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Sociology 4930 6.0

The Sociology of Science and Technology

2008-2009 Course Outline

This course provides final year students with an opportunity to apply the theoretical perspectives and methodologies they have learned in previous courses to the role of science and technologyin social life. We cover a diverse sociological literature including the recent theoretical contributions of, and debates about technological/scientific determinism, social shaping, and social constructivism. We analyse inter-actions between and among scientific knowledge, technological change and the political, economic and socio-cultural order. We explore longstanding debates about the "objectivity" and "neutrality" of science and technology and we assess the political choices that are embodied in specific applications of technology and lines of scientific inquiry. A major aim is to examine the distinctiveness and centrality of human agency in shaping a social-cultural world that is infused with scientific knowledge and technological know-how.

Students will have the opportunity to apply their their major or minor area of study to explorations of the socio-cultural aspects of science and technology. Major course projects could focus on, for example, the implications of specific technologies for mass communications, health services, work place organisation, educational institutions, and monitoring the natural environment; the portrayal of scientific knowledge in art, literature and film; and the epistemological and ontological implications of social and cultural studies of science for social theory generally.

Sept. 4 **Orientation:**

Opening the black box of science and technology

Video: **Challenger: The Final Voyage**

: The Course Outline

(Handouts 1 and 2 will be distributed for the next two weeks' reading assignments)

Sept. 11 **The Challenger Failure**

Required Reading: Wanat, Thomas. (Feb 16, 1996). The Organizational Breakdown Behind the Challenger Disaster, *The Chronicle of Higher Education,* 42, 23; Research Library, A8.

Vaughan, Diane. (Summer 2002). media launch. *Contexts*; 1, 2; Research Library, 68.

ASA Website. (March 16, 2007). Diane Vaughan. http://www. ASANET.org/page.ww?section=Awards+name=Diane+Vaughan. Downloaded June 17, 2007.

FALK, DAN (1991, April) Showtime for Science. *Ryerson Review of Journalism.* #31C208.DOC

Sept. 18 **Science and technology: up & down & all around:**

Audio Documentary: **THE CULT OF THE AMATEUR&MORAL PANICS**

Required Reading: Koerner, Brendan. (2002, Sept. 27th). Disorders Made To Order. *Toronto Star*, pp. D1 and D5.

Evans John H (Spring 2003) a brave new world? how genetic technology could change us. *Contexts,* 2, 2; Research Library, 20

Austen, Ian. (2003, Jan. 23rd). The Flexible Farmer Lets the Robot Do the Milking. *New York Times*, E8.

Longman, Jeré (May 15, 2007) Debate on Amputee Sprinter: Is he Disabled or Too-Abled? *New York Times*, A1&A21.

Hafner, Katie. (2003, Feb. 27). Where the Hall Monitor is a Webcam. *New York Times*, E1 and E7.

Pogue, David. (2003, Feb. 27th). Keeping an Eye on Things by Cell phone. *New York Times*, E1 and E7.

Waxman, Sharon (April 26, 2007) I'd Like to Get Off the Stage Right Now. *New York Times,* FASHION & STYLE, Section E.

"Bibliography on Debates" assignment will be handed out and the sign up sheet for in-class presentations will be circulated

Sept. 18th is the last day to enroll <u>without the permission</u> of the course director.

Sept. 25

8:45-10:00 LIBRARY Tutorial in Rm. 531 of the Scott Library

Norda Majekodunmi will be your librarian instructor. The tutorial will be from 8:45 to 10:00

See the next page for the second half of the class

Sept. 25 cont. 10:20-11:20 Thinking Critically about Technology – 1

Required Reading: Kleinman, Daniel Lee. (2005). Science is Political/Technology is Social: Concerns, Concepts and Questions. In Science and Technology in Society. Malden Maine: Blackwell Publishing, chapter 1.

Ullman, Ellen. (May 2000). The Museum Of Me. *Harper's Magazine,* 30-33.

