

Science and Technology Studies 201
Community and Environmental Sociology 245
Sociology 245
Where Science Meets Society/ Technology and Society

Spring 2010

Tuesdays and Thursdays, 9:30-10:45 a.m., 10 Agriculture Hall (3 credits)

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Course Description

This course explores the relationship between science, technology, and society. It is premised on the idea that science and technology affect our social, cultural, economic, and political lives, and equally scientific research and technology development are shaped by their social, cultural, economic, and political context. We will approach the ways in which science and technology “meet society” through a series of case studies that range from refrigerators to climate change.

The course has three goals:

1. Challenge students to reflect on their own assumptions about the relationships among knowledge, science, technology, society, and politics.
2. Engage students in analyses of major contemporary controversies, enabling each student to acquire in-depth knowledge of one issue of her/his choosing.
3. Improve students’ skills in writing and public speaking.

Requirements and Evaluation

- 1. Class participation and attendance (20%).** Most of the in-class learning that goes on will be through group discussion. You must show up prepared for class, engage in discussion, ask questions, dare to be wrong, listen to your fellow students, and share your ideas respectfully. The time each week in discussion represents the only meaningful difference between taking the course and simply using the syllabus as a private reading list. Preparation for class (reading, thinking, and writing) is essential to each participant’s intellectual development, as well as to the experience of the group.

Since this is a discussion-oriented class, you are expected to contribute to the class discussions. Lack of class participation could hurt your final grade. If you are a passive learner and never or almost never raise your hand in class to ask or answer questions or contribute thoughtful comments, your participation grade in this course will not be higher

than BC. If you have hard time answering questions in class on the ad hoc basis, come to class with well thought out questions about the material.

I will grade your participation each class according to the following scale:

0 - no attendance; 1 - disruptive/disrespectful to other's opinions; 2 - distracting/off topic during class; 3 - minimal or no participation; 4 - moderate participation, answers when called on; 5 - well prepared, respectful of alternative points of view, contributes to the discussion in insightful ways.

Although frequent comments are appreciated, **please remember that it is also the quality of your participation and not only the quantity that matters.** Other factors that are taken into account when determining participation include small group work in class, attendance, general attitude towards the course and the reading material. .

2. **Attendance** is imperative. You are entitled to four absences throughout the semester. Each absence beyond the limit of four will result in lowering your course grade by one half grade: i.e., 5 absences turns an A into an AB; 6 absences turns an A into a B. Since I do not distinguish between "excused" and "unexcused" absences, I suggest you keep your four absences on hold for illness or other unanticipated events that might interfere with your attendance.
3. **What is technology? What is science?** (5%) Write two paragraphs in which you answer one of these questions. Following these paragraphs, provide a list of factors that you believe shape the development of technology or developments in science. For each factor on your list, you should write a sentence or two describing the factor's role in the development of technology or science. Due in class on January 21st.
4. **Five reading reactions** (25%). These brief papers should illustrate your understanding and active engagement with the reading under consideration. Reading reactions must be emailed to me (dlkleinman@wisc.edu) by 5 p.m. the day before class meets to discuss the reading to which the reaction refers. With one exception (Goodman's *Intuition*—see below), you may write these papers on any readings you wish; however, you may not write more than one paper for any given class session. Additionally, I would encourage you to space your writing of these short papers throughout the semester. To give you the opportunity to fully understand what I seek in these response papers, you may revise your first submission in light of my assessment.

You must write one of your reaction papers on Allegra Goodman's *Intuition*. This is a novel, and you will need to read more than we will for a typical class in preparation for each of the two classes in which we discuss this. To facilitate your reading, our discussion on this book will occur the week after spring break. Thus, you can (and should) read the entire book over spring break. You must write a reaction paper for one of the two classes where we discuss the book. You should make brief notes as you reading to facilitate your interventions in our discussions.

Please note, you may not write a reaction paper in response to the visit of one of our guest presenters, and you may not write a reaction paper in response to the film we will see.

