

Technology and Power Across Historical Eras

?

- **Central question:** how does technology shape power, and vice versa?



- **Eras covered:** ancient, medieval, early modern, industrial, 20th century, digital



- **Types of power:** political, economic, military, cultural, social



- **Technology defined** as tools, infrastructure, media, energy, and information systems



- **Goal:** evaluate continuity, change, and causality without technological determinism



Core Concepts: Power, Technological Systems, and Society

- Invention, innovation, diffusion: technology as systems, not just artifacts
- Technologies concentrate, distribute, or contest political, economic, social power
- Infrastructure, technological determinism, and the social construction of technology
- Technology as instrument of control and as tool of resistance



Ancient Empires: Writing, Metallurgy, and Infrastructure

- Writing enabled administration, law, and imperial record-keeping
- Bronze and iron metallurgy drove military expansion and agricultural control
- Roads, aqueducts, and canals served as instruments of governance
- Compare technological power across Mesopotamia, Egypt, China, Rome, and the Indus Valley
- Roman concrete, roads, and aqueducts projected state power over vast territories



Medieval Transformations: Gunpowder, Print, and Agrarian Power



GUNPOWDER



PRINT



AGRARIAN POWER

INSTRUMENTS OF CONTROL

- ✧ Gunpowder weapons enabled Eurasian state consolidation and stronger fortifications
- ✧ Movable-type printing challenged religious authority and expanded literacy
- ✧ Heavy plows, crop rotation, and water mills amplified agrarian output
- ✧ Europe, Islamic world, and Song China pursued different adoption paths
- ✧ Ottoman case: swift firearms adoption, delayed Arabic-script print

Early Modern Empires: Navigation, Trade, and the Military Revolution

- Navigational tools and shipbuilding drove European overseas expansion
- Cartography linked maritime power to colonial administration
- Gunpowder weapons and bastion forts reshaped state strength
- European military competition acted as a tournament for innovation
- Technological asymmetries created lasting colonial power gaps





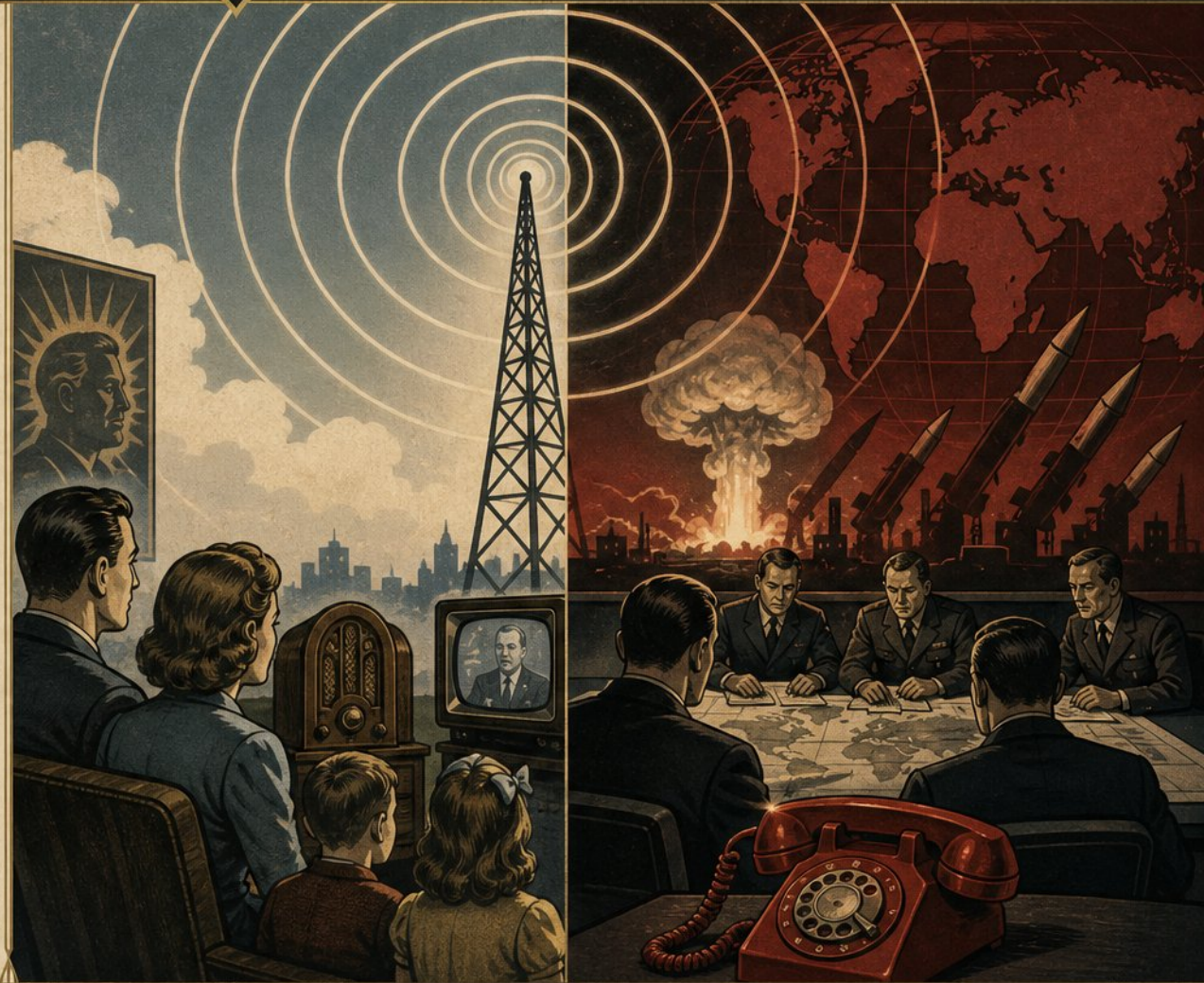
Industrial Revolutions: Energy, Production, and Social Power

