

History 297A, “Political Economy and Science”
Fall 2006
Professor Wise

The first term of this two-quarter research seminar will explore the wide field of political economy, technology, and science from the late 18th century through the twentieth. It will focus on a few major episodes on which there exists an adequate literature, aiming to prepare us for identifying specific research topics on which we would like to work during the second term. Like all research seminars, this one aims at crafting papers that would be publishable in a professional journal, when revised and polished. If the ideal is not always realized, it is nevertheless a very useful goal to strive for and very often leads to unexpectedly interesting results and future work.

The general subject of political economy and science allows a considerable variety of approaches. Most immediately, the history of political economy as a subject has often been written in relation to the development of science and technology. Equally, a considerable body of work looks at how the natural sciences have taken up economic representations. The relation is clearly reciprocal. Most of the best work of late, however, aims either to understand how the sciences have developed in relation to actual states of the political economy—in terms of materials, technologies, profits, and funding, whether state, corporate, or military—or how the sciences have affected the political-economic landscape. “Landscape” here can be quite literal, as in the channeling of the Mississippi River, or metaphorical, as in health and disease, the cultural landscape, and the relation of colonizers to the colonized. The whole subject is obviously much too broad and will require a ruthless selective process for productive scholarship. For a start, however, keep an open mind.

Basic History of Science references:

Database: History of Science, Technology, and Medicine—under “search and find” on the library website click “article databases” and then enter “history of science” and look for the site. You may need to enter your UCLA username and password.

DSB. This is the *Dictionary of Scientific Biography*, in many volumes, available in the reference section of the library.

Syllabus

Note: we will be reading selections from the readings, not usually whole books. For the books and articles in French and German, those who can read the language adequately will give reports to us all on the content.

Week 1 (Oct. 2-6)—Organization—Meet at 9 am, Monday, in 5262 Bunche

Part I—Revolution

Week 2 (Oct. 9-13)—Physiocratic economics and French revolutionary science

Mirabeau, Victor de Riquetti, marquis de, *François Quesnay: the economical table (Tableau économique)* (New York : Bergman, 1968)

William Nelson, chapter from UCLA dissertation, 2006.

Elizabeth Fox-Genovese, *The origins of physiocracy : economic revolution and social order in eighteenth-century France* (Ithaca : Cornell University Press, 1976).

Lavoisier, Antoine Laurent, *De la richesse territoriale du royaume de France*, texte et documents présentés par Jean-Claude Perrot, (Paris : Editions du C.T.H.S., 1988).

Jean-Pierre Poirier, *Lavoisier: Chemist, Biologist, Economist* (Philadelphia: University of Pennsylvania Press, 1996).

M. Norton Wise, "Mediations: Enlightenment Balancing Acts, or the Technologies of Rationalism," in Paul Horwich, ed., *World Changes: Thomas Kuhn and the Nature of Science* (Cambridge, MA; MIT Press, 1992), pp. 207-256.

Others:

Eric Brian, *La Mesure de l'Etat: administrateurs et géomètres au XVIIIe siècle* (Paris: Albin Michel, 1994). (I also have it in German.)

Ken Alder, *Engineering the Revolution: Arms and Enlightenment in France, 1763-1815* (Princeton, N.J.: Princeton University Press, 1997).

Margaret Jacob and Larry Stewart, *Practical matter : Newton's science in the service of industry and empire, 1687-1851* (Cambridge, Mass.: Harvard University Press, 2004).

Charles Coulston Gillispie, 2 vols., *Science and polity in France at the end of the old regime* and *Science and Polity in France : The Revolutionary and Napoleonic Years* (Princeton: Princeton University Press, 1980, 2004).

William H. Sewell Jr., *Work and revolution in France : the language of labor from the Old Regime to 1848* (Cambridge ; New York : Cambridge University Press, 1980).

Week 3 (Oct. 16-20)—Smithian economics and French engineers

Ivor Grattan-Guinness, "Work for the Workers: Advances in Engineering Mechanics and Instruction in France," *Annals of Science*, 41 (1984), 1-33.

Antoine Picon, *French architects and engineers in the Age of Enlightenment* (Cambridge [England]: Cambridge University Press, 1992).

Francois Vatin, *Le Travail: Economie et physique, 1780-1830* (Paris: Presses Universitaires de France, 1993)

Others:

Bruno Belhoste, Amy Dahan Dalmedico, Antoine Picon (eds.), *La formation polytechnicienne, 1794-1994* (Paris : Dunod, 1994).

Bruno Belhoste, Francine Masson et Antoine Picon (eds.), *Le Paris des polytechniciens : des ingénieurs dans la ville, 1794-1994* (Paris : Délégation à l'action artistique de la ville de Paris, 1994)

Belhoste, Bruno, *La formation d'une technocratie: l'École polytechnique et ses élèves de la Révolution au Second Empire* (Paris: Belin, 2003).

Efthymios Nicolaïdis, Konstantinos Chatzis (Athens: Institute for Neohellenic Research [National Hellenic Research Foundation], 2000).

Part II—Industrialization

Week 4 (Oct. 23-27)—Industry, Machinery, and Energy

Charles Babbage, *On the Economy of Machinery and Manufactures* (Philadelphia: Carey & Lea, 1832)

Andrew Ure, *The Philosophy of Manufactures; or, An exposition of the scientific, moral, and commercial economy of the factory system of Great Britain* [1835] (New York : A.M. Kelley, 1967).

