

Nanyang Technological University
HH2020: Science and War
Semester 2, 2013-2014

Academic Units: 3
Pre-requisites: None
Instructor: A/Prof. Hallam Stevens
Email: hstevens@ntu.edu.sg
Office: HSS-05-07

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.

Logistics:

This is a seminar class that will meet once a week on Thursday mornings from 9.30am-12.30pm in SPMS-TR+15.

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 for this module:

MCs

Medical certificates are not a get out of jail free card. Missing a seminar without an MC will mean an automatic zero for any attendance and participation marks awarded for that week. Presenting an MC confers on you the right to make up the grade for your missed class. Usually, this means I will ask you to write a 500-word response paper on the readings for that week. The grade on this response paper will make up your attendance and participation grade for that week.

Academic honesty

The University rules regarding plagiarism will be strictly enforced in this class. Make yourself familiar with the rules. If in doubt, ask me.

Clickers

It is your responsibility to have your clicker with you and in working order at all times. If you forget your clicker or if it is not working, you will miss any points associated with clicker questions for that week. If you need to change or update your clicker it is your responsibility to inform me of your new ID# as soon as possible. Passing your clicker to another student or using another student's clicker is academically dishonest. Any cases of such behavior will be treated as cheating.

Assessment

This class has no examination. The assessment tasks aim to develop your skills as historians and to ask you to read and think critically about history. The assessment structure will reward those students who work consistently over the course of the semester.

Participation in class activities (25%): 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 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 (25%): in-class presentations in groups. Topics will be based on specific weapons/technologies, to be provided during first week of class.

Documentary (15%): Create a screenplay / script / storyboard for a one hour documentary based on one of the topics in the first half of the course (up to the mid-semester break).

Due date: Thursday February 27th, 2014, in class.

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

Due date: Thursday February 27th, 2014, in class.

Final essay (25%): a research essay of 2000 words.

Due date: Thursday April 17th, 5pm (via edveNTUre)

Module Outline and Readings

Week 1 (January 16): *Introduction*

No readings.

Watch: *Day After Trinity*.

Week 2 (January 23): *Military technology in early modern China and Japan*

- 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]
- Joseph Needham, Ho Ping Yu, Lu Gwei Djen and Wang Ling. *Science and civilization in China: Volume 5: Chemistry and chemical technology: Part 7: Military technology: the gunpowder epic*. Cambridge University Press, 1986. ["Ancestry(II): The recognition and purification of saltpetre", "Gunpowder compositions and their properties", "Proto-gunpowder and gunpowder", and "Bombs and grenades." pp. 94-126 and pp. 161-191]
- David Howell, "The Social Life of Firearms in Tokugawa Japan" in *Journal of Japanese Studies*, 29, No. 1 (2009) pp. 65-80.

Week 3 (January 30): *Warfare in 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)]
- Bert S. Hall (1997) *Weapons and warfare in Renaissance Europe* (Johns Hopkins University Press) ["Technology and the military revolution", pp. 201-236]

Week 4 (February 6): *Colonial encounters*

- Jared Diamond, *Guns, Germs, and Steel* ["Collision at Cajamarca" and "Necessity's mother", pp. 67-82 and 239-264]
- 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]
- Jeremy Black, *War and the world: military power and the fate of continents, 1450-2000* (New Haven, CT: Yale University Press, 1998). ["Fifteenth and sixteenth-century expansion and warfare", pp. 18-59]

Week 5 (February 13): *Industrialization*

- 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]

Week 6 (February 20): World War I: chemistry and psychology

- 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]
- J. M. Winter (1980) “Military Fitness and Civilian Health in Britain during the First World War,” *Journal of Contemporary History* 15, no. 2: 211-244.
- Tracey Loughran (2012) “Shell shock, trauma, and the First World War: the making of a diagnosis and its histories” *Journal of the history of medicine and allied sciences* 67, no. 1: 94-119.

Week 7 (February 27): World War II, part 1: the mobilization of science

- 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.

Mid-semester break

Week 8 (March 13): World War II, part 2: the atomic bomb

- 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]
- Morris Low (1990) “Japan’s secret war: ‘Instant’ scientific manpower and Japan’s World War II bomb project,” *Annals of Science* Vol. 47: pp. 347-360.

In-class reading: The Farm Hall transcripts.

Week 9 (March 20): Mutually assured destruction

- Peter Galison and Barton Bernstein (1989) “In any light: scientists and the decision to build the superbomb, 1952-54” *Historical studies in the physical sciences* 19, no. 2: 267-347.
- Fred Kaplan (1991) *Wizards of Armageddon* (Stanford University Press). [Chapters 4-6, 12-13; pp. 51-110 and 185-219]
- Albert Wohlstetter, “The Delicate Balance of Terror,” *Foreign Affairs* 37: 2 (Jan. 1959), 211-234.
- Sharon Ghamari-Tabrizi, “On Thermonuclear War,” *The Worlds of Herman Kahn: The*

Intuitive Science of Thermonuclear War (Cambridge: Harvard University Press, 2005), 203-235.

Week 10 (March 27): Cold war, part 1: operations research, cybernetics, computing, biology

- Schweber and Fortun (1993) “Scientists and the legacy of World War II: the case of operations research” *Social studies of science* 23, no. 4: 595-642.
- Paul Edwards, *The closed world: computer and the politics of discourse in cold war America* [“Why build computers? The military role in computer research”, pp. 43-74]
- Peter Galison (1994) “Ontology of the enemy: Norbert Wiener and the cybernetic vision” *Critical inquiry* 21, no. 1: 228-266.
- Lily Kay, *Who wrote the book of life? A history of the genetic code* (Stanford University Press). [Chapter 3: “Production of discourse: cybernetics, information, life”; pp. 73-127]

Week 11 (April 3): Cold war, part 2: nuclear proliferation

- Jeffrey Richelson (2007) *Spying on the bomb: American nuclear intelligence from Nazi Germany to Iran and North Korea* (W.W. Norton). [Chapter 8: “Rogues”; pp. 317-359]
- 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]
- John Wilson Lewis and Xue Litai (1991) *China builds the bomb* (Stanford University Press). [Chapters 1,6,9; pp.1-10, 137-169, and 219-238]

Week 12 (April 10): The Vietnam War and the 1960s

- John J. Tolson (1999) *Vietnam studies: airmobility, 1961-1971* (Department of the Army, Washington, DC) Available at: http://www.history.army.mil/html/books/090/90-4/CMH_Pub_90-4-B.pdf [Foreword, Preface, “The early years in Vietnam, 1961-1965, pp. 25-50]
- Robert M. Neer (2013) *Napalm: an American biography* (Harvard University Press). [“Harvard’s genius”, “Anonymous Research No. 4”, “Freedom’s Furnace,” “Vietnam syndrome”, pp. 7-44 and 91-125]
- John Marks (1979) *The search for the Manchurian Candidate: The CIA and mind control: The secret history of the behavioral sciences* (“LSD” pp. 57-78). Available at: <http://www.druglibrary.org/schaffer/lsd/marks.htm>
- Fred Wilcox (1983 [2011]) *Waiting for an Army to Die: the tragedy of Agent Orange* (Seven Stories Press). [Chapters 1-2,10; pp. 3-30 and 147-174]

Week 13 (April 17): Terror / counter-terror

- Class chooses the reading! Please submit your suggestions and we will vote in week 12.