- ◆ Steam, coal, and mechanization power economic transformation
- ◆ Industrial capital forms alongside urban labor and new classes
- ◆ Railways and telegraph integrate states and corporations
- ◆ Automation increases profits but can erode worker autonomy
- ◆ Factory discipline reorganized work, time, and social control



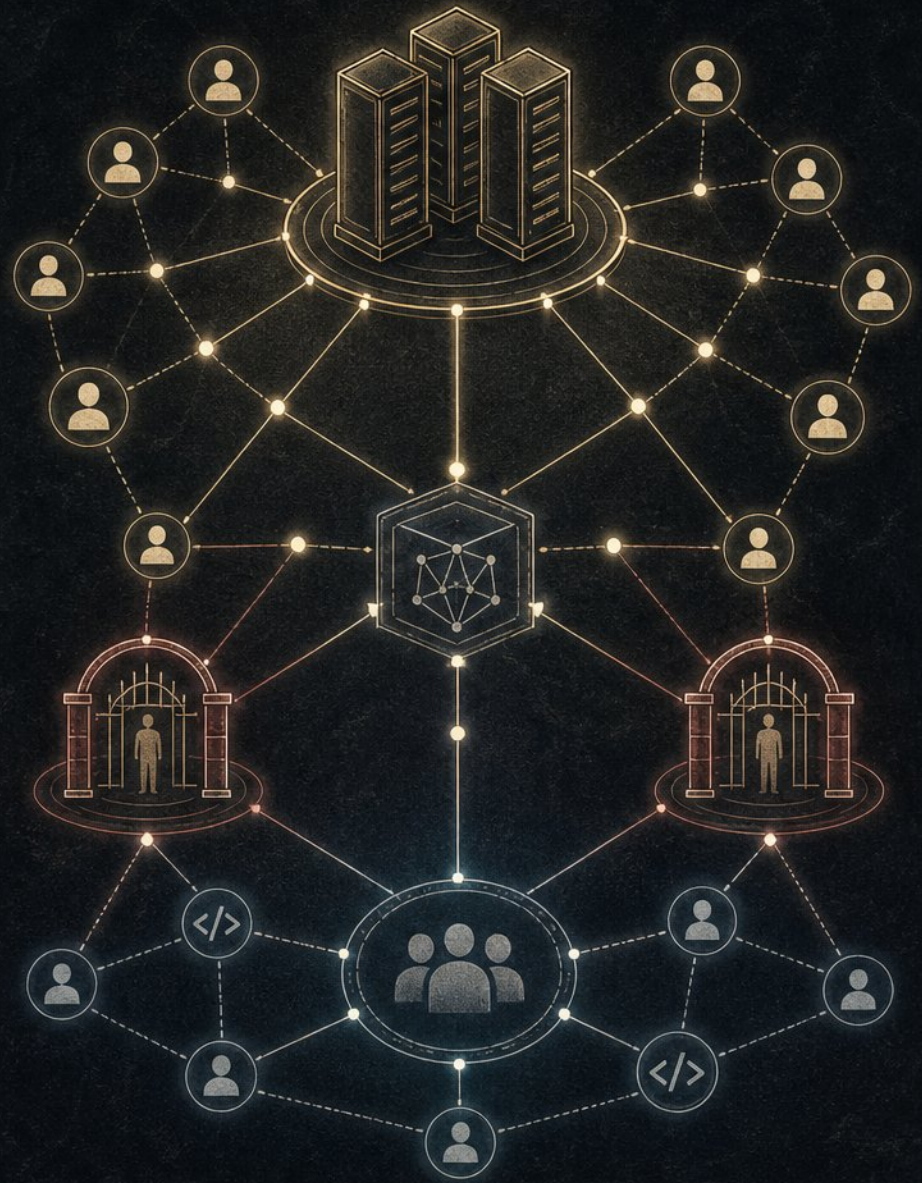
The 20th Century: Mass Media, Nuclear Technology, and Bureaucratic Power

