HIST 30605
Technology and War in US History

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Course Description:

War has been a central component of U.S. statecraft from the war of independence through to the present day. This class examines the matter of war with a particular emphasis on the historical relationship between science, technology, and warfare. We will consider not only what weapons were deployed on the battlefield but the scientific discoveries and political decisions that led to the development of those weapons of war, as well as the ways in which technological changes altered the definition of what constituted the battlefield. While this course will begin in the seventeenth century, we will spend most of the class focused on developments in the twentieth century, as well as the emerging trends already playing out in the twenty-first century. Through exploring the relationship between science, technology, and warfare this class will push back on deterministic narratives around technology to highlight the human creators, institutions, users of military technologies, as well as the victims of those technologies. Ultimately this class focuses less on the "what" of war technologies, and more on the why and how.

Learning Outcomes:

By the end of the semester, students will be able to:

1. Explain the connections between war and techno-science, with an understanding of military technology not only in terms of its deployment on battlefields but in terms of its impacts on society more broadly.
2. Discuss the development of technology in a non-deterministic fashion, recognizing historical contingencies as well as the role that people and institutions have played in the history of technological development.
3. Make sense of primary sources in a variety of formats and from a range of time periods, both in terms of how to analyze primary sources, and in terms of understanding how historians make use of primary sources.
4. Analyze historical scholarship and be able to identify arguments, contributions to the field, and the way scholars make use of sources.
5. Understand core concepts from the history of technology (including technological determinism, affordances, technological systems, and others), and recognize the debates around these concepts.
6. Recognize the current state of military technologies while appreciating the historical forces that have undergirded their emergence.

Required Texts:

You do not need to purchase any books for this class. All assigned readings will be available either as pdfs/links on Brightspace or are available as eBooks through the Purdue Library website. To find the readings go to the "Content" tab on the Brightspace page for the class and look for the proper class date under "Course Materials." If the material has "READ" in its name, it is assigned for that day; if it has "PS" in its name, it is a primary source (you are expected to read/watch those); if it has "Optional" in its name, it is an optional reading (you do not have to read it).

Course Assignments:

Exam 1 – 20%
Exam 2 – 20%
Final Exam – 25%
Primary Source Responses – 25% (five responses, 5% each)
Attendance – 10%

Exam 1 – 20% (2/5/25)

There will be an in-class exam given on 2/5/25. This exam will cover the material we covered in Section 1 of the course (weeks 1 – 4). The exam will feature identifications, a primary source response, and a few longer response questions. The test will be given using bluebooks. More details (and a study guide) will be given in class the week before.

Exam 2 – 20% (3/12/25)

There will be an in-class exam given on 3/12/25. This exam will cover the material we covered in Section 2 of the course (weeks 5 - 9). The exam will feature identifications, a primary source response, and a few longer response questions. The test will be given using bluebooks. More details (and a study guide) will be given in class the week before.

Final Exam – Date TBA – 25%

There will be final exam given during finals week. This exam will cover the material we covered in Section 3 of the course (weeks 10 - 16). The exam will feature identifications, a primary source response, and a few longer response questions. The test will be given using bluebooks. More details (and a study guide) will be given in class the week before. What sets the final exam apart from the other exams is that the final exam will include a cumulative essay question which will require you to draw on material/knowledge from the entire course.

Primary Source Responses – Dates Vary – Five responses, 5% each, 25% total

Throughout this course we will be paying attention to primary sources, both in terms of how they are used in the articles we read, and by looking at these sources ourselves. Throughout the syllabus you will find numerous items listed as "primary sources," while you are expected to read/watch all of these, you are responsible for picking and writing responses to five of them. You get to pick which five; however, at least one of them must be from unit 1, at least one of them must be from unit 2, at and least two of them must be from unit 3. You will need to do one more response, but it can come from a unit of your choosing.

For each of these, your response should consist of two short paragraphs: in the first paragraph, provide a literal explanation of what this source is based on a close reading of the source itself (When is it from? Who is it by? What does it literally say? What is it?); in the second paragraph, grapple with the source (What does it teach us? What questions does it raise? What other sources would you need to make sense of it? How might a historian use it?). The total wordcount for each response should be between 250 and 400 words total, and they should be uploaded to Brightspace. More details on these responses will be discussed in class and can also be found on the course Brightspace page (along with a rubric).

Each primary source response is due by the beginning of class on the day for which that primary source was assigned!

Attendance – 10%

There is no substitute for coming to class, having done the reading, and being prepared to engage with the topics of the day. Though this is a large lecture class, you are still expected to be present at every lecture. Attendance will be taken (by sign in sheet) every day. While every student is permitted two unexcused absences, after that each absence will result in a 2-point deduction from your attendance grade. Any student with eight or more unexcused absences (a number which includes the two which are allowed) will automatically receive an F in the course. Excused absences are, of course, a different matter. For more on what constitutes an excused absence please consult the university's policies on what is considered an excused absence.