Zizek, Slavoj. (22 May 2003). Bring me my Philips Metal Jacket. *London Review of Books*, 25, 10, 3 –

Oct. 2 Thinking critically about technology -2

Required Reading: Ehrenfeld, David (2002, October). The Cow Tipping Point. *Harper's Magazine*, 13-20.

Lanchaster, John (22 March, 2007). Hot Air. *London Review of Books*, 3 & 5-9.

Mumford, Lewis. (1964). Authoritarian and Democratic Technics. Reprinted in Zernan, John and Carnes, Alice (Eds) (1991), Questioning Technology: Tool, Toy or Tyrant? (pp. 13-21). Philadelphia: New Society Publishers.

Hirkschop, Ken. (1996, July-August). Democracy and the New Technologies. *Monthly Review* V. 48, 3, 86-98.

Jones, Thomas. (4 August 2005). Short Cuts. *London Review of Books*, 27, 4, 20.

Gutstein, Donald. (1999) Colonizing New Markets: IBM Goes To School. In e.com: how the internet undermines democracy. Toronto: Stoddart Pub. Co., chapter 7

Newson, Janice. (1999) Technopedagogy and Disappearing Context. *Academe*, Sept-Oct. 1999, 52-55.

THE BIBLIOGRAPHY ASSIGNMENT IS DUE

Oct. 9 NO CLASS- Yom Kippur

(IN-CLASS COMMENTARIES BEGIN NEXT WEEK)

October 16 **Refining technological determinism:**

Required Reading: Merkel, Kenneth G, (Spring 2000) Engineering technology and technological determinism. *Journal of Engineering Technology(on-line). Download* June 24, 2008 *from:* http://findarticles.com/p/articles/mi_qa3979/is_200004/ai_n8883860

Sclove, Richard (1995). I'd Hammer Out Freedom: Technology as Politics and Culture. In Democracy and Technology. New York: The Guilford Press, chapter 2.

Winner, Langdon. (1985). Do Artifacts have Politics? In MacKenzie, D. and Wajcman J. (eds) The Social Shaping of Technology (pp. 26-38). Milton Keynes: Open University Press.

Ois, Shelagh. (2008). I know, I think, I do.

October 17 th is the last date to enroll in this course. To enroll, you must have the written permission of the course instructor.

Oct. 23 **The Social Shaping of Technology 1**

Required Reading: MacKenzie, D. and Wajcman J. (1998, 2nd ed.).Introductory Essay. In MacKenzie, D. and Wajcman J. (eds.) The Social Shaping of Technology (pp. 3-27). Milton Keynes: Open University Press.

MacKenzie, D. and Wajcman J. (1998). Technological Determinism and Reproduction. In MacKenzie, D. and Wajcman J., 2nd edition (Eds.) The Social Shaping of Technology. (pp. 269-280). Milton Keynes: Open University Press**.**

Kleinman, Daniel Lee. (2005). Rethinking Information Technology: Caught in the World Wide Web. In Science and Technology in Society. Malden Maine: Blackwell Publishing, chapter 3.

Oct. 30 **The Social Shaping of Technology 2: The Case of the Cell Phone**

Audio discussion: **CBC *The Current*, June 19, 2008 http://www.cbc.ca/thecurrent/2008/200806/20080619.html:**

Required readings are on the next page

Oct. 30 continued

Required Reading Humphreys, Lee. (2005) Cellphones in public: social interactions in a wireless era. *New Media & Society 7*, 6, 810–833

Geser, Hans. (Spring 2006) Is the Cell Phone Undermining the Social Order?: Understanding Mobile Technology from a Sociological Perspective. *Knowledge, Technology, & Policy 19*,1, 8-18.

Nov. 6 **The Seamless Web of Technology and Society**

Required Reading: Bijker, Wiebe and Law, John. (1992) What Catastrophe Tells Us About Technology and Society. In Bijker, Wiebe and Law, John (eds) Shaping Technology/Building Society. (pp. 1-15) Cambridge, Mass.: MIT Press.