Your reaction papers should be no more than two double-spaced page and include four sections (clearly labeled):

- a. *Argument*: briefly describe the central argument made in the reading.
- b. *Evidence*: describe and evaluate the kind of evidence used by the author(s) to support the argument.
- c. *Connection*: connect this reading to other readings or ideas from class.
- d. *Evaluation*: a paragraph that express your opinion about the reading. This evaluation must be substantive. That is, you cannot, for example, simply indicate you like the writing style, the topic or the position taken by the author. You must speak to what you find compelling or inadequate in the reading.

Late submissions will not be accepted.

5. **Group presentation and facilitation (25%)**. The last three weeks of the course will involve groups of students presenting their research on topics of their choice and taking responsibility for facilitating class discussion. In Week 2, each student will sign up for a topic. In Week 3, students will meet in groups (assigned by topic) to discuss strategies for research and presentation. During Weeks 14-16, each group will be responsible for one class period. The following expectations apply:
 - a. **Opening activity (5-10 min)**: Design a brief and engaging activity for the class as an introduction to your topic. Possibilities include: distributing a quiz (ungraded) on any reading(s) you assign, showing a video clip, pairing students for a quick discussion or mini-interview, or asking small groups to draw conceptual maps that relate to the topic.
 - b. **Group presentation (25-35 min)**: Provide an overview of the topic that goes well beyond the reading(s) included in the syllabus. Include information on the history of the controversy, policy successes and failures, economic and political implications, and social and ethical considerations. Connect your analysis to ideas from our prior readings and class discussions. Handouts, visuals, and other creative ideas are welcome.
 - c. **Facilitated discussion (25-35 min)**: This could include breaking up into smaller groups, generating a list of questions to pose to the class as a whole, or answering questions sparked by the group presentation.
 - d. **Class feedback (10 min)**: At the end of the hour, the class will have an opportunity to offer specific, respectful, and constructive feedback to the presenters/facilitators. I will facilitate this process and will take this feedback into account in assigning the group a grade.
 - e. Each member of the group must have some responsibility for speaking and/or facilitating discussion.

- f. The group must present me with a presentation outline and plan for discussion at least one week in advance. Either email correspondence or a face-to-face meeting is fine.
- 6. Take-Home Final Exam (25%).** By **Friday May 1st**, each of you should submit to me via email one examination question – a question that you feel captures some portion of the course and responses to which will allow me to evaluate what each student learned in the course. I will edit these questions and perhaps add a few of my own. I will then provide to all students the entire list of questions on May 7th. From this total list, I will select a subset of approximately ten questions to appear on the examination, and students will be asked to select four questions to answer. I will distribute the selected questions electronically on May 8th, and your completed examination must be submitted to me electronically no later than 5 PM on May 13th. Each of your four responses must be 500-600 words (about 1½ to 2 double-spaced pages).
- 7. Written Assignment Formatting:** All written assignments should be formatted with 1-inch margins, 12pt font (Times New Roman, if possible), and double-spaced. Citations for readings from the syllabus should simply indicate author, date, and page number if relevant [e.g., (Collins 1995: 102)]. Citations for other readings should follow the same format within the text and also appear in a reference section at the end of the paper.
- 8. Improving Your Writing.** Writing is one of the most important skills with which you will leave the University. You should take your writing seriously and work hard to improve it. The University has a Writing Center where trained graduate students and professionals will work with you on your papers and help you to make them better. I urge you to take advantage of this resource. The Writing Center is at 6171 Helen C. White (263-9305). You are advised to make an appointment in advance of your desire to meet with a member of the Writing Center. This is especially important at the end of the semester.
- 9. Academic Honesty.** You are responsible for understanding the University's standards for academic honesty. These are described on the University's website at <http://students.wisc.edu/saja/misconduct/UWS14.html>.
- 10. Grading.** Sometimes the end of the semester comes and students indicate to me that they are not clear about how each course requirement figures into their final grade and/ or how I grade individual assignments. I believe that the description above is exceedingly clear. Indeed, drawing on what I say above, you should be able to determine your grade at any point during the semester. If there is something you are unsure about, it is your responsibility to talk to me. I am always available.
- 11. Grading Criteria for Written Work** (borrowed and adapted from the syllabi of Professor Aili Mari Tripp):

