

**H/HPS 176. American Technology from Harpers Ferry Armory to the
Military-Industrial Complex.**

9 units (3-0-6); second term.

INSTRUCTOR: Prof. John Krige

Thursdays, 7pm -10pm

Recommended vacation reading

Joel Mokyr, *The Gifts of Athena. Historical Origins of the Knowledge Economy* (Princeton University Press, 2002), Chapters 1 and 7

Week 1. Introduction: The production and circulation of knowledge

Week 2. The American System of Manufacturing I

Merritt Roe Smith, *Harpers Ferry Armory and the New Technology. The Challenge of Change* (Ithaca: Cornell University Press, 1977), Introduction, and chapters 8 and 11.

Week 3. The American System of Manufacturing II

David Hounshell, *from the American System to Mass Production. 1800 – 1932* (Baltimore: JHU Press, 1984), Introduction and chapters 6 and 7.

The Charlie Chaplin silent movie, *Modern Times* will be discussed in class.

Week 4. Industrial Research in the USA

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.

Steve Usselman, “Patents Purloined: Railroads, Inventors, and the Diffusion of Innovation in 19th-Century America,” *Technology and Culture*, Vol. 32 (1991), 1047 – 1075.

Week 5. Technological Systems and National Identity: the Manhattan Project

Thomas P. Hughes, *American Genesis. A History of the American Genius for Invention* (Penguin Books, 1989), pp. 1-12, 381 – 442.

Barton J. Bernstein, "Four Physicists and the Bomb: the Early Years, 1945-1950," *Historical Studies in the Physical Sciences*, Vol. 18:2 (1988), 231-263.

OR

Barton J. Bernstein, "In the Matter of J. Robert Oppenheimer," *Historical Studies in the Physical Sciences*, Vol 12:2 (1982), 195-252.

The documentary film, *The Day After Trinity*, will be discussed in class.

Week 6. Technological Determinism? The Decision to Develop the H-Bomb

Herbert F. York, *The Advisors. Oppenheimer, Teller and the Superbomb* (Stanford: Stanford University Press, 1976), pp. 1-74, 135-143.

Warner R. Schilling, "The H-Bomb Decision. How to Decide Without Actually Choosing," *Political Science Quarterly*, Vol. LXXVI (March 1961), 24 – 46.

Week 7. State Patronage and Research after World War II

AAAS Data on Trends in the Support of R&D after WWII (provided by the instructor)

Vannevar Bush, *Science: the Endless Frontier. A Report to the President on a Program for Postwar Scientific Research, July 1945* (multiple versions), Parts I – VI (about 45pp. (Not the Appendices).

Daniel J. Kevles, "Principles and Politics in Federal R&D Policy, 1945 – 1990. An Appreciation of the Bush Report, " in the version of Bush's Report published by the National Science Foundation, 40th Anniversary, 1950 – 1990, pp. ix – xxiii.

Week 8. The Military-Industrial-Academic Complex: General

Paul Forman, "Behind Quantum Electronics: National Security as a Basis for Physical Research in the United States," *Historical Studies in the Physical and Biological Sciences*, Vol. 18:1 (1987), 149 – 229.

Daniel J. Kevles, "Cold War and Hot Physics: Science, Security and the American State, 1945 – 1956," *Historical Studies in the Physical and Biological Sciences*, Vol. 20:2 (1990), 239 – 264.

Week 9. The Military-Industrial-Academic Complex: Specific

Michael Aaron Dennis, "'Our First Line of Defense.' Two University Laboratories in the Postwar American State," *Isis*, Vol. 85 (1994), 427 – 455.

Stuart W. Leslie, "Profit and Loss: The Military and MIT in the Postwar Era," *Historical Studies in the Physical Sciences*, Vol. 21:1 (1990), 59 – 85.

Rebecca S. Lowen, "'Exploiting a Wonderful Opportunity.' The Patronage of Scientific Research at Stanford University, 1937 – 1965," *Minerva*, Vol. 30:3 (1992), 391 – 421.

Clayton J. Koppes, *JPL and the American Space Program. A History of the Jet Propulsion Laboratory* (New Haven: Yale University Press, 1986), 1 – 42.

Week 10. Rethinking the Science-Technology Relationship

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

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

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

Philip Scranton, "Technology-Led Innovation: The Non-Linearity of US Jet Propulsion Development," *History and Technology*, Vol. 22:4 (December 2006), 337 – 367.