Berg, Anne-Jorunn. (1998). A gendered socio-technical construction: The Smart House. In MacKenzie, D. and Wajcman J. Second Edition, (Eds), The Social Shaping of Technology. (pp. 301-313). Milton Keynes: Open University Press.)

Lowry, Deborah Wilson. (2004). Understanding Reproductive Technologies As A Surveillant Assemblage: Revisions Of Power And Technoscience. *Sociological Perspectives*, 47, 4, 357–370.

Nov. 13 **The Seamless Web 2: Technology-as-mega-project-First Half**

Required Reading Vaughan, Diane (1999, December). The Role of the Organization in the Production of Techno-Scientific Knowledge. *Social Studies of Science*, Vol. 29, pp. 913-943.

Koss, Matthew B. (2003, June 29th). How Science Brought Down the Shuttle. *New York Times*, Op-Ed.

Wald, Matthew and Broad, William (2003, Feb. 23rd) Shuttle Engineers Debated Chances of Grave Damage. *New York Times*, A1 and A20.

(2003, Feb. 23rd) Excerpts from NASA E-mail Messages About Space Shuttle Before Crash. *New York Times*, A20.

Project/Portfolio Discussions – Second half

Nov. 20 **The Seamless Web 3: The automobile as a socio-technical construction**

Required Reading: Kline, Ronald and Trevor Pinch. (1996). Users as Agents of Technological Change: The Social Construction of the Automobile in the United States. *Technology and Culture 37*, 763-795.

Gjøen, Heidi and Michael Hård. (2003). Cultural Politics in Action: Developing User Scripts in Relation to the Electric Vehicle. *Science, Technology and Human Values*, 2*7,* 262-281.

Nov. 27 **Critiques of the Social Construction of Technology Perspectives**

FILM: "Taken for a Ride"

Required Reading: Winner, Langdon. (1993). Social Constructivism: Opening the Black Box and Finding it Empty. *Science and Culture*, 427-431.

(SIGN UP FOR SECOND TERM COMMENTARIES which begin on January 15 th)

Happy Holidays!

Second Term

Jan 8 **Project/Portfolio Discussions First Half**

Science and Objectivitiy/Subjectivity Second half

Required Reading: Ihde, D. (2002) How could we ever believe science is not political? *Technology in Society 24*, 179-189.

Jan 15 **The Science and Gender Controversy**

Required Reading: Haraway, Donna (1988) Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspectives. Reprinted in Keller, Evelyn and Longino, Helen (1996) Feminism and Science (pp. 249-263). New York: Oxford University Press.

Hrdy, Sarah. (1988) Empathy, Polyandry and the Myth of the Coy Female. In Bieler, R. (ed) Feminist Approaches to Science (pp. 119-146). New York: Pergamon Press.

Kleinman, Daniel Lee. (2005). Gender and the Ideology of Merit: Women, Men, Science and Engineering. In Science and Technology in Society. Malden Maine: Blackwell Publishing, chapter 6.

Jan. 22 **The Science and AIDS Controversy First half:**

Required Reading: Fujimura, J. and Chou, D. (1994). Dissent in Science: Styles of Scientific Practice and the Controversy Over the Cause of Aids. *Social Science of Medicine,* Vol. 38, 1017-1036.

Project/Portfolio Discussions Second Half

Jan. 29 **The Science and Pharmaceutical Industry Controversy**

Required Reading:Farber. Celia (March 2006). Out Of Control Aids And The Corruption Of Medical Science. *Harper's, Magazine*, 37-52.

(May 2006) Letters on Farber's "Out of Control". *Harper's, Magazine*, 1-13.

Busfield, Joan. (2006). Pills, Power, People: Sociological: Understandings of the Pharmaceutical Industry. *Sociology 40* , 2, 297–314

Feb. 5 The Science in Agriculture Controversy 1

Required Reading: Kleinman, Daniel Lee. (2005). Ceding Debate: Biotechnology and Agriculture. In Science and Technology in Society. Malden Maine: Blackwell Publishing, chapter 2.

