

**HTS 6002 CRN#26632**

**DRAFT SYLLABUS**

**Proseminar in the History of Technology**

**Fall Semester 2008**

“Identifies major areas of interest in the history of technology and introduces a variety of approaches to the discipline”

Prof. John Krige

(Smith 302, Phone 4-7765, email [john.krige@hts.gatech.edu](mailto:john.krige@hts.gatech.edu))

**Holiday Reading:**

Langdon Winner, *The Whale and the Reactor. A Search for Limits in an Age of High Technology* (Chicago: University of Chicago Press, 1986).

**Week 1.**

General discussion and introduction

**Week 2. Technology and Innovation (I)**

Joel Mokyr, *The Lever of Riches. Technological Creativity and Economic Progress* (New York: OUP, 1990)

**Week 3. Technology and Innovation (II)**

Steve Usselman *Regulating Railroad Innovation. Business, Technology and Politics in America, 1840 – 1920* (Cambridge University Press, 2002).

**Week 4. Technology and Innovation (III)**

David Hounshell, “The Evolution of Industrial Research in the United States,” In Richard S. Rosenbloom and William J. Spencer, *Engines of Innovation. U.S. Industrial Research at the End of an Era* (Boston: Harvard Business School Press, 1996), 13-85.

Nathan Rosenberg and Richard S. Nelson, “The Roles of Universities in the Advance of Industrial Technology,” in Richard S. Rosenbloom and William J. Spencer, *Engines of Innovation. U.S. Industrial Research at the End of an Era* (Boston: Harvard Business School Press, 1986), 87-109.

## **Week 5. Technology and Innovation (IV): The Science/Technology Relationship**

Vannevar Bush, *Science. The Endless Frontier* (first published 1945: multiple editions) (not the appendices).

Philip Scranton, "Technology, Science and American Innovation," *Business History*, Vol. **48:3** (2006), 311-331.

David Edgerton, "The 'Linear Model' did not Exist: Reflections on the History and historiography of Science and Research in Industry in the Twentieth Century," in Karl Grandin, Nina Wormbs and Sven Widmalm (eds), *The Science-Industry Nexus. History, Policy Implications* (New York: Watson, 2004), 31-57.

Keith Pavitt, "Changing Patterns of Usefulness of University Research. Opportunities and Dangers," *Ibid.*, 119-131.

Chalmers W. Sherwin and Raymond S. Isenson, "Project Hindsight: A Defense Department Study of the Utility of Research," *Science* **156:3782** (June 1967), 1571-1577.

Peter Thompson, "TRACES: Basic Research Links to Technology Appraised," *Science* **163:3865** (January 1969), 374 -375.

Paul Forman et al, "The Primacy of Science in Modernity, of Technology in Postmodernity and of Ideology in the History of Technology," *History and Technology* **23: 1/2** (2007), 1-184.

## **Week 6. Technological Determinism and Social Constructivism**

Herbert York, *The Advisors. Oppenheimer, Teller and the Superbomb* (San Francisco: Freeman and Co, 1976), Preface only

Merritt Roe Smith and Leo Marx (eds), *Does Technology Drive History? The Dilemma of Technological Determinism* (two articles by Heilbroner, and one by Scranton).

Donald McKenzie, *Knowing Machines. Essays on Technological Change* (Cambridge: MIT Press, 1998), chapter 2.

Donald McKenzie and Judy Wacjman (eds), *The Social Shaping of Technology* (2<sup>nd</sup> edition) (Buckingham: Open University Press, 1999), 3-27.

Wiebe E. Bijker, Thomas P. Hughes and Trevor Pinch (eds), *The Social Construction of Technological Systems* (Cambridge: MIT Press, 1998), 'General Introduction', and articles by Pinch and Bijker, and Hughes.

## **Week 7 American Technological Prowess**

Interview with Tom Hughes by Art Mollela:

[http://www.americanheritage.com/articles/magazine/it/1989/1/1989\\_1\\_18.shtml](http://www.americanheritage.com/articles/magazine/it/1989/1/1989_1_18.shtml)

Thomas P Hughes, *American Genesis. A History of the American Genius for Innovation* (Penguin Books, 1990).