- a. *Well defined statement of problem.* Does the paper start out with a clear question or a clear statement of the problem to be addressed?
- b. *Originality of Ideas.* As appropriate, do your own views and voice come through clearly.
- c. *Serious Engagement of Alternative Arguments.* As appropriate, do you seriously consider arguments other than those you make?
- d. *Use of Evidence.* Are you clear about what the evidence is in the case you consider? Are you clear about the breadth of applicability of the evidence you cite? In other words, do you understand the extent to which it is appropriate to generalize from the evidence you draw on? Some evidence is better than other evidence. Do you provide an assessment of evidence quality, as appropriate?
- e. *Clarity of Presentation.* Are your ideas clearly expressed? Is your paper focused or does it wander? Can a reader easily identify your main points? Are the ideas presented elaborated sufficiently? Are there sign-posts to guide the reader? Are terms defined?
- f. *Grammar, Spelling, Citations, Format.* Have you footnoted or cited ideas and facts that are not your own? Of course, all quoted material should appear in quotation marks. All pages should be numbered. Your paper should have a title, and your name should appear on the paper. You should have margins of one inch all the way around. Your paper should be double spaced, and your paper should be stapled in the upper left-hand corner. There should be few spelling and/ or grammatical errors, and there should be clear transitions between sentences and paragraphs. Reaction papers should be submitted electronically. I would like to receive paper copies of all other assignments.
- g. *Organization.* Is the paper organized effectively? Is the sequence of points made logical and clear? Does each paragraph have a central idea that a reader can easily identify.

12. Accommodations. If you have a disability that could affect your participation and/or performance in this course, please contact me as soon as possible in order to discuss appropriate and helpful accommodations.

Required Reading

The books from which we will read substantial parts are available for purchase at Rainbow Bookstore Cooperative (426 W. Gilman, 257-6050):

- Allegra Goodman. 2007. *Intuition*. New York: Dial Press.
- Daniel Lee Kleinman, Karen A. Cloud-Hansen, Christina Matt, and Jo Handelsman (eds). 2005. *Controversies in Science and Technology, volume 2: From Climate to Chromosomes*. New Rochelle, NY: Mary Ann Liebert, Inc.
- Michael Pollan. 2008. *In Defense of Food: An Eater's Manifesto*. New York: Penguin Books.

In addition, I will try to have these books and others which you might want to read are on reserve at Helen C. White. Shorter readings will be available via electronic reserves at the UW library website.

Schedule

Week 1 Beginnings

Jan 19: Introduction to the Course

- Introductions by instructor and students.
- Review of syllabus and assignments

Jan 21: What is Science? What is Technology?

- Discuss your answers to the question “What is technology?” or “What is science?”
- Discuss strategies for writing a reading memo

Week 2: Where Science and Technology Meet Society

January 26: A Politics to Technology? (Guest Instructor Dr. Sai Suryanarayanan)

- Winner, Langdon (1986). “Do Artifacts Have Politics?” in *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago, University of Chicago Press): 19-39.
- Cowan, Ruth Schwartz (1985). “The Industrial Revolution in the Home” and “How the Refrigerator Got Its Hum,” in *The Social Shaping of Technology: How the Refrigerator Got Its Hum*. Edited by D. MacKenzie and J. Wajcman (Philadelphia, PA: Open University Press): 181-218.

January 28: A Politics to Science?

- Kinchy, Abby J. and Daniel Lee Kleinman (2005). “Democratizing Science, Debating Values: New Approaches to ‘Politicized’ Science under the Bush Administration.” *Dissent* Summer: 54-62.

Weeks 3 & 4: Gender in Scientific Careers and Scientific Theories

Feb 2:

- Gowaty. “Perception Bias, Social Inclusion, and Sexual Selection: Power Dynamics in Science and Nature.” In Kleinman, et al.
- Roughgarden. “Social Selection versus Sexual Selection: Comparison of Hypotheses.” In Kleinman, et al.