Grading Scale:

A+ 100-98	B+ 89-88	C+ 79-78	D+ 69-68	F 59-0
A 97-93	B 87-83	C 77-73	D 67-63	
A- 92-90	B- 82-80	C- 72-70	D- 62-60	

Course Policies:

Freedom of Expression Policy: In this class, students are encouraged to exercise their right to free inquiry and expression. You are welcome to express any view on the subject matter introduced by the instructor or other class members within the structure of the course. While you are responsible for learning the content of this course, you remain free to take a reasoned exception to the views presented and to reserve judgment about matters of conscience, controversy, or opinion. When you encounter ideas that you find offensive, immoral, or unwise, you are encouraged to engage them with reasons, evidence, and arguments. Your course grade will be based on your academic performance, not on the opinions you express. Our commitment to freedom of expression means that no relevant ideas or positions are out of bounds, but disruptive or disorderly behavior, threats, or harassment are strictly prohibited and will be reported to the Office of the Dean of Students.

See the University's "Commitment to Freedom of Expression" and "Bill of Student Rights" in the University Policies and Statements module on Brightspace.

Nondiscrimination Statement: Purdue University has a clear nondiscrimination policy, which reads "Purdue University is committed to maintaining a community which recognizes and values the inherent worth and dignity of every person; fosters tolerance, sensitivity, understanding, and mutual respect among its members; and encourages each individual to strive to reach his or her own potential. The University believes that intellectual and cultural diversity among its many members strengthens the institution, stimulates creativity, promotes the exchange of ideas, and enriches campus life. Purdue University views, evaluates, and treats all persons in any University related activity or circumstance in which they may be involved, solely as individuals on the basis of their own personal abilities, qualifications, and other relevant characteristics.

Purdue University prohibits discrimination against any member of the University community on the basis of race, religion, color, sex, age, national origin or ancestry, genetic information, marital status, parental status, sexual orientation, gender identity and expression, disability, or status as a veteran. The University will conduct its programs, services and activities consistent with applicable federal, state and local laws, regulations and orders and in conformance with the procedures and limitations as set forth in Purdue's Equal Opportunity and Equal Access policy which provides specific contractual rights and remedies. Any question of interpretation regarding this Nondiscrimination Policy Statement shall be referred to the Vice President for Ethics and Compliance for final determination."

Electronic Devices in Class: Ideally, students should come to class with physical copies of the assigned readings, prepared to participate in the class, and take notes by hand. However, I recognize that many students prefer to take notes on a computer, and that some will have digital versions of class texts. You are adults, and I hope that you can be trusted to use electronic devices in class responsibly. Students using digital devices for non-class related activities will be marked as absent for the day. A laptop for notetaking is one thing, but phones, headphones, and other gadgets should be put away at the start of class. And please note, when a student is distracted by their electronic device it really is quite obvious! I know you're thinking it isn't obvious when *you* do it, but (really) it is. I reserve the right to revise this policy if students fail to use their devices responsibly.

Communication: Throughout this course we will be in contact using your Purdue email address and Brightspace. I expect you to check both regularly, as these are the ways that I will be contacting you, and the whole class. I encourage you to get in touch with me regarding any questions and concerns you might have. The best way to contact me is by email zloeb@purdue.edu. I will try to always respond promptly, but please bear in mind that I (like you) am a human being trying to do many things, so do not panic if I do not reply to your email within five minutes of you sending it. I will try to respond to all emails within 24 hours, though students should not expect to hear from me on Saturdays.

Attendance: You are expected to attend all classes. A sign-in sheet will be available each day in the classroom. In the event you are unable to attend class, you have two unexcused you may utilize without penalty during the semester. These two will not count against you. Each absence after these two absences, however, will result in a 2-point reduction of your attendance grade. A student may receive a failing grade for excessive absences (meaning, more than eight).

According to Purdue's policies, excused absences include those for documented illness, grieving, military service, jury duty, religious observance, caring for dependent children, and official university activities. Students who need to miss class for these reasons will not be penalized. While some situations and crises (you woke up feeling sick/a family emergency) are hard to predict, wherever possible please let the instructor know in advance if you will need to miss class for an excused reason.

Office Hours: My regular office hours are held on Mondays and Wednesdays from 12:00 to 2:00 p.m. in Beering 6116. These are "open" office hours, so feel free to just drop by. During periods of increased interest (before exams, for example), I will offer additional availability. I also recognize that these days/times may not work for everyone, and I am willing to set up other times to meet with students either in my office or over Zoom in order to accommodate your needs.

Classroom Expectations: To get the most out of this course you need to do the reading, come prepared to discuss the reading, and come prepared to actively listen to the lecture. This is not primarily a discussion class, but there will still be many moments where I seek the class's input, and everyone's experience will be enriched if you come prepared to wrestle with the questions that are raised. Being prepared will not only improve your experience, but it will also improve the experience of your classmates. Class participation involves not only contributing to the discussion but actively listening while others (including me) are speaking. It is inevitable that you will disagree with some of your fellow classmates, but I expect that all class discussions will be kept thoughtful and respectful. Disagreements are okay, insults are not. Lastly, I am here to help (really), please feel free to reach out to me with your concerns—if you fear that you are falling behind or that you are not understanding something please let me know!