Bouis, Howarth E. (2007) The potential of genetically modified food crops to improve human nutrition in developing countries. *Journal ofDevelopment Studies, 43*, 1, 79-96.

Toler, Deborah (2001) Biotechnology Not The Solution. *Toronto Star*

Feb. 6th is the last day to withdraw from a course without an academic penalty.

Feb. 12 The Science in Agriculture Controversy 2

AUDIO DOC: "DIET FOR A HUNGRY PLANET–FRANKENFOODS"

Required Reading: Kleinman, Daniel L. and Kloppenburg Jr., Jack (1991) Aiming for the Discursive High Ground: Monsanto and the Biotechnology Controversy. *Sociological Forum*, Vol. 6, No. 3, pp 427-447.

Feb 19 READING WEEK

Feb 26th Research/Writing Project and Portfolio Discussions

Mar. 5 The Science and Democracy Controversy

Required Reading: Kleinman, Daniel Lee. (2005). Democracy and expertise: Citizenship in a High Tech Age. In Science and Technology in Society. Malden Maine: Blackwell Publishing, chapter 7.

Levitt, N. and Gross, P. (Oct. 1994) The Perils of Democratizing Science. *The Chronicle of Higher Education*, B1 and B2.

Epstein, Steven. (1999) Democratic Science? AIDS activism and the contested construction of knowledge. *Socialist Review 21*, 2, 35-64.

MAJOR PROJECT ESSAYS DUE

Mar. 12 **Sociological Interventions in Science and Technology**

Required Reading: Martin, Brian. (1996, May). Sticking a Needle into Science: The Case of Polio Vaccines and the Origins of AIDS. *Social Studies of Science, 26,* 2, Special Issue on 'The Politics of SSK: Neutrality, Commitment and Beyond', 245-283.

Kamminga, Harmke. (1995). Interpreting the World, Changing the World, and Living in the World: Is a "Science for the People Possible? In Wakeford, Tom and Walters, Martin (eds) Science for the Earth? Can Science Make the World a Better Place? (pp. 321-346). Chichester, New York, Brisbane, Toronto: John Wiley and Sons.

Mar. 19 **Portfolio Meetings**

Mar. 26 **Portfolio Meetings**

April 2 **Portfolio Meetings**

LAST DAY TO SUBMIT ALL FINAL DRAFTS OF COURSE WORK

READING MATERIALS

The reading materials for the course include:

(a) A xeroxed reading kit obtainable from the York Bookstore. BE SURE TO GET THE KIT FOR SOCI 4930 **SECTION "A".**

(b) Kleinman, Daniel Lee. (2005). Science and Technology in Society: From Biotechnology to the Internet. Malden Maine: Blackwell Publishing. Available at the York Bookstore.

(c) From time to time, additional readings may be assigned. They will be provided on the course web page.

CONTACTING ME OUTSIDE OF CLASS TIME:

From time to time you will need to contact me to make an appointment, to let me know about when you will be submitting a late assignment, to let me know that you are ill or facing a personal emergenc and can't attend classes etc. Your first recourse should be to phone my office number (in the header on the first page of this outline) and leave a message as necessary. If I do not answer, listen to my phone mail message which will give you information about how to reach me quickly. **DO NOT USE MY yorku.ca e-mail address for any of these purposes.**

EVALUATION

Your Course Portfolio:

The evaluation for this course will be based on the content of your *course portfolio.* If you are familiar with evaluation systems used in fine arts, creative writing or music programmes, the approach being used in this course is similar.