Feb 4:

- Allen. “It’s a Boy! Gender Expectations Intrude on the Study of Sex Determination.” In Kleinman, et al.
- Barres. “The Larry Summers Hypothesis: Innate Inability or Bias?” In Kleinman, et al.

Feb 9:

- Dreger. “Sex Beyond Karyotype.” In Kleinman, et al.
- Matta. “Ambiguous Bodies and Deviant Sexualities: Hermaphrodites, Homosexuality, and Surgery in the United States, 1850-1904.” In Kleinman, et al.

Feb 11: Learning to Use Library Resources and Databases for your Research Assignment

NOTE: Feb 2 CLASS MEETING NOT IN OUR USUAL MEETING PLACE**

- Meeting with Diana Wheeler in Wendt (Engineering) Library Rm. 108, 215 N. Randall Ave

Weeks 5 Engineering Ethics

Feb 16: Guest Lecture by Professor Tim Osswald

- “From Natural Rubber to Synthetic Rubber - The Road from the Amazon to Auschwitz”

Feb 18: Ethics and Engineering Coordinated by Dean Sarah Pfatteicher

- “Ethics and Disorder”

Week 6: Bees and Environmental Justice

Feb 23: Colony Collapse Disorder

- Reading to be provided.

Feb 25: Noxious New York

- Julie Sze. 2007. *Noxious New York: The Racial Politics of Urban Health and Environmental Justice*. Cambridge, MA: MIT Press. Pages 27-48.

Week 7 Climate Change

Mar 2:

- Clark Miller. “The Politics of Climate Change.” In Kleinman, et al.
- Stephen Schneider and Patricia Mastrandrea. “Climate Change: Impacts and Implications for Justice.” In Kleinman, et al.

Mar 4:

- Daniel Sarewitz and Roger Pielke. “The Steps Not Yet Taken.” In Kleinman, et al.
- Jason Delborne’s blog posts at from the Denmark climate talks:
 - <http://thecenter.chemheritage.org/?p=1759>
 - <http://thecenter.chemheritage.org/?p=1763>
- Come to class with one news or opinion article you’ve found on climate change.

Week 8: Food

Mar 9:

- Michael Pollan. 2008. *In Defense of Food*. Pages 17-82.

Mar 11:

- Heather Paxson. 2008. “Post-Pasteurian Cultures: The Micropolitics of Raw Milk Cheese in the United States,” *Cultural Anthropology* 23: 1: 15-47.

Week 9: Stem Cells

Mar 16:

- Carl E. Guldbrandsen and Jill O. Ladwig. “Embryonic Stem Cells and the Future of Medicine.” In Kleinman, et al
- Karen Downs. “Embryological Origins of the Human Individual.” In Kleinman, et al.
- Come to class with an news or opinion article about the change of policy on stem cell research under the Obama administration.

Mar 18:

- Tadenusz Pachokczyk. “The Catholic Church and Stem Cell Research.” In Kleinman, et al.
- Elliot Dorff. “Judaism and Stem Cells.” In Kleinman, et al.
- Abdulaziz Sachedina. “Islamic Perspectives on the Ethics of Stem Cell Research.” In Kleinman, et al.

Week 10 The Politics of Information Technology

Mar 23: *The Basic Contours*

Kriplean and Kleinman. “Our Information Future: From Open Source Software to the Digital Divide.” In Kleinman, et al.

March 25: *The Digital Divide and the Future of Education*

Mark Warschauer. “Whither the Digital Divide.” In Kleinman, et al.

Michael Bugeja. “Lip-Synching at the Lectern: Information Technology and the Interpersonal Divide.” In Kleinman, et al.

Spring Break: March 27-April 4

Week 11: Science and Fiction

Apr 6:

- Allegra Goodman. *Intuition*. Pages 3-228

Apr 8:

- Allegra Goodman. *Intuition*. Pages 228-385.