Re-grading Policy: There is a mandatory 24-hour "sit with it" policy for all posted grades. If, after 24 hours, you are still curious why you received the grade you received you may contact the person who graded that assignment for an explanation. If, after that discussion, you are still not satisfied with the grade you received you may follow up with the instructor (note: I, the instructor, may have been the original grader). Asking for a re-grade from the instructor is not a guarantee of a higher grade: the instructor may decide you deserved the original grade you were given, or that you deserve a lower grade than what you were originally given. If you find that the grades you are receiving on assignments are not what you desire, I encourage you to come to my office hours so we can discuss strategies for how you can improve your work.

Maintaining Classroom Integrity: In order for all students to feel comfortable participating in this class it is essential that the integrity of the classroom be protected. Taking pictures, videos, or making recordings—without prior consent of the instructor and every student in our class—is not permitted. Any student who is found to have made or distributed images, videos, or recordings from our class without permission will receive an automatic F for the course and the Dean of Student's Office will be informed.

Academic Misconduct: Stephen Akers, Executive Associate Dean of Students, writes "Purdue University values intellectual integrity and the highest standards of academic conduct. To be prepared to meet societal needs as leaders and role models, students must be educated in an ethical learning environment that promotes a high standard of honor in scholastic work. Academic dishonesty undermines institutional integrity and threatens the academic fabric of Purdue University. Dishonesty is not an acceptable avenue to success. It diminishes the quality of a Purdue education, which is valued because of Purdue's high academic standards." Plagiarism and other forms of academic misconduct will not be tolerated and will be dealt with in accordance with Purdue's policies. If you are not sure what "academic misconduct" consists of, please familiarize yourself with the relevant policies here: https://www.purdue.edu/odos/osrr/academic-integrity/index.html

AI/Chatbot Policy: Though we will be discussing computers, AI, and robots at various points in the semester, none of the people grading your assignments are interested in reading things that were generated by AI. Submitting work that was generated by AI and claiming it as your own is a form of academic misconduct (as noted above) and carries the same consequences. If a chatbot generated any portion of your assignment (including the text of a speech you deliver) you are in violation of the academic integrity expectations of this course and the University. Your case will be reported to the Office of Student Rights and Responsibilities for further review of your status at this University. If you are stressed about a particular reading or assignment and are tempted to turn to AI, please come to office hours and speak to me. I'm happy to help you improve your reading/writing strategies.

Accommodations for Disabilities: Purdue University as an institution, and I as an instructor, are committed to ensuring that the classroom is accessible and that students needs are met. If you experience or anticipate experiencing physical or academic barriers related to disability, I encourage you to let me know as soon as possible so we can discuss appropriate options. I also highly encourage you to directly contact the Disability Resource Center at: drc@purdue.edu or call them at 765-494-1247. There is a formal process for requesting accommodations, and if you believe you qualify for accommodations, I encourage you to begin the process at once. For more information, please visit: https://www.purdue.edu/drc/

Mental Health Statement: Counseling and Psychological Services (CAPS) at Purdue "has a strong commitment to meeting the needs of diverse people. CAPS is committed to helping students benefit from their college experience. CAPS is committed to helping students achieve personal and academic success. Although CAPS works with students in crisis, our primary goal is to assist students with their concerns before they develop into more serious problems. One way that students can do this is to talk to a therapist or psychologist in a supportive atmosphere to aid self-understanding and the resolution of personal issues." If you are struggling and in need of mental health support, regardless of the source of your struggles, I encourage you to make use of Purdue's CAPS services. You can contact CAPS by calling 765-494-6995, or by going to the CAPS office on the second floor of the Purdue University Student Health Service. For more information, please visit: https://www.purdue.edu/caps/about/mission.html

COVID-19 Policies: This is an in-person class, in which you will be in close proximity to other students, if you have any of the symptoms of COVID-19 (or have recently come into close contact with someone infected) I encourage you to get tested immediately. Purdue no longer has a mask mandate, but I support any students who chooses to wear a mask in class. Remember: we keep each other safe.

Basic Needs Security: If you are experiencing challenges securing housing or food and believe that this may affect your course performance, please know that there are resources available to help you at Purdue. Should you find yourself in need of assistance I urge you to contact the Dean of Students for support. No appointment is needed, and Student Support Services is ready to assist students 8 a.m.-5 p.m. Monday through Friday.

Major Campus Emergency: While we are all certainly hoping for a smooth semester, as the experience of the pandemic has taught us all, that is not always possible. Should a major campus emergency occur, deadlines, grading, and course requirements are subject to revision. But let's all hope that isn't necessary.

Course Schedule
(subject to minor changes)

An important note on readings: For each class you will see multiple readings. You are expected to do the first reading (it will be marked READ on Brightspace) and to spend some time with the primary source (it will be marked PS on Brightspace). Any readings labeled "Optional" are just that—optional—you are not required or expected to read these additional pieces, they are there for you to dig deeper if a particular topic piques your interest.