The advantages of this portfolio system are several. For one thing, it allows you to improve your grade by revising assignments after you get them back based on comments you have received from me. It also allows you to build on work you have already submitted and to include things for the evaluation of your portfolio in addition to your specific assignments. Finally, it works as a kind of personal journal of the course. Not all students in a course are interested in the same things or in everything that the course covers. The portfolio allows you to focus on the course issues and topics which most interest you and to be credited in your grade for the way you develop them in your portfolio collection. (Continued on the next page)

Here is how it works:

As the course proceeds, your portfolio will accumulate a variety of materials: notes on class discussions; newspaper clipppings, video clips, magazine and journal articles which you collect on the course issues and themes in which you are most interested. Attached to each of these items should be a brief annotation which states why you have included the item and to what aspects of the course it applies.

Your portfolio should also include your specific assignments (see below), including the copies I originally graded and copies of any re-submissions. Since your final course project paper is due very close to the portfolio meetings, I will re-evaluation UNLESS YOU HAVE SUBMITTED IT TO ME BY ITS DEADLINE OR EARLIER.

During the final three weeks of the course, you will meet with me to discuss your portfolio and use it to show me how your thinking about science and technology developed through being in the course. Among other things, you may take me through the course ideas and topics, pointing out the ones which most interested you; you may draw my attention to improvements you made in a specific assignment; you may point to your notes on class sessions and course materials; you may review the items you have added and you may present anything else that will demonstrate how you have been engaged in the course over the year.

I will assign 25% of your final grade to your portfolio, based on our meeting and the materials included in it.

(Evaluation is continued on the next page)

A. Specific Assignments: **60% of grade as follows**

1. A bibliographic/debate analysis project, DUE OCTOBER 2ndth – **10%**

   See Handout #3 for a detailed description of what is expected.

2. Two Commentaries (one each term) on Course Readings: Presented in class and due in written form one week after you present them in class. See Handouts #4 and #5 — **10% each**

3. A research/writing project due NO LATER THAN MARCH 6th: — **30%**

   See Handouts #7 and #8 for a detailed description of the paper requirement and project ideas.

   NOTE: A detailed paper proposal, including bibliography, must be submitted in writing by no later than Jan. 15th. See Handout # 6 for proposal content.

B. The Portfolio: **25% of grade** DUE AT YOUR PORTFOLIO MEETING (Mar 19, 26th or April 2nd). ADDITIONAL MATERIALS MAY BE ADDED UNTIL APRIL 2nd)

Evaluation is based on how your course portfolio demonstrates development in your thinking about science and technology and your writing throughout the course (e.g., the overall improvement in the intellectual and writing quality of your assignments, the submission of additional materials such as course reading notes, extended notes and additional research on the topics of your bibliography assignment and commentaries, photographic displays or video clips (can be electronic), with your commentary, illustrating course ideas etc. etc. etc.):

C. Seminar attendance and participation: **15% of grade (7.5 for attendance and 7.5 for participation)**

COURSE POLICIES YOU NEED TO NOTE

Missing Due Dates for Assignments:

I provide some leeway for you to fit assignments into your own schedule. However, you MUST let me know if you are missing a due date and when you expect to have the assignment in to me. Failing to do this will result in grade deductions for the assignment in question. As well, all assignments must be handed in by the end of the term in which they are assigned with the exception of written commentaries on presentations that are made in the last week of the first term. These written commentaries will be due on January 15th, 2008. Please also note that you have to complete 80% or more of the course assignments in order to receive a passing grade in the course.

Academic Dishonesty:

Please read carefully the York University Policy on academic dishonesty which is attached to this outline**.** If I suspect or discover an instance of academic dishonesty, I follow the formal procedures outlined in this policy.

Prolonged illness/personal crisis:

If you become ill for an extended period or experience a personal crisis that seriously impedes your ability to maintain pace with the course, you (or someone who can speak on your behalf) MUST discuss your situation with me as soon as possible. I will be willing to making special arrangements for you to complete assignments AS LONG AS you have attended at least two thirds of the classes. If you miss, or anticipate missing, more than a third of the classes, I will advise you to withdraw, since the instruction that you need in order to meet the course requirements satisfactorily takes place in class sessions.

That's all for now!

WELCOME TO THE COURSE