

CULTURES OF SCIENCE AND TECHNOLOGY

ANT 245

Princeton University
Department of Anthropology

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Office hours: Tu 4 - 5 pm; Th 11:00 am - noon

Spring 2002
Tu/Th 2:30-3:20 pm
ARCH Bldg. N 101

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Course Description:

Science and technology are at the center of the economic, political, and socio-cultural changes that are reshaping our global and local worlds. This course explores 1) how cultural values, social norms and economic and political interests mediate the production of scientific facts and the deployment of new technologies; 2) how technoscientific developments inform institutional structures, strategies of governance, practices of citizenship, and individual identity-making; 3) the extent to which these processes engender transformations in our concepts of nature, life, death, health, humanness and ethics. We will combine methods and perspectives from social and cultural anthropology, and the social studies of science and technology, and will draw from historical cases studies, contemporary ethnographies of different technoscientific fields and societies, scientific and medical journals, documentary films and media reports.

Requirements:

The success of the course depends on your commitment to complete all required readings for each class meeting and to participate actively in the discussions.

Grading will be based on:

1. Attendance and participation in class discussions and precepts (10%)
2. A weekly précis with questions and comments that arise during the reading of the materials for that week (no more than one page -- 15%)
3. A short paper: an analysis of an interview you conducted with a scientist. The assignment is due no later than March 16 (30%)
4. A final research paper addressing the development, marketing, and social life of a new technology. An outline is due no later than April 4, and the final paper is due no later than May 14 (30 %).
5. A final take-home exam (to be scheduled -- 15%)

The following books will be available for purchase at the U-Store, and will be on reserve at Firestone Library:

Watson, James. 1969. *The Double Helix: A Personal Account of the Discovery of the Structure of DNA*. London: Mentor.

Lewontin, Richard. 1992. *Biology as Ideology: The Doctrine of DNA*. New York: Harper Perennial.

Ludwik, Fleck. 1979. *Genesis and Development of a Scientific Fact*. Chicago: The University of Chicago Press.

Shapin, Steven and Simon Schaffer. 1985. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press.

Mario Biagioli (ed.). 1999. *The Science Studies Reader*. New York: Routledge.

Karin Knorr-Cetina. 1999. *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge: Harvard University Press.

Proctor, Robert. 1988. *Racial Hygiene: Medicine under the Nazis*. Cambridge: Harvard University Press.

Scott, James. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press.

Rabinow, Paul. 1996. *Making PCR: A Story of Biotechnology*. Chicago: The University of Chicago Press.

Rapp, Rayna. 1999. *Testing Women, Testing the Fetus: The Social Impact of Amniocentesis in America*. New York: Routledge.

Silver, Lee M. 1998. *Remaking Eden: How Genetic Engineering and Cloning Will Transform the American Family*. New York: Bard.

Turkle, Sherry. 1997. *Life on the Screen: Identity in the Age of the Internet*. New York: Simon and Schuster.

Miller, Judith et al. 2001. *Germs: Biological Weapons and America's Secret War*. New York: Simon & Schuster.

Der Derian, James. 2001. *Virtuous War: Mapping the Military-Industrial-Media-Entertainment Network*. Boulder: Westview Press.

Kleinman, Arthur (ed.). 1999. "Bioethics and Beyond." *Daedalus* 128 (4).

"What is the meaning of science as a vocation, now after these former illusions, the 'way to true being,' the 'way to true art,' the 'way to true nature,' the 'way to true God,' the 'way to true happiness,' have been dispelled? Tolstoi has given the simplest answer, with the words: 'Science is meaningless because it gives no answer to the only question important for us: "What shall we do and how shall

we live?" That science does not give an answer to this is indisputable. The only question that remains is the sense in which science gives 'no' answer, and whether or not science might yet be of some use to the one who puts the question correctly."

Max Weber 1946: 143

Week One

Introduction:

The Anthropology of Science and Technology

Watson, James. 1969. *The Double Helix: A Personal Account of the discovery of the Structure of DNA*. London: Mentor.

