Overview: This seminar examines prominent theories of technological change, against the backdrop of three historical, empirical examples and one emerging example: the printing revolution and the contemporary revolution in electronic communications; industrial revolutions in the context of industrial globalization; and technology's role in historical/ongoing debates about the meaning and value of human work; and, right now, the emergence of biotechnology as a potent new realm of human activity. Topics include technological determinism, social construction of technology, actor-network theory, and activity theory; communications, orality, literacy, and electracy; semiotics and post-modernity; work, economics, and self; and democracy and the user’s critique of technology.

Format: The seminar is a readings and discussion course, and includes both weekly in-person discussion meetings (Mondays, 4:35-5:30) and weekly contributions to the on-line discussion forum. Students are expected to attend and participate in the weekly discussions in person and on-line. In-class discussion is worth 50% of the course grade, and on-line participation is worth 50% of the course grade (30% for on-going weekly forum posts, 20% for assigned reading evaluation posts).

Reading evaluations: Each student will prepare and post two readings evaluations during the course. A readings evaluation should give an overview of the readings for the week, pose possible discussion questions, and take an evaluative position on the readings. We will assign weeks at the first seminar meeting. Readings evaluations are worth 20% of the course grade.

Forum posts: In addition to posting two readings evaluations during the course, students must post a substantial response to the readings evaluation for each week that they do not post a readings evaluation. This post must respond to the readings evaluation. It should also respond to other comments already posted, and in fact a good forum response may require two more more additional postings. The response can be critical. It can also open a new avenue for discussion, connect the readings or postings to other issues and readings, etc. We will determine a timeline for postings at the first seminar meeting. Forum posts are worth 30% of the course grade. You will be asked to collect and submit them as a single document at the end of the term.

Discussion: Students are required to attend weekly seminar meetings, and to participate in discussion. Discussion participation is worth 50% of the course grade.

Grading: Grading will be based on participation in in-person discussion (50%), on-line forum posts (30%), and readings evaluations (20%). Please note that students may not pass the course
without completing all assignments, and that a grade of incomplete (I) will be given only if a student has already satisfactorily completed the majority of the coursework and if there is a compelling and emergency reason.

**Books:**

Most of the books we are using will be placed on reserve in Wilson Library. Almost all of the journal articles are available on-line; those that are not will be scanned and made available digitally. You may wish to purchase some of these books, which are available at a substantial discount from on-line sources. Please note that we will not read all of these books in their entirety.


> Useful throughout, for descriptions of theories and concepts, such as agency and rationality, and remarkable for its sustained commitment to finding democratic possibilities within technological society.


> Very helpful overview of the principle philosophies of technology, and their development and paths of intersection. Useful reference.


> Good summary of major issues and theories; a good reference throughout the course.


> Repays careful reading over time, full of fascinating observations and moral/philosophical reflections.

Herbert Marcuse, *One-Dimensional Man* (Boston: Beacon Press, 1991), try to get the edition with the introduction by Douglas Kellner

> A classic that you will most likely annotate heavily.


> Feenberg is a student of Marcuse’s. You will want to dip in and out of this when it is assigned, rather than reading it straight through.


> Another classic, and seminal in communication studies.


> This is a slender and exciting volume, about speech and human gestures, and the possibilities that digital technologies may foreclose.
Very empirical, compelling detail.

Stuffed with statistics and data, makes a good economic reference itself.

A great classic, about the context in which industrial civilization developed.

A slim volume, a lovely and compelling story. How environmental history should be done.

Martin Reuss and Stephen Cutcliffe, eds., *The Illusory Boundary: Environment and Technology in History* (Charlottesville: University of Virginia Press, 2010)
An edited volume, with a variety of authors and loads of interesting citations.

An argument for the significance of the study of history from one of its most distinguished practitioners.

An attempt to introduce an intellectually respectable form of realism into theories of history, through an analysis of Ranke’s views on objectivity. A response to postmodern theories of history.

You may want to have this around. Selections from it will be available electronically, but it is an excellent survey of the major positions of postmodernism.

**Schedule of discussions and readings:**

**Sept. 8**  
Technology and history: an introduction

**Sept. 15**  
Constructing the history of humans and machines

Theories: the Social Construction of Technology and Actor Network Theory
Read:


These two collections are worth examining, if this subject interests you:

Wiebe Bijker, Of Bicycles, Bakelites, and Bulbs: Toward a Theory of Sociotechnical Change

Wiebe Bijker, Thomas P. Hughes, Trevor Pinch (eds.), The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology

See also this well-known critique:


And the classic example of social construction in operation:

Thomas P. Hughes, Networks of Power

These two pieces offer a taxonomy of approaches within social construction:


Note also that there is a more moderate approach, the social shaping (rather than construction) of technology. Here are some readings that take this approach:

Langdon Winner, *The Whale and the Reactor: A Search for Limits in an Age of High Technology*

