the Mac (questions and links) **Deadline for Project Choice**	Extracts from Engelbart's 1968 JCC presentation (shown in class) *Accidental Empires*, Chapters 5 & 10 (48-72, 182-208)
Part III		The Internet
08-Nov	The Origins of the Internet (questions and links) Presentation: Carter Pace	Norberg, Arthur L. & Judy E. O'Neill, "Improving Connections among Researchers: The Development of Packet-Switching Computer Networks", from *Transforming Computer Technology* (Baltimore: The

		Johns Hopkins University Press, 1996). pages 153-196. **(Olin reserve)** COMPARISON: The Telegraph -- Standage, Tom. *The Victorian Internet*: The Remarkable Story of the Telegraph and the Nineteenth Century's On-Line Pioneers (Berkeley, 1998). Chapters 5, 6 & 9 (74-104 & 145-163). **(Olin reserve)**
13-Nov	Networks and Places: Cyberspace and the Home Workplace (questions and links) **Project Report 1** Presentation: Michael Ungerer, early history of the Internet	Gibson, William. "Burning Chrome." Burning Chrome, Ace Books, 1986: 168-191. (Some seems to have posted the text on-line). Abbate, Janet. "By No Means Complete or Perfect": The Network as Experienced by Early Users, chapter 3 of Inventing the Internet (Rutgers University Press, 1999). **(Olin reserve)** Nilles, Jack. "Teleworking from Home", in Tom Forester, *The Information Technology Revolution*, MIT Press, 1985. Pages 202-208. **(Olin reserve)** Forester, Tom. *The Myth of the Electronic Cottage* in Tom Forester, *Computers in the Human Context*, MIT Press, 1991. Pages 213-227. **(Olin reserve)**
15-Nov	Virtual Communities (questions and links) Presentation: Leif, Virtual Reality	Hafner, Katie. "The Epic Saga of the Well: The World's Most Influential Online Community (and it's not AOL)". *Wired*, Vol 5.05, May 1995, 98-142. Read it on-line. Turkle, Sherry "Virtuality and its Discontents: Searching for Community in Cyberspace," *The American Prospect* no. 24 (Winter 1996): 50-57. Read it on-line. Rheingold, Howard. "A Slice of My Life in My Virtual Community", in Ludlow, Peter (ed.) *High Noon on the Electronic Frontier: Conceptual Issues in Cyberspace*. Cambridge, Mass: MIT Press, 1996. 413-436. Read it on-line.
20-Nov	The World of Microsoft (questions and links) **Project Report 2**	Coupland, Douglas. *Microserfs* (Regan Books: 1995), chapter 1 (pages 1-42) Read it on-line. Accidental Empires, chapter 6 (93-118)

27-Nov	Electronic Music Presentations: Dave Hauser Zach Gazza	No additional readings.
29-Nov	The Internet Goes Business (questions and links) Presentation: Russell McPherson -- Scuba Diving Technology **Project Report 3**	Lewis, Michael. "The Search Engine", New York Times, October 10, 1999. (Condensed from his book, The New New Thing). (Sent via email). Madrick, Jeff "Computers: Waiting for the Revolution", The New York Review of Books, March 26th 1998, pages 29-33. (**Olin reserve).**
04-Dec	E-Commerce: Webvan and Amazon (questions and links) Presentation: Greg Johnston, Future Revolutions	Time Magazine -- Jeff Bezos, Person of the Year 1999. It's online. Hansell, Saul. "Listen Up! It's Time for a Profit; A Front-Row Seat as Amazon Gets Serious", New York Times, May 20 2001. Read it on-line. Knowledge@Wharton (via cnet.com) "What Makes a Winning Net Grocer?," October 20, 2001 (there are two pages -- read both). COMPARISON: Catalog Shopping and Home Delivery
06-Dec	Free Software Movement & Digital Ubiquity (questions and links)	Raymond, Eric. *The Cathedral and the Bazaar* Negroponte, Nicholas. *Being Digital*, Alfred A. Knopf Inc., 1995. It's not on-line, so read these columns instead - they're what it's based on. Bits and Atoms , One Room Rural Schools, Beyond Digital
12-Dec	Project Presentations	These are the final exam -- give you a bit more time to prepare! 9am -- bright and early. Location TBA.

Project

Group Project: The course is organized around teamwork. Students will work in groups of three people to produce a web-site dealing with the issues raised in the course. This web-sites can include multimedia elements such as pictures and video-clips. However, credit will primarily be awarded for clear presentation, good writing, powerful story telling, selection of evidence and the coherent presentation of interesting arguments.

In the first week of class, fill in the individual information form, and return it via paper or email.

Project groups will be assigned in consultation with the students. Start thinking about a topic as soon as possible. You will need to consult with me before finalizing it.

Breakdown of Marks:

Project marks will be assigned as follows.