Week 1 – Course Overview and Core Themes

January 13
- Syllabus overview, course policies, assignments, how to read for this class.
- READ:
    - Nothing (it's the first day).

January 15
- The History of Technology and the History of War
- READ:
    - David Edgerton. "War." In *The Shock of the Old* (Oxford University Press, 2007): 138-159.
    - *Optional:* Susan Lindee. "Experimental Wounds: Science and Violence in Mid-Century America." *Journal of Law, Medicine & Ethics*, v. 39, n. 1 (Spring): 8-20; George Raudzens, "War-Winning Weapons: The Measurement of Technological Determinism in Military History." *The Journal of Military History.* Vol. 54 (October 1990): 403-433.
    - *Primary Source: SIPRI Yearbook 2025: Armaments, Disarmament and International Security*, *Summary.* (SIPRI 2025)

Week 2 – Making Guns, Using Guns

January 20
- The Affordances of the Rifle
- READ:
    - Adam Hirsch. "The Collision of Military Cultures in Seventeenth-Century New England." *The Journal of American History,* v. 74, n. 4 (1988). 1187-1212.
    - *Optional:* Patrick Malone. "Chapter V: Technology, Tactics, and Total Warfare." In *The Skulking Way of War: Technology and Tactics among the New England Indians.* (Madison Books: 2000): 67-98; Robert Multhauf. "The French Crash Program for Saltpeter Production, 1776-94. *Technology and Culture.* Vol. 12, No. 2 (April 1971): 163-181.
    - *Primary Source(s)*: Baron de Steuben. *Regulations for the Order and Discipline of Troops of the United States.* (177). Note, this source is quite long, please read pages 9-16 ("The Manual Exercise").

January 22

- Industrializing the Production of Weapons
- READ:
    - Merritt Roe Smith. "John H. Hall, Simeon North, and the Milling Machine: The Nature of Innovation among Antebellum Arms Makers." In *Technology and Culture*, v. 14, n. 4 (October 1973): 573-591.
    - *Optional:* Robert Howard. "Interchangeable Parts Reexamined: The Private Sector of the American Arms Industry on the Eve of the Civil War." In *Technology and Culture*, v. 19, n. 4 (October 1978): 633-649; Rosalind Williams. "The Political and Feminist Dimensions of Technological Determinism." In *Does Technology Drive History? The Dilemma of Technological Determinism.* Merritt Roe Smith and Leo Marx (eds.). (The MIT Press: 1994): 217-235.
    - *Primary Source:* John H. Hall and William Thornton. "Improvement in Fire-Arms." *United States Patent Office.* May 21, 1811.

Week 3 – The Civil War

January 27

- Infrastructure and Technological Systems
- READ:
    - Anne Kelly Knowles. "Labor, Race, and Technology in the Confederate Iron Industry." In *Technology and Culture,* v. 42, n. 1 (January 2001): 1-26.
    - *Optional:* Lisa Brady. "The Wilderness of War: Nature and Strategy in the American Civil War." *Environmental History.* Vol. 10 (July 2005): 421-447; Thomas Hughes. "The Evolution of Large Technological Systems." In *The Social Construction of Technological Systems, Anniversary Edition: New Directions in the Sociology and History of Technology.* Wiebe Bijker, Thomas Hughes, Trevor Pinch, and Deborah Douglas (eds.), (The MIT Press, 2012): 45-76.
    - *Primary Source:* Joseph LeConte. "Instructions for the Manufacture of Saltpetre." (State Printer, 1862).

January 29

- Railroads and Telegraph Lines
- READ:
    - Steven G. Collins. "Progress and Slavery on the South's Railroads." *Railroad History.* No. 181 (Autumn 1999): 6-25.
    - *Optional:* R.G. Angevine. "Chapter 7: The Civil War and the Beginning of Army-Railroad Cooperation, 1861-1865," in *Railroads and the State: War, Politics, and Technology in Nineteenth Century America* (Stanford University Press, 2004): 130-164; Pierre Wilhelm. *The Telegraph: A Strategic Means of Communication During the American Civil War*. Revista de Historia de America. No. 124 (January-February 1999): 81-98.
    - *Primary Source:* Joel Emmet O'Brien. *Telegraphing in Battle: Reminiscences of the Civil War*. Read Chapter X. https://archive.org/details/telegraphinginba00obri/page/70/mode/2up

Week 4—Towards the Twentieth Century

February 3

- Iron on the Seas
- READ:
    - D.A. Mindell. "'The Clangor of That Blacksmith's Fray': Technology, War, and Experience, Aboard the USS Monitor." *Technology and Culture,* v. 36, n. 2 (April 1995): 242-270.
    - *Optional*: Tommy Jamison. "Manning the Torpedo Boats: How Gendered Insecurities Shaped Naval War in the United States and Britain, 1860-1900." *Technology and Culture*. Vol. 63, NO. 4 (October 2022): 1106-1136; Elting Morison. "Gunfire at Sea: A Case Study of Innovation." *Engineering and Science Monthly.* Vol. XIII, NO. 7 (April 1950): 5-11.
    - *Primary Source*: Alfred Thayer Mahan. "The United States Looking Outward." In *The Interest of America in Sea Power: Present and Future* (1897).

