

Professor Erika Lorraine Milam

Thursdays, 9:00 – 11:50 am / Dickinson 211

The seminar introduces graduate students to central problems, themes, concepts, and methodologies in the history of science (and neighboring fields). We explore past and recent developments, including: the Sociology of Scientific Knowledge; Actor-Network Theory; the study of practice, experimentation, and quantification; the concept of the paradigm; gender, race, sexuality, and the body; environmentalism; and the role of labor and industry in the changing patterns of global technoscience (in addition to other relevant topics).

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READINGS

All readings should be on reserve in (books) Firestone or (articles and chapters) through the Canvas page for the course. For each week, readings are listed with the book first, followed by an alphabetical list of complementary articles and chapters. The “Additional” sources are if you want to follow up on your own—we will not discuss them in class.

ASSIGNMENTS

Evaluations will be based as follows:

- 30% **Class Participation** (active and informed engagement)
- 30% Three written **Responses** to weekly readings on weeks of your choice
(to be posted on Canvas before 6pm Wednesday)
- 40% Final **Historiographic Paper**

Final: Please turn in, no later than Dean’s Date, your final written work for our seminar.

Compose a historiographical essay on a suitable topic of your choice. This should take the form of a literature review such as might appear in the introductory section of a PhD dissertation or scholarly book, and ought to discuss a range of related books and articles (probably not fewer than ten, though there is flexibility here, as such a project may be approached in various ways). Expected length: 6,000-8,000 words. We will discuss your selected topics in class.

No extensions on the final or any other assignment in the class.

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Week 1. The Paradigm of the Revolution (Jan 30)

Core Reading:

- Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1962). Read whichever edition you can put your hands on. The newest edition (2012) has a useful introduction by Ian Hacking. Read it quickly.
- Mario Biagioli, "The Anthropology of Incommensurability," *Studies in History and Philosophy of Science Part A*, 21, no. 2 (1990): 183-209.
- James Secord, "Against Revolutions," *BJHS Themes* 9 (2024): 17-37.
- Steven Shapin, "Lowering the Tone in the History of Science: A Noble Calling," in *Never Pure* (Baltimore, MD: Johns Hopkins University Press, 2010): 1-14.
- Anke te Heesen, "Thomas S. Kuhn, Earwitness: Interviewing and the Making of a New History of Science," *Isis* 11, no. 1 (2020): 86-97.

Additional:

- Helen Longino, "Theoretical Pluralism and the Scientific Study of Behavior," in Stephen Kellert, Helen Longino, and C. Kenneth Waters, eds. *Scientific Pluralism* (Minneapolis: University of Minnesota Press, 2006), 102-131.
- Carolyn Merchant, "The Scientific Revolution and the *Death of Nature*," Focus Section, *Isis* 97, no. 3 (2006): 513-533.
- Robert J. Richards and Lorraine Daston, eds. *Kuhn's 'Structure of Scientific Revolutions' at Fifty* (Chicago: University of Chicago Press, 2016).
- James A. Secord, "Inventing the Scientific Revolution," *Isis* 114, no. 1 (March 2023): 50-76.
- Errol Morris, *The Ashtray (Or, the Man Who Denied Reality)* (Chicago: University of Chicago Press, 2018).
- See also – Philip Kitcher, "The Ashtray Has Landed: The Case of Morris v. Kuhn," *Los Angeles Review of Books* (May 18, 2018): [link](#).

Media:

- "The Trigger Effect," the pilot episode of James Burke's classic BBC history of science and technology series, "CONNECTIONS" (1978). Online lots of places: <https://www.youtube.com/watch?v=NcOb3Dilzjc>

Week 2: Epistemic Archaeology (Feb 6)

Core Reading:

- Michel Foucault, *The Order of Things* (New York: Vintage, 1994 [1970]).
- Geoffrey C. Bowker and Susan Leigh Star, "Introduction: To Classify is Human," and "Why Classifications Matter," in *Sorting Things Out: Classification and Its Consequences* (Cambridge, MA: MIT Press, 1999), 1-32 and 319-333.
- Ian Hacking, "Making Up People," in T. Heller, M. Sosna, and D. Wellberry, eds. *Reconstructing Individualism* (Stanford University Press, 1986), 222-236.
- Reinhart Koselleck, "Modernity and the Planes of Historicity," in *Futures Past: On the Semantics of Historical Time*, translated by Keith Tribe (New York: Columbia University Press, 2004 [1985]), 9-25, notes 277-278.