Week 12: Science and Film

Apr 13: “Gattica”

Apr 15: “Gattica”

Week 13 – Group Presentations

April 20 Group #1 Presentation

April 22 Group #2 Presentation

Week 14 – Group Presentations

April 27 Group #3 Presentation

April 29 Group #4 Presentation

Week 15 – Group Presentations

May 4 Group #5 Presentation

May 6 Group #6 Presentation

Group Presentations - Possible Topics

Each student will sign up for one of the following topics, as explained in the description of assignments. The listed readings below constitute “entry points,” designed to jump-start each group’s research and also to potentially provide a common reference point for the whole class during discussion. A schedule for the following topics will be generated by Week 4 of the course, as we will only use 6 of the listed topics. Please note that if a group chooses to approach the issue from a different angle than suggested by the “entry point” reading, you may propose a substitute reading that would better orient the class to the aspect of controversy you wish to address. Such changes must be approved by me no later than April 9 in order to make appropriate readings available to the class.

Military Technology

Rappert, Brian, Balmer, Brian and Stone, John (2008). “Science, Technology and the Military: Priorities, Preoccupations, and Possibilities” in *The Handbook of Science and Technology*

Studies Edited by E. J. Hackett, O. Amsterdamska, M. Lynch and J. Wajcman (Cambridge, MA and London, UK, The MIT Press): 719-739.

MacKenzie, Donald M. (1987). "Missile Accuracy: A Case Study in the Social Processes of Technological Change" in *The Social Construction of Technological Systems*, edited by W. Bijker, T. Hughes, and T. Pinch (Cambridge, MA: MIT Press): 195-222.

Collins, Harry and Trevor Pinch (2002). "A Clean Kill?: The Role of Patriot in the Gulf War," in *The Golem at Large: What You Should Know about Technology* (Cambridge: Cambridge University Press): 7-29.

Conflicts of Interest in Science

Krimsky, Sheldon (2003). Chapter 2, "Tales of the Unholy Alliance," Chapter 8, "Conflicts of Interest in Science," and Chapter 9, "A Question of Bias." *Science in the Private Interest* (Rowman & Littlefield Publishers, Inc.)

The Commercialization of the University

Eyal Press and Jenifer Washburn. 2000. "The Kept University," *The Atlantic March*.

Information Technology & Democracy

A. Michael Froomkin. 2004. "Technologies for Democracy." Pages 21-34 in Peter Shane (ed.). *Democracy Online: The Prospects for Political Renewal Through the Internet*. Routledge.

Jason Delborne, Ashley Anderson, Daniel Lee Kleinman, Mathilde Colin, and Maria Powell. Forthcoming. "Virtual Deliberation? Prospects and Challenges for Integrating the Internet into Consensus Conferences." *Public Understanding of Science*.

Barry N. Hague and Brian D. Loader (eds.). 1999. *Digital Democracy: Discourse and Decision Making in the Information Age*. Routledge.

Cass R. Sunstein. 2007. *Republic.com 2.0*. Princeton University Press.

Science, Technology and Democracy

Daniel Lee Kleinman (ed.). 2000. *Science, Technology, and Democracy*. Albany, NY: SUNY Press.

Maria Powell and Daniel Lee Kleinman. 2007. "Building Citizen Capacities for Participation in Technoscientific Decisionmaking: The Democratic Virtues of the Consensus Conference Model." *Public Understanding of Science*.*

Kleinman, Daniel Lee, Jason Delborne, Ashley Anderson. Forthcoming. "Engaging Citizens: The High Cost of Citizen Engagement in High Technology." *Public Understanding of Science*.*

Race and Biomedicine

Ossorio, Pilar and Troy Duster (2005). "Race and Genetics: Controversies in Biomedical, Behavioral, and Forensic Sciences." *American Psychologist* 60(1):115-28.

Livingstone, Frank B. (1993). "On the Non-Existence of Human Races" In *The Racial Economy of Science: Toward a Democratic Future*. Edited by S. Harding: 133-141.

Epstein, Steven (2007). *Inclusion: The Politics of Difference in Medical Research*. Chicago: University of Chicago Press.

