

**HTS 6114: Topics in the History of Science  
(Revolution or Innovation: Case Histories in the Science and Technology)**

This seminar focuses on debates about the nature of scientific revolution and its relation to ideas of innovation in science and engineering. While seminar work begins with consideration of western theories of scientific change, it will ask how such theories have affected ideas of non-western science. Questions addressed include 1) legacy of academic views of science and their consequences for preparation of histories of science and technology, 2) scientific development and economic progress, and 3) the relation between contemporary stress on innovation and ideas of change in science. In addition to engaging major texts on that address scientific and technological change, the course carries the challenge to explore the ways that change in science and technology is hardly distant but surrounds us. Consequently, in addition to discussions of books and articles, the seminar will explore examples of ongoing research at Georgia Tech and the Georgia Tech Research Institute.

**Schedule:**

**Week 1.** ‘Five Year Plans’ and the History of Science: Primary: B. Hessen, *Social and Economic Roots of Newton’s Principia*. Boris Hessen, *The Social and Economic Roots of Newton’s Principia* (Science at the Crossroads, London 1931) Boris Hessen, *The Social and Economic Roots of Newton’s Principia* in: Nicolai I. Bukharin, *Science at the Crossroads*, London 1931 (Reprint New York 1971), pp. 151–212 (Russian original).

**Week 2.** Upsetting the Copernican Revolution: Kuhn’s Harvard Seminar on Copernicus and the Theory of Scientific Revolutions. Primary: Thomas Kuhn, *The Structure of Scientific Revolutions* (Chicago: Univ. of Chicago Press, 1974 (1962)); Secondary: Thomas Kuhn, *The Copernican Revolution: Planetary Astronomy in the Development of Western Thought* (Cambridge: Harvard Univ. Press, 1957); Thomas Kuhn, *The Essential Tension: Selected Studies in Scientific Tradition and Change* (Chicago: Univ. of Chicago Press, 1977)

**Week 3.** Science and the Act of Writing: Hayden White, *Historiography and Writing*. Primary: Selected essays from *Tropics of Discourse* (Baltimore: John Hopkins Univ. Press, 1978). Essays assigned in seminar. Secondary: *Vico: Selected Writings* ed. and translated by Leon Pompa (Cambridge: Cambridge Univ. Press, 1982)

**Week 4.** Idealism and Materiality: Why is *The Leviathan and the Air Pump* important? (Part I) Primary: Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Habbes, Boyle, and the Experimental Life* (Princeton: Princeton Univ. Press, 1985); Secondary: Steven Shapin, *The Scientific Revolution* (Chicago: Univ. of Chicago Press, 1996).

**Week 5.** Idealism and Materiality: Why is *The Leviathan and the Air Pump* important? (Part II) Primary: Steven Shapin and Simon Schaffer, *Leviathan and the Air-Pump: Habbes, Boyle, and the Experimental Life* (Princeton: Princeton Univ. Press, 1985); Secondary: Steven Shapin, *The Scientific Revolution* (Chicago: Univ. of Chicago Press, 1996).

**Week 6.** Tracking Latour from the Laboratory to the Internet/Ethnology of the Laboratory to Anthropology of World Science. Primary: Bruno Latour, *An Inquiry into Modes of Existence: An Anthropology of the Moderns* (Cambridge: Harvard Univ. Press, 2013); Secondary: Bruno Latour, *On the Modern Cult of the Factish Gods* (Durham: Duke Univ. Press, 2010); Bruno Latour, *Science in Action* (Cambridge: Harvard Univ. Press, 1987)

**Week 7.** Joseph Needham and the Discovery of China: Approaching Non-Western Science. Joseph Needham, *History of Scientific Thought*, Vol 2 of *Science and Civilization in China*, 7 vols. [28 books] (Cambridge: Cambridge Univ. Press, 1954-2008); Secondary: William E. Burns, *The Scientific Revolution in Global Perspective* (Oxford: Oxford Univ. Press, 2016)

**Week 8.** Walter Benjamin and the Challenge of Materiality. Primary: Selections from the Benjamin's *Arcades project*. Primary: Walter Benjamin, *Arcades Project* (Cambridge: Harvard Univ. Press, 1999); Secondary: Walter Benjamin, *Radio Benjamin* (London: Verso, 2014); Philippe Baudouin, *Au microphone: Dr. Walter Benjamin: Walter Benjamin et la creation radiophonique 1929-1933* (Paris: Editions de la maison des sciences de L'homme, 2009).

**Week 9.** Friedrich A. Kittler and network theory. Primary: Friedrich A. Kittler, *Gramophone, Film, Typewriter* (Palo Alto: Stanford Univ. Press, 1999); Secondary: Friedrich A. Kittler, *Discourse Networks 1800-1900* (Palo Alto, Stanford Univ. Press, 1990)

**Week 10.** Soviet Scholarship and the Legacy of the Cold-War. Primary: Yuri Lotman, *Universe of the Mind: A Semiotic Theory of Culture* (Bloomington: Univ. of Indiana Press, 1990); Secondary: F. W. Galan, *Historic Structures: The Prague School Project 1928-1946* (Austin: Univ. of Texas, 1985), Karl Schlögel, *Moscow* (London: Reaktion Books Ltd. 2005)

**Week 11.** Cognition: Revolution, Innovation and Neurophysiology: Primary: Andy Clark: *Natural Born Cyborgs: Minds, Technologies, and the Future of Human Intelligence* (London: Oxford Univ. Press, 2003); Secondary: *Science as Psychology: Sense-Making and Identity in Science Practice* ed. Lisa M. Osbeck, Nancy J. Nersessian et al. (Cambridge: Cambridge Univ. Press, 2011); Peter Sloterdijk, *Neither Sun Nor Death* (London: Semiotext, 2011).

12. Seminar Presentations

13. Seminar Presentations

14. Seminar Presentations

Assignments:

In addition to the discussion of books, chapters, or articles associated with seminar, the objective of the seminar will be the preparation and staging of papers that may be submitted to conferences or appropriate journals. Whenever appropriate, students will be encouraged to situate and apply readings to evolving projects associated with the seminar or with research projects linked to their graduate work in HTS. To facilitate research and writing, I will anticipate meeting separately with each student on a regular basis. Every effort will be made to schedule an initial meeting before the beginning of the seminar or during the first week.

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