Additional:

Gary Gutting, "The Politics of 'The Order of Things': Foucault, Sartre, and Deleuze," *History and Theory* 55, no. 4 (2016): 54-65.

Media:

"A game of grids," Foucault in conversation with Noam Chomsky on creativity and scientific progress (1971, excerpts):

<https://www.youtube.com/watch?v=F5Wpe65sky8>

Week 3: The Sociology of Scientific Knowledge (Feb 13)

Core Reading:

Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Hobbes, Boyle, and the Experimental Life* (Princeton, NJ: Princeton University Press, 2011 [1985]).

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

H.M. Collins, "The TEA Set: Tacit Knowledge and Scientific Networks," *Science Studies* 4/2 (1974): 165-185.

Peter Galison, "Trading Zone: Coordinating Action and Belief (1998 abridgment)," reprinted in *The Science Studies Reader*, edited by Mario Biagioli (New York: Routledge, 1999): 137-160.

Additional:

Adi Ophir and Steven Shapin, "A Place of Knowledge: A Methodological Survey," *Science in Context* 4, no. 1 (1991): 3-22.

Andrew Pickering, "From Science as Knowledge to Science as Practice," in *Science as Practice and Culture* (Chicago: University of Chicago Press, 1992): 1-26.

Media:

HPS Podcast, "Simon Schaffer on *Leviathan and the Air Pump*: 40 Years Later,"

Season 4: Part 1, Episode 2 (September 25, 2024): [link](#).

Part 2, Episode 3 (October 2, 2024): [link](#).

Week 4: The Science Wars (Feb 20)

Core Reading:

Donna Haraway, *Primate Visions: Gender, Race, and Nature in the World of Modern Science* (New York: Routledge, 1989).

Robert A. Nye, "Medicine and Science as Masculine 'Fields of Honor,'" *Osiris* 12 (1997): 60-79.

Sadiya Qureshi, "Displaying Sara Baartman, the 'Hottentot Venus,'" *History of Science* 42 (2004): 233-257.

Londa Schiebinger, "Why Mammals are Called Mammals: Gender Politics in Eighteenth-Century Natural History," *The American Historical Review* 98 (1993): 382-411.

Mary Terrall, "Salon, Academy and Boudoir: Generation and Desire in Maupertuis's Science of Life," *Isis* 87, no. 2 (1996): 217-229.

Additional:

- Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14/3 (1988): 575-599.
- Emily Martin, "The Egg and the Sperm: How Science Has Constructed a Romance Based on Stereotypical Male-Female Roles," *Signs: Journal of Women in Culture and Society* 16, no. 3 (1991): 485-501.

Media:

- HPS Podcast, "Donna Haraway on Storytelling in Science," Season 1, Episode 1 (May 31, 2023): [link](#).

Week 5: From Actor Network Theory to a Parliament of Things (Feb 27)

- Bruno Latour, *We Have Never Been Modern* (Cambridge, MA: Harvard University Press, 1993).
- Michel Callon, "Actor Network Theory," in Neil J. Smelser, Paul B. Baltes, eds. *International Encyclopedia of the Social & Behavioral Sciences* (Oxford: Pergamon, 2001): 62-66.
- H.M. Collins and Steve Yearley, "Epistemological Chicken," in Andrew Pickering, ed. *Science as Practice and Culture* (Chicago: University of Chicago Press, 1992), 301-326.
- Bruno Latour, "Why Has Critique Run Out of Steam? From Matters of Fact to Matters of Concern," *Critical Inquiry* 30 (2004): 225-248.
- Susan Leigh Star, "Power, Technology and the Phenomenology of Conventions: On Being Allergic to Onions," in John Law, *A Sociology of Monsters: Essays on Power, Technology and Domination*, Sociological Review Monograph 38 (New York: Routledge, 1991), 26-56.

Additional:

- Bruno Latour, *Science in Action: How to Follow Scientists and Engineers through Society* (Cambridge, MA: Harvard University Press, 1987), see esp. "Centers of Calculation," 215-257.
- Michael Callon and Bruno Latour, "Don't Throw the Baby Out with the Bath School! A Reply to Collins and Yearley," in Andrew Pickering, ed. *Science as Practice and Culture* (Chicago: University of Chicago Press, 1992), 343-368.
- Michel Callon, "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fisherman of St. Brieuc Bay," *Sociological Review* 32.51 (1984): 196-223.

