

## STS 302.002: Contemporary Science, Technology, and Human Values

Fall 2007

MWF 1:30-2:20pm, 00143 Harrelson Hall

Instructor: Marie Hicks

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### Course Description

The goal of this course is to gain insight into the interactions between society, science, and technology by using a multidisciplinary approach that incorporates work in history, economics, philosophy, investigative journalism, and the social studies of science. This course is reading and writing intensive and will ask you to critically evaluate and compare the case studies of technological development that you read. Throughout the course, we will try to understand the different ways that technology and society shape each other. We will do this by focusing on machines and work, and looking at technologies that have participated in defining how we understand automation, engineering, and technology's role in society. We will be concerned with assessing how technological objects and tools participate in molding human culture and values.

The questions this course will address include: What is the mechanism by which machines and other technologies influence the way we live? To what extent do we shape the pre-existing technologies that alter our daily lives? What are the different ways to understand how technology and society shape each other? And, what sorts of intellectual tools must we employ to begin to answer these questions?

### Course Requirements

Two short (3-5pp.) papers worth 20% each (see syllabus for paper due dates)

One longer Final Exam paper (10-12pp.) worth 30%

Discussion Questions and Article Assignment for class worth 20%

Classroom discussion participation worth 10%

The two short paper assignments will be described and discussed in class before they are due. The Final Exam paper will be discussed later in the semester, and will draw on course readings as well as independent readings you will choose.

Discussion Questions are required for each class. **You must write down one or two brief discussion questions and bring them with you to each Monday and Wednesday class—you are expected to have the reading listed on the syllabus done in time for class on Monday and Wednesday of the week for which it is assigned.** I may collect the questions periodically. The questions can be about something in the readings you would like to talk about more in class, or something you did not understand or agree with in the readings.

In addition, **for one week of the semester you will be required to find three on-line articles pertaining to that week's topic.** You will send links to these articles to the class no later than 5pm on the Sunday preceding your assigned week. You will work on this in groups of 2 or 3 people and will briefly talk about your article choices in class, explaining what they are about and why you chose them.

As you can see, classroom participation (in the form of discussion questions, article assignments, and attendance) is a major portion of your grade (30%). It is imperative that you do the readings on time in order to participate effectively in class.

## Books

These books will be available in the bookstore. I strongly recommend purchasing both as we will be reading large portions of them. There will also be a number of articles on e-reserve.

1) Nina Lerman, Ruth Oldenziel, and A. Mohun, *Gender and Technology: A Reader* (Johns Hopkins, 2003)

2) Lynn Townsend White, *Medieval Technology and Social Change* (Oxford University Press, 1966)

## Class Schedule:

### Weeks 1 &2 **Introduction and Historical Dimensions of Society, Technology, and Work**

Questions to keep in mind: What is the concept of “technological determinism”? Are there different kinds of technological determinism? Is technological determinism a compelling idea? Why *and* why not?

Understanding technology’s impact on societies is often easier when a society is far removed from us in historical development. As you are reading White, consider how his views could be described deterministic, and in what ways they are not deterministic.

W 8/22	Introduction
F 8/24	Heilbroner article: “Do Machines Make History?” (on reserve)
M 8/27	White, <i>Medieval Technology and Social Change</i> chapter 1
W 8/29	White, <i>Medieval Technology and Social Change</i> , chapter 2
F 8/31	Assign article groups, discuss first paper topic

### **PAPER ASSIGNMENT, 4-5 pages, due Monday 9/10:**

Heilbroner says that “machines make history in some sense,” and tries to systematize how machines interact with society. Lynn White gives us examples of how this may have occurred in western Europe during medieval times. Take 2 to 3 of Heilbroner’s ideas (which are highlighted by the bold section headings in his article) and explain how Lynn White’s account of the stirrup and the plow does or does not agree with Heilbroner’s ideas. Use examples from the texts to support your arguments and clarify your points.