February 5

- Exam 1!

Week 5 – The World at War

February 10

- The Breakdown of Scientific Internationalism
- READ:
    - Daniel Kevles. "'Into Hostile Political Camps': The Reorganization of International Science in World War I." *ISIS*, v. 62, n. 1 (Spring, 1971): 47-60.
    - *Optional:* Elisabeth Crawford. "Internationalism in science as a casualty of the First World War: relations between German and Allied scientists as reflected in nominations for the Nobel prizes in physics and chemistry." *Social Science Information,* v. 27, n. 2 (1988): 163-201; David van Keuren. "Science, Progressivism, and Military Preparedness: The Case of the Naval Research Laboratory, 1915-1923." In *Technology and Culture*, v. 33, n. 4 (October 1992): 710-736.
    - *Primary Source:* Edward Marshall. "Edison's Plan for Preparedness." *The New York Times.* May 30, 1915.

February 12

- The Troglodyte War
- READ:
    - Constance M. Ruzich. "Taming the tank: American soldiers' views of technology, agency, and masculinity in the First World War." *First World War Studies.* Vol. 13, Nos. 2-3 (2022): 125-140.
    - *Optional:* A.E. Ashworth. "The Sociology of Trench Warfare 1914-18." *The British Journal of Sociology,* v. 19, n. 4 (Dec. 1968): 407-423; Richard Fisher and Richard Willis. "One million rounds fired in 12 hours? An analysis of the account of six guns of the 100th Brigade Machine Gun Company at High Wood in August

1916." *First World War Studies.* Vol. 9, NO. 3 (2018): 313-327; Frederick Todd. "The Knife and Club in Trench Warfare, 1914-1918." *The Journal of the American Military Foundation*, v. 2, n. 3 (Autumn 1938): 139-153; Charles Ziegler. "Weapons Development in Context: The Case of the World War I Balloon Bomber." *Technology and Culture.* Vol. 35, No. 4 (Oct. 1994): 750-767.

- *Primary Source:* Army War College. *Notes on Training for Rifle Fire in Trench Warfare.* (Government Printing Office, 1917).

Week 6 – The Chemists' War

February 17

- Mobilizing Chemistry, Mobilizing Chemists
- READ:
  - Daniel Jones. "American Chemists and the Geneva Protocol." *ISIS*, v. 71, n. 3 (Sept., 1980): 426-440.
  - *Optional:* Martin Gordon, Barry Sude, and Ruth Ann Overbeck. "Chemical Testing in the Great War: The American University Experiment Station." *Washington History*, v. 6, n. 1 (Spring/Summer 1995): 28-45; Gilbert Whittemore, Jr. "World War I, Poison Gas Research, and the Ideals of American Chemists." In *Social Studies of Science*, v. 5, n. 2 (May 1975): 135-163.
  - *Primary Source:* L.H. Baekeland. "The Naval Consulting Board of the United States." *The Journal of Industrial and Engineering Chemistry.* Vol. 8, No. 1 (Jan. 1916): 67-70.

February 19

- Was Gas a Failure?
- READ:
  - Hugh Slotten. "Humane Chemistry or Scientific Barbarism? American Responses to World War I Poison Gas, 1915-1930." *The Journal of American History*, v. 77, n. 2 (Sept. 1990): 476-498.
  - *Optional:* L.F. Haber. "Chapter 11: Was Gas a Failure?" in *The Poisonous Cloud: Chemical Warfare in the First World War.* (Clarendon Press: 1986): 259-284; Daniel Jones. "From Military to Civilian Technology: The Introduction of Tear Gas for Civil Riot Control." *Technology and Culture.* Vol. 19, No. 2 (April 1978): 151-168.
  - *Primary Source:* J.B.S. Haldane. *Callinicus: A Defence of Chemical Warfare*. (1925).

Week 7 – Darker Days Ahead

February 24

- Mobilizing Science (for another war)
- READ:
  - Larry Owens. "The Counterproductive Management of Science in the Second World War: Vannevar Bush and the Office of Scientific Research and Development." *The Business History Review*, v. 68, n. 4 (Winter 1994): 515-576.

- *Optional:* Kerry Irish. "Apt Pupil: Dwight Eisenhower and the 1930 Industrial Mobilization Plan." *The Journal of Military History.* Vol. 70, No.1 (Jan. 2006): 31-61; Carroll Pursell Jr. "A Preface to Government Support of Research and Development: Research Legislation and the National Bureau of Standards, 1935-41." *Technology and Culture.* v. 9, n. 2 (April 1968): 145-164.
- *Primary Source:* American Association for the Advancement of Science. "Resolution of the Council on the Science Mobilization Bill (S.702)." *Science.* (August 6, 1943): 135-137.

