

# HH2020: Science and Warfare

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## Overview

Warfare has shaped the social and political fabric of the twentieth century. As such military history still has an important role to play within any historical curriculum. However, the study of the history of warfare should be situated in such ways that links it to broader themes in social, cultural, and political history. This class fulfills this goal by linking military history to the development of science and technology. The relationship between science, technology and warfare raises important problems and questions (many of ongoing policy relevance) about state funding of science, the responsibility of the scientist, and the place of science within society.

## Class/Tutorial Hours and Venue

The seminar will be held once a week on Thursdays between 0930 hours - 1230 hours at LHS-TR+49 (Please try to be there on time. I feel bad every time someone misses the beginning of the class. Also I sometimes make announcements at the beginning of the class)

## Learning objectives

- Understand the impact of the military and warfare on the development of science and technology;
- Understand the impact of science and technology on the conduct and strategy of warfare;
- Understand military history as part of broader social histories that include the histories of science and technology;
- Theorize the relationship between society, science, and the state;
- Analyze policy related to scientific and military technology in a broad historical context.

## Some Rules

### *Weekly Readings*

The weekly readings are assigned to help you with your understanding and familiarization with the subject discussed in the class. In an ideal world, it is expected you to do your weekly reading, nevertheless in a realistic setting it is not essential.

### *Academic Honesty*

The universal rules regarding academic honesty will be strictly enforced in this class. Chicago style (full notes-with-bibliography) should be adopted for all written work. Any written work has to be submitted through turnitin. Also a hardcopy of the paper needs to be submitted with the similarity report attached. Papers with over 24% similarity

ratings (excluding small sources and quotes & bibliography) will be returned to be re-written within 24 hours.

### *Late policy*

Late work will incur a penalty of 10% of the maximum grade for every 10 hours. Extensions may be granted until 4 days before the deadline in exceptional cases (and some creative penalty will be applied). Verbal agreements are not binding, therefore the extension requests have to be made through a written medium.

## **Assessment**

Participation in class activities (30%): This component will be made up of your attendance at seminars, weekly reading responses, and any other in-class activities. Weekly reading responses should be one page only (double space) and provide your view on one or more of the readings for each week. They will be grades 0(not handed in), 1 (low effort), 2 (satisfactory), or 3 (exceptional).

Presentation based on group work (30%): in-class presentations in groups. The size of the groups will depend on the total size of the class. Topics will be based on specific weapons/technologies, to be provided during first week of class.

Final essay outline (10%): Submit a one-page outline of your final essay. It should include a detailed thesis / statement of argument.

Final essay (30%): a research essay of 2000 words.

More details will be given about the assignments during the semester.

## **Week 1 - Introduction**

## **Week 2 - RMA theory**

- MacGregor Knox and Williamson Murray, eds., *The Dynamics of Military Revolution 1300-2050*, (Cambridge: Cambridge University Press, 2001), chapters 1 and 10.
- Andrew Krepinevich, "From Cavalry to Computer: The Pattern of Military Revolutions," *The National Interest*, Fall 1994.
- Colin S. Gray, *Strategy for Chaos: Revolutions in Military Affairs and the Evidence of History*, (London: Frank Cass, 2002), ch. 3.
- Gwynne Dyer, *War, the Lethal Custom* (New York: Carroll & Graff, 2004), chapters 6 and 7.

### **Week 3 - Ancient warfare around the world**

- William McNeill (1982) *The Pursuit of Power: Technology, Armed Force, and Society since A.D. 1000* (Chicago: Chicago University Press, 1982) ["The era of Chinese predominance", pp. 24-62]
- Creveld, Martin Van. *Technology and War: From 2000 B.C. to the Present*. Revised & Expan edition. New York : Toronto : New York: Touchstone, 1991. pp. 9-37

### **Week 4 - Early Modern Europe**

- William McNeill (1982) *The Pursuit of Power: Technology, Armed Force, and Society since A.D. 1000* (Chicago: Chicago University Press, 1982) ["The business of war in Europe, 1000-1600" and "Advances in Europe's Art of War, 1600-1750", pp. 63-143]
- Frank Tallet (1992) *War and Society in Early Modern Europe 1495–1715* (Routledge, London). ["The changing art of war", pp. 21-68] [NTU online: XX(1056812.2)]
- Geoffrey Parker, *The Military Revolution and the Rise of the West, 1500-1800* (Cambridge University Press, 1996). [Introduction, Chapters 1 and 4; pp. 1-44 and 115-145]
- Creveld, Martin Van. *Technology and War: From 2000 B.C. to the Present*. Revised & Expan edition. New York : Toronto : New York: Touchstone, 1991. pp. 81-111