- Radio, film, and TV as tools for propaganda and public debate
- Nuclear deterrence shaped the Cold War's global order
- Early computing fueled rationalized state bureaucracy
- Totalitarian versus democratic uses of communication media
- Arms races linked command economies and the military-industrial complex



The Digital Era: Platforms, Data, and Networked Power

- Internet and social platforms now function as core infrastructure for communication and commerce
- Algorithmic curation drives visibility, attention, and behavior at massive scale
- Platform power concentrates through data, control, and infrastructure
- State surveillance and private gatekeeping both reshape public life
- Digital activism and open-source projects create distributed counter-power



Contemporary Debates: AI, Surveillance, and Regulation

- ◆ Generative AI reshapes information, disinformation, and democratic discourse
- ◆ Surveillance federalism centralizes data, eroding local democratic institutions
- ◆ EU Digital Services Act shows weak regulatory capture by platforms
- ◆ Platform governance crisis: opaque rules, data enclosure, accountability gaps
- ◆ Platform power comprises control, data, and infrastructure dimensions

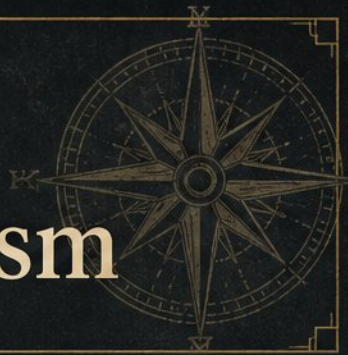


Patterns of Continuity and Change

- ◆ Recurring mechanisms: infrastructure, communication, weapons, energy, information control
- ◆ Similar technologies produce different political outcomes across contexts
- ◆ Technology can centralize or democratize power depending on institutions
- ◆ Reject determinism; emphasize access, institutions, and social choices
- ◆ Compare Ottoman print ban with European military tournament

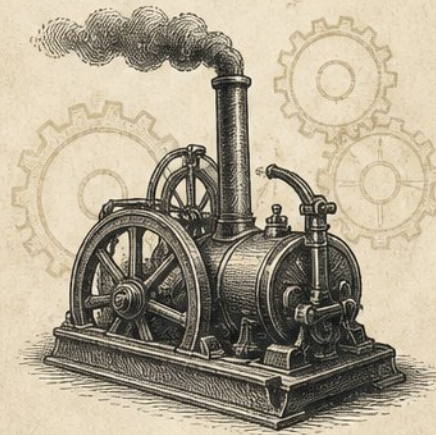


Teaching Strategies: Avoiding Technological Determinism



- ✧ Treat technology as socially constructed and politically contested
- ✧ Separate invention, diffusion, and adaptation across regions
- ✧ Use comparative cases to reveal divergent outcomes
- ✧ Ask who gains and who loses from technological change
- ✧ Present technology as a system of human choices

TECHNOLOGICAL DETERMINISM



Technology drives society inevitably forward.