Franklin, Sarah. 1995. "Science as Culture, Cultures of Science." *Annual Review of Anthropology*, 24:163-184. (E-Reserve)

Film: *Beyond Human* and *Gene Hunters*

Week Two

Science as a Vocation and Technical Life

Lewontin, Richard. 1992. *Biology as Ideology: The Doctrine of DNA*. New York: Harper Perennial.

Weber, Max. 1946. "Science as a Vocation." Gerth and Mills (eds.). *From Max Weber: Essays in Sociology*. New York: Oxford University Press, pp.129-156. (E-Reserve)

Dewey, John. 1999. "Individuality in Our Day." *Individualism Old and New*. Amherst, NY: Prometheus Books, pp.71-83. (E-Reserve)

Good, Mary-Jo Del-Vecchio. "The Biotechnical Embrace." *Culture, Medicine and Psychiatry* 25:395-410, 2001. (E-Reserve)

Film: *Optimum: The Crusade for Efficiency*

Suggested Reading:

Freud, Sigmund and Albert Einstein. "Why War?" [correspondence 1932/1933]. In *The Standard Edition of the Complete Psychological Works of Sigmund Freud*, vol. 22. London: The Hogarth Press. (E-Reserve)

Week Three
Genesis and Development of Scientific Facts

Fleck, Ludwik. 1979. *Genesis and Development of a Scientific Fact*. Chicago: The University of Chicago Press. (Selections)

Foucault, Michel. 1997. "What is Critique?" *The Politics of Truth*. New York: Semiotext(e), pp. 23-61.

Shapin, Steven and Schaffer, Simon. 1985. *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life*. Princeton: Princeton University Press. (Selections)

Haraway, Donna. "Modest Witness: Feminist Diffractions in Science Studies." Peter Galison and David J. Stump (eds.). *The Disunity of Science: Boundaries, Contexts, and Power*. Stanford: Stanford University Press, 1996, pp. 428-441.

Film: *Island of Flowers*

Suggested Readings:

Kuhn, Thomas. 1996. *The Structure of Scientific Revolutions*. Chicago: The University of Chicago Press, pp. 1-9, 174-210.

Bourdieu, Pierre. "The Specificity of the Scientific Field and the Social Conditions of the Progress of Reason." Mario Biagioli (ed.). *The Science Studies Reader*. New York: Routledge, pp. 31-50.

Week Four
Laboratory Life

Latour, Bruno. 1990. "Drawing Things Together." Michael Lynch and Steve Woolgar (eds.). *Representation in Scientific Practice*. Cambridge: The MIT Press, pp.19-68.

Latour, Bruno. 1999. "Give me a laboratory and I will raise the world." Mario Biagioli (ed.). *The Science Studies Reader*. New York: Routledge, pp.258-275.

Knorr Cetina, Karin. 1999. *Epistemic Cultures: How the Sciences Make Knowledge*. Cambridge: Harvard University Press. (Selections)

Traweek, Sharon. "Pilgrim's Progress: Male Tales Told during a Life in Physics." Mario Biagioli (ed.). *The Science Studies Reader*. New York: Routledge, pp. 525-542.

Film: *I am Become Death: They Made the Bomb*

Suggested Reading:

Latour, Bruno. "Circulating Reference: Sampling Soil in the Amazon Forest." *Pandora's Hope: Essays on the Reality of Science Studies*. Cambridge: Harvard University Press, 1999, pp. 24-79.

Week Five
Politics of Science

Hacking, Ian. 1991. "How Should We do the History of Statistics?" Graham Burchell, Colin Gordon, and Peter Miller (eds.). *The Foucault Effect: Studies in Governmentality*. Chicago: The Chicago University Press, pp.181-195.

Daston, Lorraine and Galison, Peter. 1992. "The Image of Objectivity." *Representations* 40:81-128.

Proctor, Robert. *Racial Hygiene: Medicine under the Nazis*. Cambridge: Harvard University Press, 1988. (Selections)

Hacking, Ian. 1999. "Making Up People." Mario Biagioli (ed.). *The Science Studies Reader*. New York: Routledge, pp. 161-171.