February 26

- Total War (Above)
- READ:
  - Kenneth P. Werrell. "The Strategic Bombing of Germany in World War II: Costs and Accomplishments." *The Journal of American History.* Vol. 73 (1986-1987): 702-713.
  - *Optional:* Tami Davis Biddle. "Chapter 3: The United States in the Interwar Years." In *Rhetoric and Reality in Air Warfare: The Evolution of British and American Ideas About Strategic Bombing, 1914-1945.* 128-175.
  - *Primary Source:* General Carl Spaatz. "Strategic Air Power: Fulfillment of a Concept." In *Foreign Affairs*, v. 24, n. 3 (Apr. 1946): 385-396
  - *Primary Source:* Army Air Forces Training Command. *Students' Manual Bombing.* (1944). Note: this is a lengthy training manual, for the purposes of your response you need only read "Section 1—The Bombing Problem—Theory of Bombing."

Week 8 – World War II

March 3

- Total War (Below)
- READ:
  - Douglas V. Johnson II, Charles M. Baily, Robert M. Citino, and William J. Astore. "Tanks: were American tanks inferior to their German and Soviet Counterparts?" In D. Showalter (ed). *History in Dispute. Vol. 4. World War II.* St. James Press (Detroit: 2000): 238-252.
  - *Optional*: Carolina Castaldi, Roberto Fontana, and Alessandro Nuvolari. "'Chariots of fire': the evolution of tank technology, 1915-1945." *Journal of Evolutionary Economics.* Vol. 19 (200(): 545-566; Rachel Gross. "Layering for a Cold War: The M-1943 Combat System, Military Testing, and Clothing as Technology." *Technology and Culture.* Vol. 60, No. 2 (April 2019): 378-408.
  - *Primary Source*: War Department. *Technical Manual: Medium Tank M4A3.* (August 1942). Note: this is a rather lengthy technical manual, for the purposes of your response you need only read "Section 1: Introduction," "Section II: Description and Tabulated Data," and "Section III: Operating Instructions and Controls."

March 5

- Making the Bomb

- READ:
    - R. Scott Kemp. "The End of Manhattan: How the Gas Centrifuge Changed the Quest for Nuclear Weapons." *Technology and Culture*. Vol. 53, No. 2 (April 2012): 272-305.
    - *Optional: Kate* Brown. "Chapter 3: Labor Shortage," "Chapter 4: Defending the Nation," and "Chapter 5: The City Plutonium Built." In *Plutopia: Nuclear Families, Atomic Cities, and the Great Soviet and American Plutonium Disasters.* (Oxford University Press: 2013): 26-43. (available as an ebook through the library website); Barton Bernstein. "Reconsidering the 'Atomic General': Leslie Groves." *The Journal of Military History*, v. 67, n. 3 (July 2003): 883-920; David Hecht. "The Atomic Hero: Robert Oppenheimer and the Making of Scientific Icons in the Early Cold War." *Technology and Culture.* Vol. 49, No. 4 (October 2008): 943-966.
    - *Primary Source:* Albert Einstein. "Letter to President Roosevelt (Einstein-Szilard Letter)." August 2, 1939.

Week 9 – World War II

March 10
- Using the Bomb
- READ:
    - J. Samuel Walker. "The Decision to Use the Bomb: A Historiographical Update." In *Hiroshima in History and Memory*, MJ Hogan (ed.) (Cambridge University Press: DATE): 11-37.
    - *Optional:* John Hersey. "Hiroshima." *The New Yorker.* August 23, 1946; Matt Price. "Roots of Dissent: The Chicago Met Lab and the Origins of the Franck Report." *ISIS.* Vol. 86 (1995): 222-244; Alex Wellerstein. "The Kyoto Misconception: What Truman Knew, and Didn't Know, About Hiroshima," in *The Age of Hiroshima*, Michael Gordin and G. John Kienberry (eds.). (Princeton University Press: 2020): 34-55.
    - *Primary Source:* James Franck. "The Franck Report." (June 1945). https://archive.org/details/FranckReport/Franck%20Report%201945%20original/

March 12
- Exam 2.

Week 10 – Spring Break!

March 17
- Spring Break!

March 19
- Spring Break!

Week 11 – One War Ends, Another Begins

March 24

- The Next Bomb(s)
- READ:
    - Peter Galison and Barton Bernstein. "In Any Light: Scientists and the Decision to Build the Superbomb, 1952-1954." In *Historical Studies in the Physical and Biological Sciences,* v. 19, n. 2 (1989): 267-347.
    - *Optional:* Barton Bernstein. "Four Physicists and the Bomb: The Early Years, 1945-1950." *Historical Studies in the Physical and Biological Sciences.* Vol. 18, No. 2 (1988): 231-263; James Hershberg. "'Over My Dead Body': James B. Conant and the Hydrogen Bomb." In Everett Mendelsohn, Merritt Roe Smith, and Peter Weingart (eds). *Science, Technology and the Military. Sociology of the Science Yearbook,* Vol. 12, Nos. 1-2 (1988): 379-430; Alex Roland. "Was the Nuclear Arms Race Deterministic?" In *Technology and Culture,* v. 51, n. 2 (April 2010): 444-461.
    - *Primary Source*: Eugene Rabinowitch. "The Narrowing Way." In *Bulletin of the Atomic Scientists,* v. 9, n. 8 (1953): 294-295, 298.