### Weeks 3&4 **Making Machines Work for Us**

The Social Construction of Technology (sometimes referred to by the acronym SCOT in Science Studies) refers to a range of different levels of social impact on technology. What exactly does this term mean? How can technology be socially constructed? Is this process always intentional and controllable? Why and why not? Try to think of examples from the reading, or from your own experiences.

W 9/5	Ronald Kline and Trevor Pinch, “Users as Agents of Technological Change: The Social Construction of the Automobile in the Rural United States,” <i>Technology and Culture</i> 37, No. 4 (October 1996): 763–95. (on reserve)
F 9/7	First Article Group
M 9/10	<b>FIRST PAPER DUE AT THE BEGINNING OF CLASS</b> Ruth Schwartz Cowan, “How the Refrigerator got its Hum” (on reserve)

W 9/12 Thomas Hughes, "The Evolution of Large Technological Systems" (on reserve)

F 9/14 2<sup>nd</sup> Article Group

**Weeks 5 Mapping Social Divisions onto Machines: Gendered Constructions of Technology**

M 9/17 A. M. Turing, "Computing Machinery and Intelligence" *Mind*, New Series, Vol. 59, No. 236. (Oct., 1950), pp. 433-460. (available on JSTOR and reserve)

W 9/19 Jennifer Light's article, pp. 295-317 in *Gender and Technology* reader,

F 9/21 3<sup>rd</sup> Article Group

**Week 6 Industrializing Nature: Agribusiness and GM Foods**

M 9/24 Ethics of Biopharming:

<http://www.foe.org/camps/comm/safefood/biopharm/PharmRiceReportExecSummary.pdf>

Starlink Corn Problems:

<http://www.ehponline.org/members/2002/110p5-13bucchini/EHP110p5PDF.PDF>

Lawsuit over pollution by GM Crop Testing:

[http://www.centerforfoodsafety.org/cfs\\_files2.cfm](http://www.centerforfoodsafety.org/cfs_files2.cfm)

Failure of Biotech Wheat:

[http://www.centerforfoodsafety.org/monsanto\\_p.cfm](http://www.centerforfoodsafety.org/monsanto_p.cfm)

rGBH Labeling Controversy:

[http://www.bioethics.iastate.edu/Bioethics\\_in\\_Brief/nov05.html](http://www.bioethics.iastate.edu/Bioethics_in_Brief/nov05.html)

Monsanto Sues Farmers:

<http://www.i-sis.org.uk/MonsantovsFarmers.php>

[http://www.centerforfoodsafety.org/press\\_release1.13.05.cfm](http://www.centerforfoodsafety.org/press_release1.13.05.cfm)

W 9/26 Excerpts from *Fast Food Nation* (on reserve)

F 9/28 4<sup>th</sup> Article Group

**Week 7 Transporting Goods and Workers**

M 10/1 Websites on petroleum consumption and alternative fuels at:

[http://home.earthlink.net/~mjohnsen/Environment/oil\\_consumption\\_slide.html](http://home.earthlink.net/~mjohnsen/Environment/oil_consumption_slide.html)

[http://www.bts.gov/publications/national\\_transportation\\_statistics/2003/html/table\\_04\\_01.html](http://www.bts.gov/publications/national_transportation_statistics/2003/html/table_04_01.html)

<http://www.ehponline.org/members/2007/115-2/spheres.html>

[http://www.biodiesel.org/resources/biodiesel\\_basics/](http://www.biodiesel.org/resources/biodiesel_basics/)

John E. Kwoka, "Market Power and Market Change in the U.S. Automobile Industry" and "The Limits of Market-Oriented Regulatory Techniques: The Case of Automotive Fuel Economy"

W 10/3 Excerpts from *Unsafe at Any Speed*

F 10/5 5<sup>th</sup> Article Group

**Week 8 Society and the Standardization of Bodies**

M 10/8 "Introduction," pp. 1-8, and Herzig's article, pp. 73-89, of *Gender and Technology* reader