### **Week 5 - Industrialisation, Mobility and the Mass**

- William McNeill (1982) *The Pursuit of Power: Technology, Armed Force, and Society since A.D. 1000* (Chicago: Chicago University Press) ["The initial industrialization of war, 1840- 84" and "Intensified Military-Industrial Interaction, 1884-1917", pp. 223-306.
- John Ellis (1975) *Social History of the Machine Gun* (Johns Hopkins University Press) [Chapters 1-4, pp.9-109]
- Creveld, Martin Van. *Technology and War: From 2000 B.C. to the Present*. Revised & Expan edition. New York : Toronto : New York: Touchstone, 1991. pp. 153-167

### **Week 6 - Sail, Steam And the Nuclear Navy**

- Creveld, Martin Van. *Technology and War: From 2000 B.C. to the Present*. Revised & Expan edition. New York : Toronto : New York: Touchstone, 1991. pp. 199-217

### **Week 7 - WWI**

- Sarah Jansen (2000) "Chemical-Warfare Techniques for Insect Control: Insect 'Pests' in Germany Before and After World War I," *Endeavour* 24: 28–33.

- L. Fritz Haber (1986). *The Poisonous Cloud: Chemical Warfare in the First World War*. Oxford University Press. [Chapters 3, 6, and 8; pp. 22-40, 106-138, and 176-206]
- Peter Leese (2002) *Shell Shock: Traumatic Neurosis and the British Soldiers of the First World War*. Palgrave [Chapters 2 and 3, pp. 15-48]

### **Week 8 - WWII**

- Peter Galison (1997) *Image and Logic: A Material History of Microphysics* (University of Chicago Press) [Sections 4.1, 4.2 and 4.6; pp. 239-245 and 303-311]
- Robert Buderi (1996) *The Invention that Changed the World: The Story of Radar From War to Peace* (Simon & Schuster) [Chapters 3-5; pp. 52-113]
- Nicolas Rasmussen (2009) *On Speed: The Many Lives of Amphetamine* (NYU Press). ["Speed and total war"]
- Peter Neushel (1993) "Science, Government and Mass Production of Penicillin," *Journal of the History of Medicine and Allied Sciences* 48: 371-95.

### **Week 9 - Nuclear Warfare, MAD**

- Richard Rhodes, *The Making of the Atomic Bomb* ["The New World" and "Physics and Dessert Country"; pp. 394-485]
- Mark Walker, *Nazi Science: Myth, Truth, and the German Atomic Bomb*. [Chapter 8, "Hitler's Bomb"; pp. 183-206]
- Fred Kaplan (1991) *Wizards of Armageddon* (Stanford University Press). [Chapters 4-6, 12-13; pp. 51-110 and 185-219]
- Itty Abraham (1998) *The Making of the Indian Atomic Bomb: Science, Secrecy, and the Postcolonial State* (Zed Books) [Introduction and "Learning to Love the Bomb"; pp. 6-33 and 113-154]

### **Week 10 Automation, Computers and Information**

- Arthur K. Cebrowski and John J. Garstka, "Network-Centric Warfare: Its Origin and Future," *Proceedings*, January 1998.
- Office of Defense Transformation, *Network-Centric Warfare: Creating a Decisive Warfighting Advantage* (Washington, DC: U.S. Department of Defense, 2003).
- William Owens, "The Emerging Systems of Systems", *Strategic Forum* #63, (Washington DC: INSS, February 1996), [http://www.ndu.edu/inss/strforum/SF\\_63/forum63.html](http://www.ndu.edu/inss/strforum/SF_63/forum63.html)

### **Week 11 - Failure of science and technology**

- David Talbot, "How Technology Failed in Iraq," *Technology Review*, November 2004.

- Noah Shachtman, “How Technology Almost Lost the War: In Iraq, the Critical Networks are Social – Not Electronic,” *Wired*, November 2007

**Week 12 - The future trends**

**Reading will be announced during the semester.**

**Week 13 - Review and discussion**