Introduction to Science and Technology Studies (STS): Theories, Methods, and Current Debates.

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Course description and objectives: This course offers a survey of the main themes, theories, and approaches developed in the field of Science and Technology Studies (STS). Graduate students will have the opportunity to explore concepts and methods that will enable them to ground their projects in the history of science and technology according to traditional and current theoretical debates in the field. In the last three decades history of science and technology scholars have contributed enormously to the development of STS, and at the same time have adopted concepts and shared perspectives of contiguous disciplines, such as sociology and anthropology of science. The selection of the readings reflects this consolidated and fruitful interdisciplinary approach. In addition to this, in recent years engineering and medical schools, but also physical and biological science departments, have introduced social studies of science in their curricula. This course also welcomes students from other disciplines, including engineering, medicine, and geo-physical sciences, who want to engage critically with problems and questions concerning the social impact and relevance of scientific research and applied science.

The format of the course will be that of a graduate colloquium, which meets for three hours once a week. The main goal is to give students the opportunity to discuss relevant themes in Science and Technology Studies through the reading of classic works in the field and through a selection of current themes/debates, such as climate change, energy politics, and the relative socio-technical controversies.

The evaluation of students' work will be based on weekly response papers, and a final paper of their choice exploring one of the themes discussed during the course. The goal of the short weekly papers is to develop writing abilities and a style that privileges synthesis and straightforwardness in addressing theoretical and methodological questions. This will also contribute to the professionalization of graduate students who will have to submit conference and article proposals. Each weekly paper will be graded. The average of weekly papers' grades will amount to the 70% of the final grade. The remaining 30% will be based on the evaluation of a final paper (of about 20-25 pages). The intent of the final paper is to allow students to expand their knowledge of the literature on a topic of particular interest and relevant to their own research projects. This will be a valuable exercise for both pre-candidates, who can build up a list for their preliminary examination or for more immediate research needs, and for candidates interested in refining their conceptual and methodological toolbox during the writing phase of their dissertations.

Weekly schedule

Week 1: Origins and early debates

Hess, David J. *Science Studies: An Advanced Introduction*, 1-5. NY: New York University Press, 1997.

Sismondo, Sergio. "The Prehistory of Science and Technology Studies," in *An Introduction to Science and Technology Studies.* 1-11. Malden: Blackwell Publishing, 2004.

Hilgartner, Stephen. "Institutionalizing Science and Technology Studies in the Academy." In *Social Studies of Science and Technology: Looking Back Ahead*, edited by B. Joerges and H. Nowotny, 201-210. Dordrecht & Boston: Kluwer, 2003.

Week 2: Epistemology, Sociology of Knowledge, and Technological Society

Merton, Robert K. "The Normative Structure of Science." In *The Sociology of Science: Theoretical and Empirical Investigations*, 267-278. Chicago: University of Chicago Press, 1973.

Popper, Karl. "A Survey of Some Fundamental Problems." In *The Logic of Scientific Discovery*, 3-26. London & New York: Routledge, 1992.

Koyré, Alexandre. "An Experiment in Measurement." *Proceedings of the American Philosophical Society* 97, no. 2 (April 30) (1953): 222-237

William F. Ogburn, *You and Machines* (American Council on Education, 1934)

Ellul, Jacques. *The Technological Society*. New York: Vintage, 1964; 1-14.

Week 3: Sociology of Scientific Knowledge (SSK)

Kuhn, Thomas S. *The Structure of Scientific Revolutions*. Chicago: Chicago University Press, 1962 [Selections].

Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump* (Chicago: University of Chicago Press, 1985), pp. 3-79 and 332-344.

David Bloor, "The Strong Programme in the Sociology of Knowledge," in *Knowledge and Social Imagery*, 2nd ed. (Chicago: University of Chicago Press, 1991) (orig. 1976), pp. 3-23.

Barry Barnes and David Bloor, "Relativism, Rationalism, and the Sociology of Knowledge," in M. Hollis & S. Lukes (eds.), *Rationality and Relativism* (Blackwell, 1982).

Week 4: Social Construction of Technology (SCOT)

Langdon Winner, "Do Artifacts have Politics?" (1980) in *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (Chicago: University of Chicago Press, 1986), pp.19-39.

David Noble, "Social Choice in Machine Design," in MacKenzie and Wajcman, *The Social Shaping of Technology, 2nd edition,* pp. 161-176.

Thomas Hughes, "The Evolution of Large Technical Systems," in Wiebe Bijker, Thomas Hughes, and Trevor Pinch, eds. *The Social Construction of Technological Systems* (Cambridge MA: MIT Press, 1987), pp. 51-82.