Week 6: Practice and Experimentation (Mar 6)

- Robert Kohler, *Lords of the Fly: Drosophila Genetics and the Experimental Life* (Chicago, IL: University of Chicago Press, 1994).
- Ursula Klein, "Paper Tools in Experimental Cultures," *Studies in History and Philosophy of Science A* 32, no. 2 (2001): 265-302.
- Hans-Jorg Rheinberger, "Experimental Systems: Historiality, Narration, and Deconstruction," *Science in Context* 7, no. 1 (1994): 65-81.

Hasok Chang, “How Historical Experiments Can Improve Scientific Knowledge and Science Education: The Cases of Boiling Water and Electrochemistry,” *Science and Education* 20 (2011): 317-341.

Additional:

Adele E. Clarke and Joan H. Fujimura, eds. *The Right Tools for the Job: At Work in Twentieth-Century Life Sciences* (Princeton, NJ: Princeton University Press, 1992).

S P R I N G B R E A K

Week 7: History of the Body (Mar 20)

Dorothy Roberts, *Killing the Black Body: Race, Reproduction, and the Meaning of Liberty* (New York: Vintage, 2017 [1997]).

Projit Mukharji, *Brown Skin, White Coats: Race Science in India, 1920-1960* (Chicago: University of Chicago Press, 2022).

Ian Hacking, “The Looping Effect of Human Kinds,” in Sperber, D., Premack, D., Premack, A. J. (eds.) *Causal Cognition: A Multi-Disciplinary Debate* (Oxford: Clarendon Press, 1995): 351-83.

Allan Sekula, “The Body and the Archive,” *October* 12 (1986): 3-64.

Additional:

Garland E. Allen, “The Double-Edged Sword of Genetic Determinism: Social and Political Agendas in Genetic Studies of Homosexuality, 1940–1994,” in *Science and Homosexualities*, edited by Vernon A. Rosario (New York: Routledge, 1997): 242-70.

Caroline Walker Bynum, “Death and Resurrection in the Middle Ages: Some Modern Implications,” *Proceedings of the American Philosophical Society* 142, no. 4 (1998): 589-596.

Shigehisa Kuriyama, *The Expressiveness of the Body and the Divergence of Greek and Chinese Medicine* (New York, Cambridge: Zone Books, 1999).

Saidiya Hartman, “Venus in Two Acts,” *Small Axe* 12, no. 2 (2008): 1-14.

Christopher Lawrence and Steven Shapin, eds. *Science Incarnate: Historical Embodiments of Natural Knowledge* (Chicago: University of Chicago Press, 1998).

Jennifer Terry and Jacqueline Urla, eds. *Deviant Bodies* (Bloomington: Indiana University Press, 1995)

Margaret Lock, *Twice Dead: Organ Transplants and the Reinvention of Death* (Berkeley: University of California Press, 2001).

Katherine Park, *Secrets of Women: Gender, Generation, and the Origins of Human Dissection* (New York: Zone, 2006).

Fernando Vidal, “Brainhood, Anthropological Figure of Modernity,” *History of the Human Sciences* 22, no. 1 (2009): 5-36.

Week 8: Objectivity, Evidence, Quantification (Mar 27)

Theodore M. Porter, *Genetics in the Madhouse: The Unknown History of Human Heredity* (Princeton, NJ: Princeton University Press, 2018).

Daniela Bleichmar, "The Geography of Observation: Distance and Visibility in Eighteenth-Century Botanical Travel," in Lorraine Daston and Elizabeth Lunbeck, *Histories of Scientific Observation* (Chicago, IL: University of Chicago Press, 2010): 373-395.

Jorge Luis Borges, "On Exactitude in Science" [1946], in *Collected Fictions*, trans. by Andrew Hurley (Viking, 1998).

Lorraine Daston and Peter Galison, "The Image of Objectivity," *Representations* no. 40 (1992): 81-128.

Simon Schaffer, "Astronomers Mark Time: Discipline and the Personal Equation," *Science in Context* 2 (1988): 115-145.

Additional:

Peter Galison and Lorraine Daston, *Objectivity* (New York, Cambridge: Zone Books: 2007).

Lorraine Daston and Elizabeth Lunbeck, eds. *Histories of Scientific Observation* (Chicago: University of Chicago Press, 2011).

Lorraine Daston and Fernando Vidal, eds., *The Moral Authority of Nature* (Chicago: University of Chicago Press, 2004).

If you are curious, Umberto Eco expanded Borges' one paragraph story into a longer version (even it is only 12 pp.): "On the Impossibility of Drawing a Map of the Empire on a Scale of 1 to 1" [1982], in *How to Travel with a Salmon and Other Essays* (Mariner Books, 1995), 95-106.