March 26
- The Military Industrial Complex
- READ:
    - Thomas Lassman. "Putting the Military Back into the History of the Military-Industrial Complex." *ISIS*, v. 106 (2015): 94-120.
    - *Optional:* Mie Augier, James March, and Andrew Marshall. "The Flaring of Intellectual Outliers: An Organizational Interpretation of the Generation of Novelty in the RAND Corporation." *Organization Science*. Vol. 26, No. 4 (2015): 1140-1161; Michael Aaron Dennis. "Reconstructing Sociotechnical Order: Vannevar Bush and the US Science Policy." In Sheila Jasanoff (ed) *States of Knowledge* (2004): 225-253; Jennifer Light. "Chapter One: Planning for the Atomic Age: Creating a Community of Experts." In *From Warfare to Welfare.* (Johns Hopkins University Press, 2003): 10-31.
    - *Primary Source*: Vannevar Bush. "Science, The Endless Frontier." (United States Government Printing Office: 1945). Note: this whole report is pretty short (about 34 pages), you do not need to read the appendices.

Week 12 – The Expanding Battlefield

March 31
- Cold War Computing
- READ:
    - Paul Edwards. "Chapter 3: SAGE." In *The Closed World: Computers and the Politics of Discourse in Cold War America.* (The MIT Press: 1997): 75-112.
    - *Optional:* Janet Abbate. "Chapter 1: White Heat and Cold War: The Origins and Meanings of Packet Switching." In *Inventing the Internet.* (The MIT Press, 1999): 7-41. (this book is available as an ebook through the library website); I. Bernard Cohen. "The Computer: A Case Study of Support by Government, Especially the Military, of a New Science and Technology." In Everett Mendelsohn, Merritt Roe Smith, and Peter Weingart (eds). *Science, Technology and the Military. Sociology of the Science Yearbook,* Vol. 12, Nos. 1-2 (1988): 119-154; Thomas Smith.

"Project Whirlwind: An Unorthodox Development Project." *Technology and Culture*, v. 17, n. 3 (July 1976): 447-464.
- *Primary Source:* IBM Corporation, Military Products Division. "On Guard! The Story of SAGE." (1956) https://archive.org/details/OnGuard1956
- *Optional Primary Source:* Paul Baran. "On Distributed Communications Networks." *IEEE Transactions on Communications.* v. 12, n. 1 (1964): 1-9.

April 2
- Rockets (and where to station them)
- READ:
  - Kristian Nielsen, Henry Nielsen, and Janet Martin-Nielsen. "City Under the Ice: The Closed World of Camp Century in Cold War Culture." *Science as Culture.* v. 3, n. 4 (2014): 443-464.
  - *Optional:* Christopher Gainor. "The Atlas and the Air Force: Reassessing the Beginnings of America's First Intercontinental Ballistic Missile." *Technology and* Culture. Vol. 54, No. 2 (April 2013): 346-370; Jacob Neufeld. "Ace in the Hole: The Air Force Ballistic Missiles Program." In Jacob Neufeld, George M. Watson, Jr., and David Chenoweth (eds.) *Technology and the Air Force a Retrospective Assessment* (1997): 111-121.
  - *Primary Source:* United Sates Army Research and Development. "Progress Report Number Six – Camp Century." https://www.campcentury.org/learning/historic-films

Week 13 – The Battlefield Keeps Expanding

April 7
- Space!
- READ:
  - Michael Neufeld. "The End of the Army Space Program: Interservice Rivalry and the Transfer of the von Braun group to NASA, 1958-1959." *The Journal of Military History.* Vol. 69, No. 3 (July 2005): 737-757.
  - *Optional*: John Cloud. "Imaging the World in a Barrel: CORONA and the Clandestine Convergence of the Earth Sciences." In *Social Studies of Science*, v. 31, n. 2 (April 2001): 231-251; Gerald K. Haines. "CIA's Role in the Study of UFOs, 1947-90: A Die-Hard Issue." In *Intelligence and National Security,* v. 14, n. 2 (Summer 1999): 26-49; Monique Laney. "Chapter One: From Enemy Aliens to Valued Citizens." In *German Rocketeers in the Heart of Dixie: Making Sense of the Nazi Past During the Civil Rights Era.* (Yale University Press, 2015): 23-42; Michael Neufeld. "Wernher von Braun's ultimate weapon." *Bulletin of the Atomic Scientists.* v. 63, n. 4 (2007): 50-78.
  - *Optional Primary Source:* House of Representatives. "Unidentified Flying Objects." Hearing by Committee on Armed Services. (April 5, 1966). Note: This is rather long, but please read the opening testimony/report and first discussion: 5991-6006.
  - *Primary Source:* "Man-Made Satellite: the first step into outers space." in *The UNESCO Courier*, September 1957 (International Geophysical Year): 30-34.