Maxine Berg, *The machinery question and the making of political economy, 1815-1848* (Cambridge [Eng.]: Cambridge University Press, 1980).

M. Norton Wise, with the collaboration of Crosbie Smith, "Work and Waste: Political Economy and Natural Philosophy in Nineteenth Century Britain," *History of Science*, 27 (1989), Pt. I, 263-301; Pt. II, 391-449; Pt. III, 28 (1990), 221-261.

Hermann Helmholtz, "Conservation of Energy . . ."

Robert M. Brain and M. Norton Wise, "Muscles and Engines: Indicator Diagrams in Helmholtz's Physiology," in *Universalgenie Helmholtz: Ruckblick nach 100 Jahren*, ed. Lorenz Krüger (Akademie Verlag, 1994), 124-145; reprinted in Mario Biagioli, ed., *The Science Studies Reader* (New York: Routledge, 1999), pp. 51-66.

Others (historians of political economy):

Harro Maas, *William Stanley Jevons and the making of modern economics* (Cambridge, UK: Cambridge University Press, 2005).

Margaret Schabas, *A world ruled by number : William Stanley Jevons and the rise of mathematical economics* (Princeton, N.J. : Princeton University Press, 1990).

Michael White,

Philip Mirowski, *More heat than light : economics as social physics, physics as nature's economics* (Cambridge ; New York : Cambridge University Press, 1989).

Week 5 (Oct. 30-Nov. 3)—Evolution and Economics: Division of Labor

Charles Babbage, *Ninth Bridgewater Treatise: A Fragment* (1837), 2nd ed. (1838), *The Works of Charles Babbage*, ed. Martin Campbell-Kelly (London: Pickering, 1989).

Simon Schaffer, "Babbage's intelligence: Calculating engines and the factory system, in *Critical Inquiry*, 21 (1994), 203-227.

[Robert Chambers], *Vestiges of the Natural History of Creation*, James A. Secord (ed.) (Chicago: University of Chicago Press, 1994).

Charles Darwin, *On the Origin of Species*. A facsimile of the 1st ed., 1859, with an introduction by Ernst Mayr (Cambridge : Harvard University Press, 1964).

Robert M. Young, *Darwin's metaphor : nature's place in Victorian culture* (Cambridge: Cambridge University Press, 1985).

Sam Schweber,

Others:

Janet Browne, *Charles Darwin : a biography*, 2 vols. (so far) (New York : Knopf : Distributed by Random House, 1995-2002)

Adrian Desmond, *The politics of evolution : morphology, medicine, and reform in radical London* (Chicago : University of Chicago Press, 1989).

M. Norton Wise, "The Gender of Automata in Victorian Science and Culture," in Jessica Riskin (ed.), *The Sistine Gap: Essays on the History and Philosophy of Artificial Life* (Cambridge, MIT Press, 2006).

Week 6 (Nov. 6-10)—German Industrialization

Eric Dorn Brose, *The politics of technological change in Prussia : out of the shadow of antiquity, 1809-1848* (Princeton, N.J. : Princeton University Press, 1993).

Myles Jackson, *Spectrum of belief : Joseph von Fraunhofer and the craft of precision optics* (Cambridge, Mass.: MIT Press, 2000); and *Harmonius Triad: Physicists, Musicians, and Instrument makers in Nineteenth-Century Germany* (Cambridge, Mass.: MIT Press, 2006).

Jürgen Kocka, *Industrial culture and bourgeois society : business, labor, and bureaucracy in modern Germany* (New York : Berghahn Books, 1999).

M. Norton Wise, "Architectures for Steam," in *The Architecture of Science*, Peter Galison and Emily Thompson (eds.), (Cambridge, MA, MIT Press, 1999), pp. 107-140.

Others:

M.Norton Wise & Elaine M. Wise, "Staging an Empire," in Lorraine Daston (ed.), *Things that Talk* (Zone Books, 2003), 101-145, 391-399.

Week 7 (Nov. 13-17)—work on paper topic (Wise in Europe)

Week 8 (Nov. 20-24)—work on paper topic (Wise in Europe)

Part III—Modernity and Modernism

Week 9 (Nov. 27-Dec. 1)—2nd Empire and 3rd Republic in France

Anson Rabinbach, *The Human Motor: . . .*

Pierre Bourdieu, *The Field of Cultural Production*
Diana Kormos Barkan, *Nernst*

Week 10 (Dec. 4-8)—WWI

Part IV—The Shape of Contemporary Science

Week 11 (Dec. 11-15)—WWII and beyond

John Heilbron and Robert Seidel, *Lawrence and his Laboratory*

Dan Kevles

Cybernetics—Wiener, von Neumann, Morgenstern, etc. + gun-laying, etc

Andy Pickering

Roy Weintraub

Week 12 (1st week of Winter term)—recent science and economy

Angela Creager, *The Life of a Virus* or the radioisotopes work

Soraya de Chadarevian

Nick Rasmussen

Jean-Paul Gaudilliere and Ilana Löwy

Paul Rabinow,

Remember also:

Marx

Values of Precision

Field of statistics and probability

Theodore Porter, *Rise of Statistical Thinking* and *Trust in Numbers*