Week 9: Technology and Labor (Apr 3)

Michelle Murphy, *The Economization of Life* (Durham, NC: Duke University Press, 2017).

Boris Hessen, "The Social and Economic Roots of Newton's Principia," in Nicolas Bukharin et al., *Science at the Cross Roads* (London: Kniga, 1931), 149-212.

Laura Stark, "Mutual Aid: The Workers' History of Science," *Isis* 114, no. 4 (2023): 841-849.

Ruth Schwartz Cowan, "The Industrial Revolution in the Home," in Donald McKenzie and Judy Wajcman, eds., *The Shaping of Technology*, 2nd ed. (Buckingham, Open University Press, 1999 [1985]): 281-300.

Additional:

Melinda Cooper and Catherine Waldby, *Clinical Labor: Tissue Donors and Research Subjects in the Global Economy* (Durham, 2014).

Michelle Murphy, *Seizing the Means of Reproduction: Entanglements of Feminism, Health, and Technoscience* (Durham, NC: Duke University Press, 2012).

Week 10: The Technoscience of Globalization (Apr 10)

Gabrielle Hecht, *Being Nuclear: Africans and the Global Uranium Trade* (Cambridge, MA: MIT Press, 2014).

Warwick Anderson, "The Possession of Kuru: Medical Science and Biocolonial Exchange," *Comparative Studies in Society and History* 42 (2000): 713-744.

James Poskett, "Phrenology, correspondence, and the global politics of reform, 1815-1848," *The Historical Journal* 60 (2017): 409-442.

Additional:

John Krige, "Writing the Transnational History of Knowledge Flows in a Global Age," in *Knowledge Flows in a Global Age: A Transnational Approach*, edited by John Krige (Chicago: University of Chicago Press, 2022): 1-30.

Rudolf Mrazek, *Engineers of Happy Land: Technology and Nationalism in a Colony* (Princeton, NJ: PUP Press, 2002).

Week 11: Environment and Place (Apr 17)

Core Reading:

Ruth Rogaski, *Knowing Manchuria: Environments, the Senses, and Natural Knowledge on an Asian Borderland* (Chicago: University of Chicago Press, 2022).

Deborah Coen, "Climate," *Encyclopedia of the History of Science* (December 2023), accessed 21 January 2025: <https://doi.org/10.34758/zxxc-8v87>.

Thomas F. Gieryn, "Three Truth Spots," *Journal of the History of the Behavioral Sciences* 38, no. 2 (2002): 13-132.

William Rankin, "Mapping Time in the Twentieth (and Twenty-First) Century," in Kären Wigen and Caroline Winterer, eds. *Time in Maps: From the Age of Discovery to Our Digital Era* (Chicago: University of Chicago Press), 15-34.

Additional:

Deborah R. Coen, *Climate in Motion: Science, Empire, and the Problem of Scale* (Chicago: University of Chicago Press, 2018).

David N. Livingstone, *Putting Science in Its Place: Geographies of Scientific Knowledge* (Chicago: University of Chicago Press, 2003).

Naomi Oreskes and Erik M. Conway, "Challenging Knowledge: How Climate Science Became a Victim of the Cold War," in Robert N. Proctor and Londa Schiebinger, eds., *Agnotology: The Making and Unmaking of Ignorance* (Stanford, CA: Stanford University Press, 2008): 55-89.

Week 12: Media, Screen, Democracy, Dream (Apr 24)

Core Reading:

Fred Turner, *The Democratic Surround: Multimedia & American Liberalism from World War II to the Psychedelic Sixties* (Chicago: University of Chicago Press, 2013).

Ludwig Fleck, "To look, to see, to know?" in R. S. Cohen and T. Schnelle, eds. *Cognition and Fact* (Reidel, 1986), 129-52.

Jennifer Tucker, "Photography as Witness, Detective, and Imposter: Visual Representation in Victorian Science," in *Victorian Science in Context* (University of Chicago Press: 1997), 378-408.

Media:

La Jetée (1963), 23 min. <https://www.kanopy.com/en/princeton/video/113477>

Additional:

Bernard Stiegler, "Economy and Cognition of Attention," in *Taking Care of Youth and the Generations* (Stanford: Stanford University Press, 2010): 94-106.

Hito Steyerl, "The Spam of the Earth: Withdrawal from Representation," chapter *The Wretched of the Screen* (Berlin: Sternberg Press, 2012): 106-175.

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