Landecker, Hannah. 2001. "Immortality, In Vitro. A History of the HeLa Cell Line. Paul Brodwin (ed.). *Biotechnology and Culture: Bodies, Anxieties, Ethics*. Bloomington and Indianapolis: Indiana University Press, pp.53-72.

Kohler, Robert. "Moral Economy, Material Culture, and Community in Drosophila Genetics." Mario Biagioli (ed.). *Science Studies Reader*. New York: Routledge, pp.243-257.

Films: *Death by Design* and *Deadly Deception*

Suggested Readings:

Fox Keller, Evelyn. 1992. *Secrets of Life, Secrets of Death: Essays on Language, Gender and Science*. New York and London: Routledge, pp. 39-55.

Gusterson, Hugh. 1996. "Bodies and Machines." *Nuclear Rites: A Weapons Laboratory at the End of the Cold War*. Berkeley: University of California Press, pp. 101-130.

Jasanoff, Sheila. 1991. "Acceptable Evidence in a Pluralistic Society." In R. Hollander and D. Mayo (eds.). *Acceptable Evidence: Science and Values in Hazard Management*. New York: Oxford University Press, 1991, pp. 29-47.

Week Six
Biotechnology

Rabinow, Paul. 1996. *Making PCR: A Story of Biotechnology*. Chicago: The University of Chicago Press.

Wright, Susan. 1994. *Molecular politics*. Chicago: University of Chicago Press, pp. 83-103.

Paul Rabinow. 1996. "Artificiality and Enlightenment: From Sociobiology to Biosociality." *Essays on the Anthropology of Reason*. Princeton: Princeton University Press, pp. 91-111.

Rheinberger, Hans-Jörg. "Beyond nature and culture: modes of reasoning in the age of molecular biology and medicine." Margaret Lock, Allan Young, Alberto Cambrosio (eds). *Living and working with the new medical technologies*. Cambridge: Cambridge University Press, pp.19-30.

Film: *Gene Blues: Dilemmas of DNA Testing*

March 14: Guest Speaker -- President Shirley Tilghman, Princeton University

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Week Seven
Technology's Social Life

Marx, Karl. "The Machine Versus the Worker." Donald MacKenzie and Judy Wajcman (eds.). *The Social Shaping of Technology* (Second Edition). Buckingham: Open University Press, 1999.

Heidegger, Martin. "The Question Concerning Technology." *The Question Concerning Technology and Other Essays*. New York: Harper and Row, 1977, pp.3-35.

Benjamin, Walter. "The Work of Art in the Age of Mechanical Reproduction." *Illuminations*. New York: Schocken Books, 1968, pp.217-251.

Haraway, Donna. 1991. "A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century." *Simians, Cyborgs, and Women: The Reinvention of Nature*. New York: Routledge, pp.149-201.

Rapp, Rayna. 1999. *Testing Women, Testing the Fetus: The Social Impact of Amniocentesis in America*. New York: Routledge. (Selections)

Suggested Reading:

Donald MacKenzie and Judy Wajcman. "Introductory Essay: The Social Shaping of Technology." *The Social Shaping of Technology* (Second Edition). Buckingham: Open University Press, 1999, pp.3-27.

Week Eight
Risk Society and Technological Catastrophes

Deleuze, Gilles. 1995. "Postscript on Control Societies." *Negotiations*. New York: Columbia University Press, pp.177-182.

Beck, Ulrich. 1999. *World Risk Society*. London: Polity Press. (Selections)

Petryna, Adriana. 2002. "Science and the Politics of Health in the Chernobyl Aftermath." (Manuscript)

Judith Miller et al. 2001. *Germs: biological weapons and America's secret war*. New York: Simon & Schuster. (Selections)

Films: *Ground Zero America: Chemical and Biological Weapons* and *Dragon Science*

Guest Speaker: Professor Adriana Petryna, New School University

Suggested Reading:

Fortun, Kim. 1998. "Politics, Critique, Disaster: The Bhopal Case." In *Science as Culture* 7 (2).