- **30% for quality of research.** This is a research project. That means footnotes, citations, going to the library, ordering books specially, reading old newspapers, and that kind of thing. Do not rely exclusively on amateur websites, and use all materially skeptically. Make sure you have a good range of sources of different types.
- **20% for quality of writing.** Write clearly, directly. Proofread carefully. Have an overall argument, and make sure the thing holds together as a site rather than just a collection of pages.
- **20% for the final presentation.**
- **15% for integration with the themes of the course.** This doesn't mean you need to write exactly what you think I want to hear, or drop mentions to the course readings where they don't belong. But the project must address some of the big themes of the course. (The themes page and the timeline will help with this).
- **15% for intelligent use of the Web.** Everything that makes this more than just a term paper on line. Note that this does NOT mean that you need Flash animations, big graphics, etc. -- more that you put thought into the overall design, structure and so on. More of these marks

Generally speaking, everyone in a group will get the same mark. But, sometimes some members of the group put in much more effort than others, and it is clear to them that other members are free-riders. You will have an opportunity at the end of the project to recommend what you as an individual think is a fair distribution of the overall group mark between the different individuals. In the past, this has led to substantial adjustments of marks for a small number of people.

Hints on Teamwork

Teamwork is great when it works, and horrible when it doesn't. There are things you can do to make it work better.

- Treat your fellow team members with respect. Don't always insist on getting your own way. Be vocal and give your opinions at the planning stage, but listen and learn from others and go along with the team consensus. Don't argue about the little things.
- Work sensibly on a single topic -- put the site together as a whole. Splitting a bit topic into separate areas and having each team member create a separate area of the site is not a good strategy -- you'll finish up with a very patchy result.
- Different people are good at different things. If one of you is much better at web layout, and another is much better at research, then play to those strengths. Don't assume that everyone has to take part equally in each activity. You are not in competition with each other.
- Have whoever is best at writing and editing go over the whole thing before you put it online.

What NOT to Do:

Here are some mistakes students have made previously. Learn from them.

- Put all the effort into a fancy graphic design. Look at the credit breakdown. Great visual design is not going to push up the overall mark by more than a few percent. Worry more about layout and navigation, and worry most of all about quality of research.
- Adapt all the content from an existing website. This shows.
- Not bother showing up to meetings with your teammates. They will hit you hard in the credit breakdown, and you will deserve it.
- Think of it like a homepage. When you put up your own amateur website you can write whatever you want, you don't need to do original research, your opinions don't need to be separated from your evidence, and you don't need to cite sources. This isn't a home page -- it's a formal research project that is being put on the web instead of paper.
- Leave it until the last minute.

Group Assignments:

Group 1: Title TBA Project TBA

- Ross Freedman
- Gregory W. Johnson
- Leif G. Person

Group 2: Title TBA Project TBA

- Russell B McPherson
- Russell D. Mink
- Pace Carter

Group 3: Title TBA Project TBA

- Joseph Z. Gazza
- Michael L. Ungerer
- David C. Hauser

Presentation & Paper

Students will also take part in a personal presentation. Research for this presentation will also be used to write a paper of about 8 double spaced pages. Each student will present the results of their work (presentations to last 10-15 minutes) which will then discussed by the class. Between them these count for 20% of the overall class credit. This will in general be evenly split between the paper and the presentation.

Topic. All assignments will involve some kind of research on a topic related to the class. Examples include learning how to program an early microcomputer and producing a simple demonstration program, research on press coverage of the introduction of the VAX minicomputer, and an exploration of the controversy over the attempt of the Computer Decency Act to impose censorship on the Internet. Multimedia and computer facilities may be used in these presentations. Make the topic interesting but also keep it narrow enough that you can actually get a grip on it.

Scheduling: Once a topic has been selected, each student will be added to the course schedule. The precise date will be set by the instructor in consultation with the student so as to complement the material being discussed that week.

Due Date: The paper is due one week after your presentation. Extensions are available if asked for in advance -- but don't let this drag on to the end of the semester.

Presentation: Practice and time your presentation carefully 10 minutes can be over a lot sooner than you think. Be careful to introduce your topic and explain how it fits in with the themes of the class and the material we have all read. PowerPoint and video capabilities are available, but use these only if you think they will help your presentation. Speak clearly, explain any unfamiliar topics.

Research: Successful projects will involve some original research. This does not necessarily mean papers in academic journals, but it does require a hunt for relevant material and careful footnoting. Use of original documents (newspaper articles, popular books, manuals etc) from the period you are discussing is strongly encouraged. Treat material from the web with caution -- don't assume that all facts and opinions on a personal or corporate website are well researched or that a Google search will bring all you need to know. On the other hand, on-line newspaper archives are invaluable -- just be aware of what you are dealing with.

Papers: Papers should be about 8 double-spaced pages. Credit for papers is awarded roughly 20% for elegance of writing, 30% for organization and argument and 50% for research. **Footnote all your sources!** Here are some hints I have produced on the writing of a successful paper.

www.tomandmaria.com/tom. Updated 01/18/2002.