Trevor J. Pinch and Wiebe E. Bijker, "The Social Construction of Facts and Artifacts: Or How the Sociology of Science and the Sociology of Technology Might Benefit Each Other." In Bijker et al, pp. 18-50.

Bryan Pfaffenberger, "The Harsh Facts of Hydraulics: Technology and Society in Sri Lanka's Colonization Schemes," *Technology and Culture* (1990): 361-397.

Week 5: Actor Network Theory

Latour, Bruno. *Science in Action: How to Follow Scientists and Engineers through Society.* Cambridge, MA: Harvard University Press, 1987.

Amsterdamska, Olga. "Surely You are Joking, Monsieur Latour!" Science, Technology & Human Values 15, no. 4 (1990): 495-504.

Recommended:

Law, John (1992), "Notes on the Theory of the Actor Network: Ordering, Strategy and Heterogeneity"

Nowotny, Helga (1990), "Actor-networks vs. science as self-organizing system: A comparative view of two constructivist approaches." *Sociology of the Sciences* 14: 223-239.

Week 6: History/Historicity and the Life of Scientific Objects

Latour, Bruno. "On the Partial Existence of Existing and Nonexisting Objects," in Lorraine Daston (Ed.), *Biographies of Scientific Objects*, Chicago: University of Chicago Press, 2000; pp. 247-269.

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

Recommended:
Hacking, Ian. *Historical Ontology*, Cambridge, MA: Harvard University Press, 2002.
Murphy, Michelle. *Sick Building Syndrome and the Problem of Uncertainty*, Durham: Duke University Press, 2006.

Week 7: Truth, Trust, and Objectivity

Porter, Theodore M. *Trust in Numbers: The Pursuit of Objectivity in Science and Public Life* (Princeton: Princeton University Press, 1995): "Introduction," "How Social Numbers are Made Valid," "A World of Artifice," and "Objectivity and the Politics of Disciplines," in *Trust in Numbers*, pp. 3-48, 193-216.

Daston, Lorraine and Peter Galison, "The Image of Objectivity," *Representations* 40 (Special issue: *Seeing Science*, Autumn 1992): 81-128.

Haraway, Donna. "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective." In *Simians, Cyborgs and Women: The Reinvention of Nature,* 183-201. New York: Routledge, 1991.

Recommended:

Shapin, Steven. *A Social History of Truth*

Week 8: Classification, Power, and Social Order

Bowker, Geoffrey C., and Susan Leigh Star. *Sorting Things Out: Classification and its Consequences*. Cambridge, MA: MIT Press, 1999; chapters TBD.

Ian Hacking, "Biopower and the Avalanche of Printed Numbers," *Humanities in Society* 5 (1982): 279-95.

John Carson, "Intelligence and the Politics of Merit Between the Wars," *The Measure of Merit: Talents, Intelligence, and Inequality in the French and American Republics, 1750-1940* (Princeton: Princeton University Press, 2007), pp. 229-70.

Lessig, Lawrence. "four puzzles from cyberspace," "what things regulate," and "privacy." In *Code and Other Laws of Cyberspace*, 9-23, 85-99, 142-163. New York: Basic Books, 2002.

Recommended:
Foucault, Michel. *Discipline and Punish: The Birth of the Prison*. New York: Vintage Books, 1979; [selections].

Week 9: Medicine and the Body

Annemarie Mol, *The Body Multiple: Ontology in Medical Practice* (Durham: Duke University Press, 2003), pp. 1-85.

Alternative: Peter Redfield, *Life in Crisis: The Ethical Journey of Doctors Without Borders*, University of California Press, 2013.

Liz Roberts, "Assisted existence: an ethnography of being in Ecuador," *Journal of the Royal Anthropological Institute* 19 (2013), 562-80.

Charles E. Rosenberg, "The Therapeutic Revolution: Medicine, Meaning, and Social Change in Nineteenth-Century America," in M.J. Vogel and Charles E. Rosenberg, eds., *The Therapeutic Revolution: Essays in the Social History of American Medicine* (Philadelphia: University of Pennsylvania Press, 1979), 3-25.

Recommended for further reading:
Alexandra Stern, *Eugenic Nation: Faults and Frontiers of Better Breeding in Modern America*
Charis Thompson, *Making Parents: The Ontological Choreography of Reproductive Technologies*
Shobita Parthasarathy, *Building Genetic Medicine: Breast Cancer, Technology, and the Comparative Politics of Health Care*
Joel Howell, *Technology in the Hospital: Transforming Patient Care in the Early Twentieth Century*
Charles Rosenberg, *The Cholera Years* OR *The Care of Strangers*
Marc Berg, *Rationalizing Medical Work: Decision-Support Techniques and Medical Practices*
Martin Pernick, *The Black Stork: Eugenics and the Death of "Defective" Babies in American Medicine and Motion Pictures since 1915*
Adele E. Clarke, *Disciplining Reproduction: Modernity, American Life Sciences, and the Problem of Sex*

Week 10: Risk Society (?)