W 10/10 Nick Watson, *In Pursuit of Standardization: The British Ministry of Health's Model 8F Wheelchair, 1948-1962* (on reserve)

F 10/12 NO CLASS (Fall Break)

Weeks 9 &10 **Automation, Organization and Valuation of Labor**

M 10/15 Karl Marx, "The Machine Vs. The Worker," and David Noble, "Social Choice in Machine Design: The case of automatically controlled machine tools"

W 10/17 Lindstrom, Richard "They all believe they are undiscovered Mary Pickfords": Workers, Photography, and Scientific Management (on reserve)

F 10/19 6<sup>th</sup> Article Group

M 10/22 Ronald Kline, "Home Ideologies: Progress?" in *Gender and Technology: A Reader*

W 10/24 Roger Horowitz, "Meatpacking" in *Gender and Technology: A Reader*

F 10/26 7<sup>th</sup> Article Group

Week 11&12 **Cyborgs, Missiles, and Levels of Technological Construction**

M 10/29 **SECOND PAPER DUE AT THE BEGINNING OF CLASS**  
Donald Mackenzie, "Nuclear Missile Testing and the Social Construction of Accuracy" pp.343-356 (on reserve)

W 10/31 Donna Haraway, "A Cyborg Manifesto Science, Technology, and Socialist-Feminism in the Late Twentieth Century," in *Simians, Cyborgs and Women: The Reinvention of Nature* (New York; Routledge, 1991), pp.149-181. (on reserve)  
Available online: <http://www.egs.edu/faculty/haraway/haraway-a-cyborg-manifesto.html>

F 11/2 8<sup>th</sup> Article Group

M 11/5 Donna Haraway,  
*Modest\_Witness@Second\_Millennium.Femaleman\_Meets\_Oncomouse*, pp. 49-69 (on reserve)

W 11/7 Donna Haraway,  
*Modest\_Witness@Second\_Millennium.Femaleman\_Meets\_Oncomouse*, pp. 79-87 (on reserve)

F 11/9 9<sup>th</sup> Article Group

Week 13 **Personalizing Technology**

- M 11/12 Paul Ceruzzi “Inventing Personal Computing” (on reserve)
- W 11/14 Downey, Greg “Virtual Webs, Physical Technologies, and Hidden Workers: The Spaces of Labor in Information Internetworks” (on reserve)  
A Brief History of the Internet  
Available Online: <http://www.isoc.org/internet/history/brief.shtml>  
Discuss Final Paper Topics
- F 11/16 10<sup>th</sup> Article Group
- Weeks 14&15 **Agency of Machines?**
- M 11/19 Bruno Latour “Where are the Missing Masses” (on reserve)
- W 11/21 and F 11/23 NO CLASS (Thanksgiving Break, Nov. 24-26)
- M 11/26 Bruno Latour “Where are the Missing Masses” (on reserve)  
Langdon Winner “Do Artifacts Have Politics?” (on reserve)
- W 11/28 Discussion of Winner and Latour Articles, summation
- F 11/30 Outlines and Annotated Bibliography of Final Papers Due  
**Discuss Final Papers (class members will present their topics to the class)**
- Week 16
- M 12/3 **Discuss Final Papers (class members will present their topics to the class)**
- W 12/5 **Discuss Final Papers (class members will present their topics to the class)**
- F 12/7 Final Class: **Individual Actors Within a Large Technological System**  
Listen to Part 2 “Should I Stay or Should I Go?” Beginning at 26:35 minute mark  
[http://thislife.org/Radio\\_Episode.aspx?sched=1071](http://thislife.org/Radio_Episode.aspx?sched=1071)  
The story of Graphing Calculator 1.0:  
<http://www.pacifict.com/Story/>

Final Exam period Dec. 10 through 18  
**FINAL PAPERS DUE WEDNESDAY, DECEMBER 12, at 1:30pm**