Thomas Hughes, *Rescuing Prometheus. Four Monumental Projects that Changed the Modern World* (Vintage Books, 2000).

## **Week 8 Infrastructural Technologies: Power and Steel**

Thomas Hughes, *Networks of Power. Electrification in Western Society 1880-1930* (Johns Hopkins University Press, 1983), chapters 1-6, 8.

David Nye, *Consuming Power. A Social History of American Energies* (MIT Press, 1998).

Thomas J. Misa, *A Nation of Steel. The Making of Modern America 1865 – 1925* (Johns Hopkins University Press, 1995).

## **Week 9 Standardization and Mass Production (I)**

Merritt Roe Smith, *Harpers Ferry Armory and the New Technology* (Ithaca: Cornell University Press).

Ken Alder, *Engineering the Revolution. Arms and Enlightenment in France, 1763-1815* (Princeton University Press, 1997), chapters 5 and 6.

## **Week 10 Standardization and Mass Production (II)**

David A. Hounshell, *From the American System to Mass Production 1880 – 1932. The Development of Manufacturing Technology in the United States* (Johns Hopkins University Press, 1984), chapters 1-4.

## **Week 11 Standardization and Mass Production (III)**

David A. Hounshell, *From the American System to Mass Production 1880 – 1932. The Development of Manufacturing Technology in the United States* (Johns Hopkins University Press, 1984), chapters 5-8.

## **Week 12 Standardization and Mass Production (IV)**

Philip Scranton, *Endless Novelty. Speciality Production and American Industrialization 1865 – 1925* (Princeton University Press, 1997).

## **Week 13 Everyday Technologies**

Claude S. Fischer, *America Calling. A Social History of the Telephone to 1940* (University of California Press, 1992).

Ronald Kline, “Resisting Consumer Technology in Rural America: The Telephone and Electrification,” in Nelly Oudshoorn and Trevor Pinch (eds) *How Users Matter. The Co-Construction of Users and Technology* (MIT Press, 2003), 51-66.

Ruth Schwartz Cowan, *More Work for Mother. The Ironies of Household Technology from the Open Hearth to the Microwave* (Basic Books, 1983).

Ruth Schwarz Cowan, “The Consumption Junction. A Proposal for Research Strategies in the Sociology of Technology,” in Bijker, Hughes and Pinch (eds) *The Social Construction of Technological Systems, op. cit*

Sue Bowden and Avner Offner, “Household Appliances and the Use of Time: the United States and Britain Since the 1920s,” *Economic History Review XLVII :4* (1994), 725-748.

## **Week 14 Technologies in Use**

David Edgerton, “From Innovation to Use: Ten (Eclectic) Theses on the History of Technology,” *History and Technology*, **16:2** (1999), 111 – 136.

Nelly Oudshoorn and Trevor Pinch (eds) *How Users Matter. The Co-Construction of Users and Technology* (MIT Press, 2003), Introduction.

David Edgerton, *The Shock of the Old. Technology and Global History Since 1900* (London: Profile Books, 2006).

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Fall 2008

Proseminar in the history of technology

Three-day take away paper

To be submitted no later than noon on December 12 (12.12 at 12.00)

Email to [john.krige@hts.gatech.edu](mailto:john.krige@hts.gatech.edu)

**Critically discuss TWO of the following statements, drawing on texts for each that we have read from *at least two different weeks* to illustrate your argument. Each answer is of equal weight and should be about 2500 words in length.**

1. “Social constructivism exaggerates the role of human agency in shaping technological trajectories.”
2. The American System of Manufacture was “adopted in a gradual manner. Some did not fully comprehend that the full benefit of the system would not be got unless every piece was made by it. They would leave a piece, here and there, to be finished according to the idiosyncrasies of the workmen, and these pieces made confusion until the full system was carried out.” (1890)
3. “The shibboleths of this new [post-WWII] age were that basic science and well-funded scientists produced dramatic new technologies and that scientists knew better than generals, engineers, or industrialists what new science to pursue, which new technologies to develop, and how best to deploy those new technologies.” (Hounshell)

Shibboleth: pet phrase, uncritically repeated by a party or a sect

4. “Studies of technology-in-use help us look at technology in very different ways as compared to studies of technological innovation.”