April 9

- Apocalyptic Anxiety
- READ:
    - Kenneth Rose. "Chapter 5: The Theory and Practice of Armageddon." In *One Nation Underground: The Fallout Shelter in American Culture*. (NYU Press: 2001): 150-185.
    - *Optional:* Sharon Ghamari-Tabrizi. "Simulating the Unthinkable: Gaming Future War in the 1950s and 1960s." *Social Studies of Science.* Vol. 30, No. 2 (April 2000): 163-223; Leo Marx. "The Idea of 'Technology' and Postmodern Pessimism." In *Does Technology Drive History? The Dilemma of Technological Determinism.* Merritt Roe Smith and Leo Marx (eds.). (The MIT Press: 1994): 237-257.
    - *Primary Source:* Department of Defense. "Fallout Protection: What to Know and Do About Nuclear Attack." (Office of Civil Defense: 1961). Note: please read 5-26.

Week 14 – Technological Dominance, and Its Discontents

April 14

- The Search for a Technological Solution in Vietnam
- READ:
    - Seymour Deitchman. "The 'Electronic Battlefield' in the Vietnam War." *The Journal of Military History.* Vol. 72, No. 3 (July 2008): 869-887.
    - Optional: Neil Oatsvall. "Trees Versus Lives: Reckoning Military Success and the Ecological Effects of Chemical Defoliation During the Vietnam War." *Environment and History,* v. 19, n. 4 (November 2013): 427-458; David Zierler. "Chapter 5: Herbicidal Warfare." In *The Invention of Ecocide.* (University of Georgia Press: 2011): 67-88.
    - *Primary Source:* JASON Division. *Study S-255: Air-Supported Anti-Infiltration Barrier*. (August 1966). Note: This report is rather long, for your response you need to only read the summary sections and Part I (pages 1-13).

April 16

- The Strategic Defense Initiative
- Guest lecture!
- READ:
    - Aaron Bateman. "Intelligence and alliance politics: America Britain, and the strategic Defense Initiative." *Intelligence and National Security.* Vol. 36, No. 7 (2021): 941-960.
    - *Optional*: Rebecca Slayton. "From Death Rays to Light Sabers: Making Laser Weapons Surgically Precise." *Technology and Culture.* Vol. 52, No. 1 (January 2011): 45-74; Peter Westwick. "The International History of the Strategic Defense Initiative: American Influence in the Late Cold War." *Centaurus.* Vol. 52 (2010): 338-351.
    - *Primary Source*: President Ronald Reagan. "Speech to the Nation on Defense and National Security." March 23, 1983. A pdf of the text of the speech has been uploaded, as has a link to a recording of the speech (https://www.youtube.com/watch?v=srtgQdpdArE)

Week 15 – The Digital Battlefield

April 21

- Cyberwar
- READ:
    - Rebecca Slayton. "What is a Cyber Warrior? The Emergence of U.S. Military Cyber Expertise, 1967-2018." In *Texas National Security Review,* v. 4, n. 1 (Winter 2020/2021): 62-96.
    - *Optional:* Chris Demchak. "Cybered Ways of Warfare: The Emergent Spectrum of Democratized Predation and the Future Cyber-Westphalia Interstate Topology." In, Phil Williams, Dighton Fiddner, eds., *Report, Cyberspace: Malevolent Actors, Criminal Opportunities and Strategic Competition.* Strategic Studies Institute, US Army War College (2016): 603-640; Rebecca Slayton and Brian Clarke. "Trusting Infrastructure: The Emergence of Computer Security Incident Response, 1989-2005." *Technology and Culture.* Vol. 61, No. 1 (January 2020): 173-206.
    - *Primary Source:* The White House. "Presidential Decision Directive 63—Critical Infrastructure Protection." May 22, 1998.

April 23

- Robots, Drones, and The War on Terror
- READ:
    - P.W. Singer. "Robots at War: The New Battlefield." In *Wilson Quarterly* v. 33, n. 1 (Autumn 2008/Winter 2009): 30-48.
    - *Optional:* Richard H. Kohn. "The Danger of Militarization in an Endless 'War' On Terrorism." *The Journal of Military History.* Vol. 73, No. 1 (January 2009): 177-208; Lucy Suchman. "Imaginaries of Omniscience: Automating Intelligence in the US Department of Defense." Vol. 53, No. 5 (2023): 761-786.
    - *Primary Source:* Robert Work. *Principles for the Combat Employment of Weapon Systems with Autonomous Functionalities.* Center for a New American Security (CNAS). April 2021.
    - *Primary Source:* International Committee of the Red Cross. "ICRC Position on Autonomous Weapon Systems." May 2021.

Week 16 - The Final Week

April 28

- The Present of War, the Future of War
- READ:
    - The RAND Corporation. "The Future of Warfare in 2030: Project Overview and Conclusions." RAND Corporation, 2020. Note: this is rather long, but please read the first three chapters (about 34 pages).
    - *Optional*: Rosalind Williams. "Opening the Big Box." *Technology and Culture.* Vol. 48, No. 1 (January 2007): 104-116.

- *Primary Source*: In order to best represent the moment we find ourselves in as the semester comes to a close, the primary source(s) for this session will be selected closer to this actual class session.

April 30

- Final Thoughts
- READ:
  - Nothing (it's the last day).