Donald MacKenzie, *Knowing Machines: Essays on Technical Change*


*And this controversial classic, of what has become called Actor Network Theory:*


*You can familiarize yourself with Latour’s terminology in:*


*Be aware of these contributions considering Actor Network Theory in studies of information systems; perhaps choose one to read:*


**Sept. 22**

**Classic theories about technology, social change, and human work**

**Theory: varieties of Marxism**

**Read:**

Karl Marx, preface to *A Contribution to the Critique of Political Economy* (Chicago: Charles H. Kerr and Company, 1904), pp. 9-15


*See Giddens’s study for the larger reach of social theory:*


Chapter 11 is especially helpful, “Fundamental Concepts of Sociology” (pp. 145-168). It concentrates on Weber but also discusses the historical and contextual development of important categories within social thought.

*And these classics:*


Sept. 29  

**Industrial revolutions and technological change: economic theories of change**

**Theory: economics as the driver of technological change**

*Read selections from:*


*These are some well-known considerations of industrialization and change:*


Michael Adas, *Machines as the Measure of Men.* Adas criticizes the use of industrial ideas of progress for critiquing the non-European world.


**Oct. 6**

**Industry and innovation: theory and empirical example**

**Theory: entrepreneurial activity as the root of technological change**

*Read selections from:*


Thomas P. Hughes, *Elmer Sperry: Inventor and Engineer* (Baltimore, MD: Johns Hopkins University Press, 1971)

**Oct. 13**

**The discipline of history: studying change over time**

*Read:*


*and selections from* Keith Jenkins, ed., *The Postmodern History Reader* (London: Routledge, 1997) (we will read selections from Jenkins throughout the course)

*There are many good studies of history as a practice and a field, and my favorites include:*

Paul Veyne, *Writing History*

Thomas Haskell, *Objectivity is not Neutrality: Explanatory Schemes in History*

Peter Novick, *That Noble Dream: The Objectivity Question and the American Historical Profession*
David Harlan, *The Degradation of American History*

**Oct. 20**

**Biotechnology, environment and change, I**

**Theory:** nature and technology are known through activity

**Read:**


*and selections from* Martin Reuss and Stephen Cutcliffe, eds., *The Illusory Boundary: Environment and Technology in History* (Charlottesville: University of Virginia Press, 2010).

*Other provocative studies of technology, biology, and environment:*


**Oct. 27**

**Biotechnology, environment and change, II**

**Theory:** nature speaks to technology

**Read:**


*See also this recent cheerleading effort on behalf of biotechnology:*

Emily Anthes, *Frankenstein’s Cat: Cuddling up to biotech’s brave new beasts* (New York: Farrar, Straus, Giroux, 2013)
That people knowing nature through practice is a cornerstone of Activity Theory, which focuses on cognition and tool use. We will not read these contributions, but you may want to be aware of them, especially if you are interested in neurology, activity, and change. Activity theory is rooted in work by Russian psychologists, and American Bonnie Nardi has been influential in extending the theory here:


Nov. 3  Communications I: printing and the digital revolution

Theory: society is defined by how its members interact

Read:


And be aware of larger ramifications of cultural theory:


Robert Darnton, The Great Cat Massacre


Nov. 10  Communications II: The transition from speech to writing
Theory: the shift to text made rationality possible

Read:


Be aware of the seminal study to which Ong responded:


And of this early collection exploring the varieties of non-literate society:


And of this brilliant study of how orality and literacy meet in biblical interpretation:


Nov. 24

Technological determinism and critics of technology

Theory: that technology has limited human freedoms

Read:

Jacques Ellul, *The Technological Society* (Vintage Books, 1967). This is a frustrating but widely influential study from a jurist and lay theologian. Dip into parts of it, and read those carefully; do not feel compelled to read through the whole thing.


See also the famous but impossible to read essay by Heidegger:

And be aware of these interesting contributions:


David Chandler, Technological or Media Determinism (pdf www.aber.ac.uk/media/Documents/tecdet/tdet.html)

And these classic contributions:

Lewis Mumford, Technology and Civilization

Siegfried Geidion, Mechanization Takes Command

Dec. 1 Ways out of technological determinism: diagnosis and response

Theory: critical theory and empirical history

Read:


And be aware of this significant treatise, a classic of what is called the Frankfurt School approach:

Theodor Adorno and Max Horkheimer, Dialectic of Enlightenment

You might also find these of interest:


Feenberg, chaps. 4 & 8: “Critical Theory of Technology: An Overview,” and “From Critical Theory of Technology to the Rational Critique of Rationality”.

Familiarize yourself with one of these, asking “what is under criticism?”:

Michel Foucault, *Discipline and Punish*


And if you are of a philosophical bent, look up Herbert Dreyfus’s papers on Heidegger and Foucault:

http://socrates.berkeley.edu/~hdreyfus/index.html

Dec. 8 **Technology, change, and the future: final discussion**

Please collect all your postings from the term, and submit them as a single document.