SOCIAL CONSTRUCTION OF TECHNOLOGY

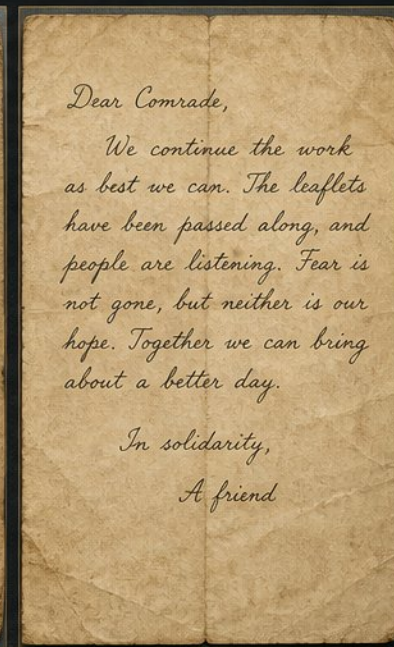
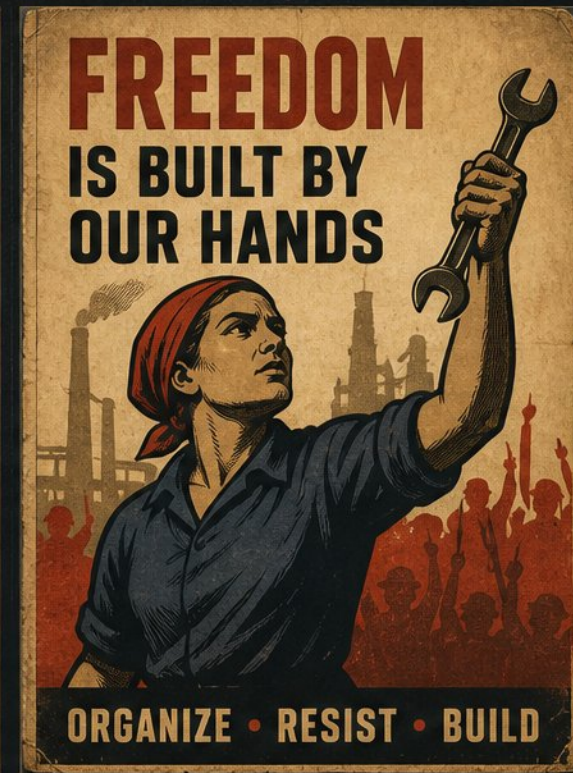
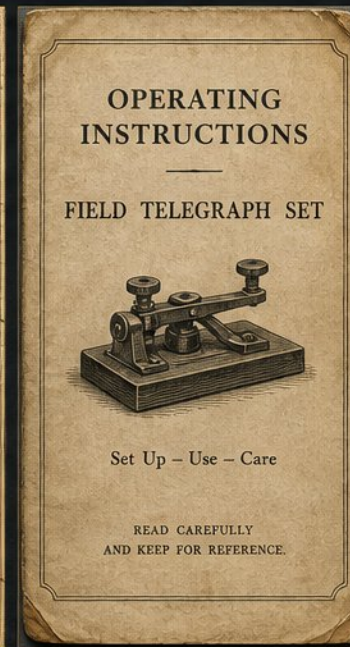
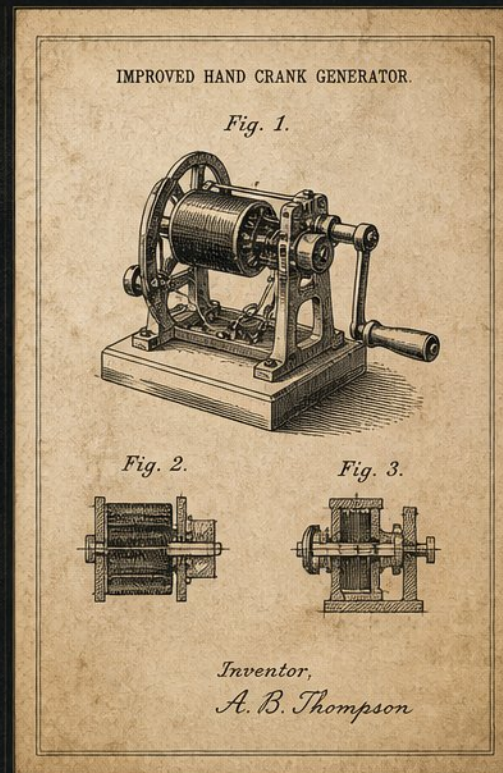


Technology is shaped by social values and choices.

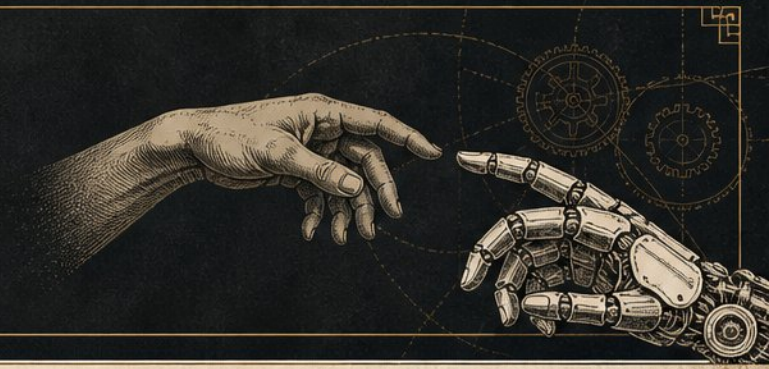
Teaching with Primary Sources: Maps, Patents, Propaganda, and Manuals