Music Sharing and Information Ownership

Vaidyanathan, Siva. 2001. *Copyrights and Copywrongs: The Rise of Intellectual Property and How it Threatens Creativity*. New York: NYU Press.

McCourt, Tom and Patrick Burkhardt. 2003. "When Creators, Corporations, and Consumers Collide: Napster and the Development of On-line Music Distribution," *Media, Culture and Society* 25: 333-50.

Nanotechnology

Barben, Daniel, Fisher, Erik, Selin, Cynthia and Guston, David H. (2008) "Anticipatory Governance of Nanotechnology: Foresight, Engagement, and Integration" in *The Handbook of Science and Technology Studies* Edited by E. J. Hackett, O. Amsterdamska, M. Lynch and J. Wajcman (Cambridge, MA and London, UK, The MIT Press): 979-1000.

ETC Group (2006). "EPA's Nanotech Regs: Ironic Parameters." News Release. 18 October. Available at <http://www.etcgroup.org/en/issues/nanotechnology.html>.

Langdon Winner (2003). "The Societal Implications of Nanotechnology." Testimony before the Committee on Science of the US House of Representatives, 9 April.

Baum, Rudy (2003) "POINT-COUNTERPOINT. Nanotechnology: Drexler and Smalley make the case for and against 'molecular assemblers.'" *Chemical and Engineering News* 81 (48): 37-42. Available at <http://pubs.acs.org/cen/coverstory/8148/8148counterpoint.html>.

Gene Flow in Agriculture

Snow, Allison A. (2005). "Genetic Modification and Gene Flow: An Overview," in Daniel Lee Kleinman, Abby J. Kinchy, and Jo Handelsman (eds.). *Controversies in Science and Technology, volume 1: From Maize to Menopause*. University of Wisconsin Press.

Gepts, Paul (2005). "Introduction of Transgenic Crops in Centers of Origin and Domestication," in Daniel Lee Kleinman, Abby J. Kinchy (eds.). *Controversies in Science and Technology, volume 1: From Maize to Menopause*. University of Wisconsin Press.

Agricultural Biotechnology

Daniel Lee Kleinman. 2005. *Science and Technology in Society: From Biotechnology to the Internet*. Blackwell. Chapter 2. "Ceding Debate: Biotechnology and Agriculture."

Genetic Testing and Research

Winickoff, David E. and Richard N. Winickoff (2003). "The Charitable Trust Model as a Model for Genomic Biobanks." *The New England Journal of Medicine* 349(12): 1180-4.

Genetic "Enhancement" of Human Beings

Hayes, Richard (2007). "Our Biopolitical Future: Four Scenarios." *World Watch* 20 (2). Available at http://geneticsandsociety.org/downloads/200703_worldwatch_hayes.pdf .

Art, Science, and Politics

Critical Art Ensemble "Flesh Machine" <http://www.critical-art.net/biotech/biocom/index.html>

McKenzie, Jon and Schneider, Rebecca (2004) "Keep Your EYES on the FRONT and WATCH YOUR BACK" *The Drama Review* 48(4): 5-10.

Pentecost, Claire (2008) "Outfitting the Laboratory of the Symbolic Toward a Critical Inventory of BioArt" in *Tactical Biopolitics: Art, Activism and Technoscience* Edited by B. da Costa and K. Philip (Cambridge, MA, MIT Press): 107-130.

Bioterrorism

Stone, et al. "The Model State Emergency Health Powers Act: A Tool for Public Health Preparedness" in Daniel Lee Kleinman, Abby J. Kinchy, and Jo Handelsman. 2005. *Controversies in Science and Technology, Volume 1: From Maize to Menopause*. University of Wisconsin Press.

Rosner and Markowitz. "The States and the War against Bioterrorism: Reactions to the Federal Smallpox Campaign and the Model State Emergency Health Powers Act" in Daniel Lee Kleinman, Abby J. Kinchy, and Jo Handelsman. 2005. *Controversies in Science and Technology, Volume 1: From Maize to Menopause*. University of Wisconsin Press.