Beck, Ulrich. *Risk Society: Towards a New Modernity,* Translated by Mark Ritter. London & Newbury Park, CA: Sage, 1992. [Selections].

Boudia, Soraya and Nathalie Jas. (2007). "Risk and Risk society in Historical Perspective, *History and Technology* 23 (4): 317-331.
Wynne, Brian. (1996). "May the Sheep Safely Graze? A Reflexive View of the Expert-Lay Knowledge Divide," in Lash, Scott, Bronislaw Szerszynski, and Brian Wynne (Eds.). (1996). *Risk, Environment, and Modernity: Towards a New Ecology*. London: Sage: 44-83.

Week 11: The Politics of Expertise

Gieryn, Thomas. "Boundary-Work and the Demarcation of Science from Non-Science: Strains and Interests in Professional Ideologies of Scientists." *American Sociological Review* 48, no. 6 (1983): 781-95.

Nelkin, Dorothy. "The Political Impact of Technical Expertise." *Social Studies of Science* 5, no. 1 (1975): 35-54.

Wynne, Brian. "Misunderstood Misunderstanding: Social Identities and Public Uptake of Science," *Public Understanding of Science* 1 (1992): 281-304.

Collins, Harry, and Robert Evans. 2002. "The Third Wave of Science Studies: Studies of Expertise and Experience." *Social Studies of Science* 32(2): 235-296.

Wynne, Brian. 2003. "Seasick on the Third Wave? Subverting the Hegemony of Propositionalism. Response to Collins and Evans" *Social Studies of Science* 33 (3): 401-417.

Jasanoff, Sheila. 2003. "(No?) Accounting for Expertise." *Science and Public Policy* 30 (3): 157-162.

Recommended for further reading:

Hilgartner, Stephen. *Science on Stage: Expert Advice as Public Drama*. Stanford: Stanford University Press, 2000.

Week 12: Science, Public Participation, and Sociotechnical Controversies

Suryanarayanan, Sainath and Kevin Kleinman. 2013. "Be(e)coming Experts: The Controversy Over Insecticides in the Honey Bee Colony Collapse Disorder." *Social Studies of Science* 43(2): 215-240.

Epstein, Steven. "The Construction of Lay Expertise: AIDS Activism and the Forging of Credibility in the Reform of Clinical Trials," *Science, Technology & Human Values* 20 (1995): 408-437.

Irwin, Alan. 2015. "Citizen science and scientific citizenship: same words, different meanings?' In Schiele, B., Marec, J.L. and Baranger, P. (eds) *Science Communication Today*. (Presses Universitaires de Nancy, Nancy: 2015) pp. 29-38.

Pestre, Dominique. 2008. Challenges for the Democratic Management of Technoscience: Governance, Participation and the Political Today." *Science as Culture* 17(2): 101-119.

Welsh, Ian and Brian Wynne. 2013. "Science, Scientism and Imaginaries of Publics in the UK: Passive Objects, Incipient Threats." *Science and Culture* 22(4): 540-560

Week 13: The Production of Ignorance

Proctor, Robert. "A Missing Term to Describe the Cultural Production of Ignorance," in Proctor R. N, and L. Schiebinger (Eds.), *Agnotology: The Making and Unmaking of Ignorance*. Stanford: Stanford University Press, 2008; pp. 1-36.

Frickel, Scott. (2014). "Not Here and Everywhere: The non-production of scientific knowledge," in Kleinman, Daniel Lee and Kelly Moore (Eds.). (2014). *Routledge Handbook of Science, Technology, and Society*. London: Routledge: 263-276.

Gross, Matthias and Linsey McGoey. *Routledge International Handbook of Ignorance Studies*. New York: Routledge, 2015. [Selections].

Week 14: Global Scales/Infrastructuctures

Edwards, Paul. *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming*, Cambridge, MA: The MIT Press, 2010. [Selections].

Week 15: Technologies of Power (Alternative: STS and colonial/postcolonial worlds)

Sonja Schmid, *Producing Power: The Pre-Chernobyl History of the Soviet Nuclear Industry*, Cambridge, MA: The MIT Press, 2015.

Alternative: Gabrielle Hecht, *Being Nuclear: Africans and the Global Uranium Trade*, Cambridge, MA: The MIT Press, 2012.