Week Nine
Technology, Governance, Business

Scott, James. 1998. *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed*. New Haven: Yale University Press. (Selections)

Hacking, Ian. "Weapons Research." *The Social construction of What?* Cambridge: Harvard University Press, 2001, pp.163-185.

Juma, Calestous. 1989. *The Gene Hunters: Biotechnology and the Scramble for Seeds*. Princeton: Princeton University Press. (Selections)

Der Derian, James. *Virtuous War: Mapping the Military-Industrial-Media-Entertainment Network*. Boulder: Westview Press, 2001. (Selections)

Films: *Harvest of Fear* and *Field of Genes: The effects of the biotechnology revolution on farmers and consumers*

Week Ten
Cloning and Remembering the Family

Laqueur, Thomas. "From Generation to Generation: Imagining Connectedness in the Age of Reproductive Technologies." Paul Brodwin (ed.). *Biotechnology and Culture: Bodies, Anxieties, Ethics*. Bloomington and Indianapolis: Indiana University Press, pp. 75-98.

Strathern, Marilyn. 1994. "New Certainties For Old? The Case of an Enabling Technology." Lancaster: Centre for the Study of Cultural Values.

Silver, Lee M. 1998. *Remaking Eden: How Genetic Engineering and Cloning Will Transform the American Family*. New York: Bard. (Selections)

Parens, Eric and Adrienne Asch. "Disability Rights Critique of Prenatal Genetic Testing." *Special Supplement Hasting Center Report* (1999), 29 (5): 1-22.

Wise, Steven M. "The Problem of Being a Thing." *Rattling the Cage: Toward Legal Rights for Animals*. Perseus Books, 2001, pp.1-9.

Film: *Making Babies*

April 18: Guest Speaker -- Professor Lee Silver, Princeton University

Week Eleven Cyberspace

Mohaney, Michael S. 2001. Boy's Toys and Women's Work: Feminism Engages Software." Angela N.H. Creager, Elizabeth Lunbeck, Londa Schiebinger (eds.). *Feminism in Twentieth-Century Science, Technology, and Medicine*. Chicago University Press.

Turkle, Sherry. "What Are We Thinking about When We Are Thinking about Computers?" In Biagioli, Mario (ed.), *op.cit.*, pp.543-552.

Turkle, Sherry. 1997. *Life on the Screen: Identity in the Age of the Internet*. New York: Simon and Schuster. (Selections)

Kolko, Beth, Lisa Nakamura, and Gilbert B. Rodman (eds.). 2000. *Race in Cyberspace*. New York: Routledge. (Selections)

Film: *Nerds 2.0.1.: A Brief History of the Internet* and *Secrets of Silicon Valley*

April 25: Guest Speaker -- Professor Michael S. Mohaney, Princeton University

Week Twelve The Pharmaceutical Future and Bioethics

Fox, Renée C. and Judith P. Swazey. 1992. "Of Wonder Drugs, the Transplant 'Boom,' and Moratoria." *Spare Parts: Organ Replacement in American Society*. New York/Oxford: Oxford University Press, pp.3-30.

Biehl, João. *Pharmaceutical Governance: The Development of the Brazilian AIDS Model*. (Manuscript)

Bach, Fritz. 1999. "Barriers to Xenotransplantation." *Transplantation Proceedings* 31(4): 1819-1820.

Farmer P, Léandre F, Mukherjee J, et al. 2001. "Community-based approaches to HIV treatment in resource-poor settings." *The Lancet*, 358: 404-409.

Kleinman, Arthur (ed.). 1999. "Bioethics and Beyond." *Daedalus* 128 (4). (Selections)

Film: *Organ Farm*

Suggested Readings:

Löwy, Ilana. 2000. "Trustworthy knowledge and desperate patients: clinical tests for new drugs from cancer to AIDS." Margaret Lock, Allan Young, Alberto Cambrosio (eds). *Living and working with the new medical technologies*. Cambridge: Cambridge University Press, pp.49-81.

Truog, Robert D. 1997. "Is it time to abandon brain death?" *Hastings Center Report* 27, no.1, pp.29-37.