

Nanyang Technological University
HH2020: Science and War
Semester 2, 2015-2016

Academic Units: 3
Pre-requisites: None
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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.

Logistics:

This is a seminar class that will meet once a week on Friday afternoons from 1.30pm-4.30pm in LHS TR+56.

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. Chicago style (notes-with-bibliography) should be adopted for all written work.

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.

Late policy:

Late work will incur a penalty of **10% of the maximum grade** per 24 hours late. For an assignment worth twenty points, for example, an assignment that is two hours late and an assignment that is 23 hours late would both incur a 2 point penalty. An assignment that is 26 hours late and an assignment that is 50 hours late would incur a 4 point and a 6 point penalty respectively.

Extensions may be granted in exceptional cases, although no extensions will be granted for any reason within **one week** of the deadline (in other words, if you need an extension, ask early!).

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. 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.

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: Friday February 26th, 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: Friday March 11th, 2014, in class.

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

Due date: Friday April 15th, 12noon (via edveNTure)

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

Use of Class time

Generally, the first two hours of class time will be devoted to discussion of the readings or mini-lectures related to each week's topic. The final hour of the class will be devoted to a "writing workshop." In this workshop, different activities will be planned for each of the weeks – these will include formulating a historical question, formulating a thesis, planning an essay, working with primary sources, editing and revising an essay, and others. These final hours will often involve individual or group work that will count towards your participation grade.

Module Outline and Readings

Week 1 (January 15): Introduction

No readings.

Watch: *Day After Trinity*.

Week 2 (January 22): 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.

Writing workshop: Picking a historical question

Week 3 (January 29): 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]

Writing workshop: Developing a thesis

Week 4 (February 5): 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]

Writing workshop: Finding primary sources

Week 5 (February 12): 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]

Writing workshop: Working with primary sources I

Week 6 (February 19): 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]
- Peter Leese (2002) *Shell Shock: Traumatic Neurosis and the British Soldiers of the First World War*. Palgrave [Chapters 2 and 3, pp. 15-48]

Writing workshop: Working with primary sources II

Week 7 (February 26): 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.

Writing workshop: Planning an essay

Mid-semester break

Week 8 (March 11): 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]

Writing workshop: Composition I

Week 9 (March 18): Mutually Assured Destruction and Nuclear Proliferation

- 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]
- 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]

Writing workshop: Composition II

Week 10 (March 25): No class due to Good Friday holiday.

Week 11 (April 1) Cold War: Operations research, Cybernetics and Computing

- 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.

Writing workshop: Peer review and editing I

Week 12 (April 8): Hot War: 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]

Writing workshop: Peer review and editing II

*Week 13 (April 15): **Terror / Counter-terror***

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