- Primary sources reveal design, use, and contestation
- Types: maps, patents, posters, manuals, letters
- Analysis: purpose, message, audience, bias
- Visual sources: photos, cartoons, advertisements
- Connect evidence to power and resistance

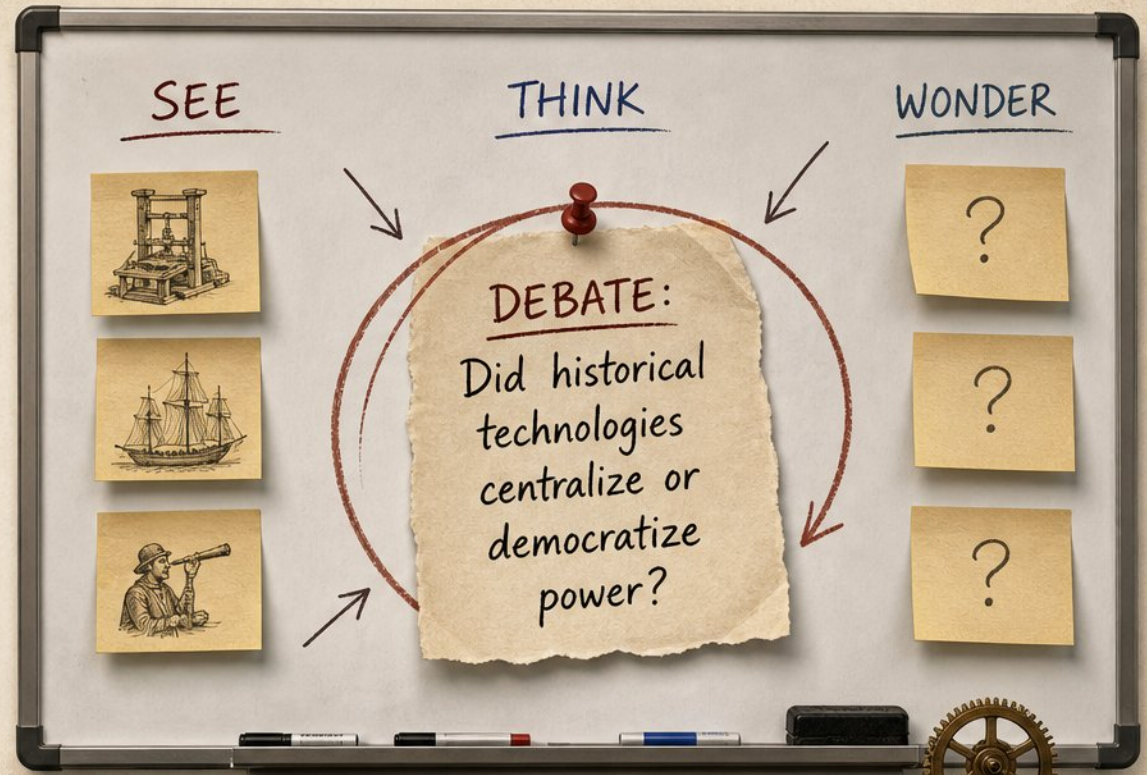
The tool
of resistance.



Classroom Activities and Discussion Prompts



- ✧ - Build comparative timelines of communication, energy, and weapons
- ✧ - Debate whether historical technologies centralized or democratized power
- ✧ - Compare Ottoman print and European military innovation as case studies
- ✧ - Link AI, surveillance, and platform regulation to past patterns
- ✧ - Use see-think-wonder, S-I-T, and source-matching activities





Assessment and Further Learning

- ◆ Assess analysis of continuity, change, and causality across eras
- ◆ Evaluate understanding of technological determinism versus social shaping
- ◆ Use project-based assessments: essays, source analyses, digital exhibits
- ◆ Draw on Smithsonian and Library of Congress primary-source collections
- ◆ Encourage students to connect historical cases to current technology-power debates

ASSESSMENT FOCUS



CONTINUITY

Assess analysis of patterns that persist over time.



CHANGE

Assess analysis of transformations and new developments.



CAUSALITY

Assess analysis of causes, connections, and consequences.



DETERMINISM

Evaluate understanding of technological determinism versus social shaping.



Student Essay

*How causal determinism of British
empire...
...the industrial revolution...
...the social shaping...
...the technological determinism...*



Primary Sources

Smithsonian Collections
Library of Congress
Collections



PersonWise.

PersonWise • AI digital-human course platform



Scan the code or click anywhere to watch this course live, with voice Q&A

personwise.ai/t/c69071f5/public