

Emerging Technology + International Security

17.449

Erik Lin-Greenberg

Assistant Professor of Political Science

Massachusetts Institute of Technology

Thursday, February 24, 2022
Today's Paper

The New York Times

☁️ 25°F 34° 29°
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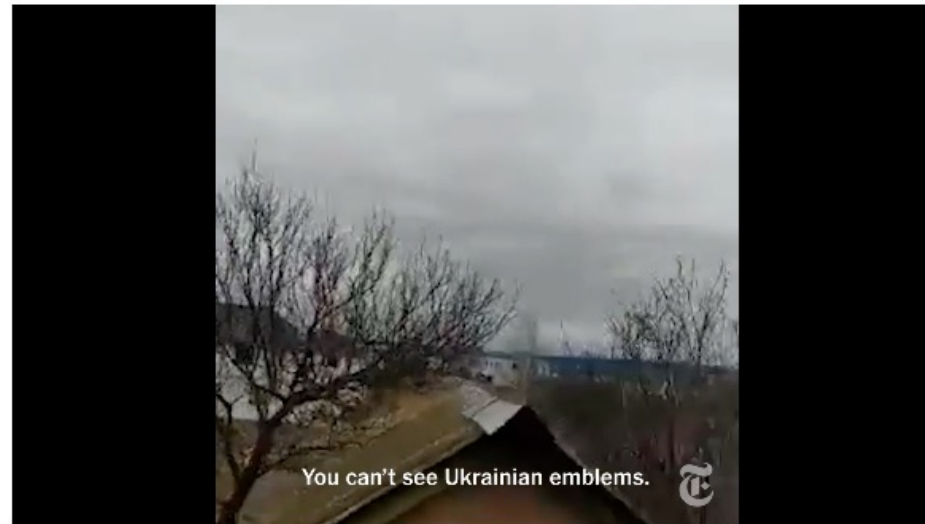
UKRAINE UNDER FULL-SCALE ATTACK

Explosions Heard Across Country; Biden Says World Will Hold Russia Accountable

LIVE

Ukraine Vows 'All-Out Defense'; Dozens of Its Soldiers Are Killed

- Ukraine's government said it faced "a full-scale attack from multiple directions." The Ukrainian military claimed to have shot down several Russian aircraft.
- Explosions were reported in Kyiv, Kharkiv and elsewhere. A mass migration appeared underway as residents fled the capital.
- President Biden, who will address the public today on Russia's attack, promised "severe sanctions" against the country. Here's the latest.



Marc Santora 1h ago

A woman's voice, blaring over loudspeakers across the city, pierced the calm in downtown Lviv. She was giving detailed instructions about what to do if the air raid sirens wail. Seek cover and don't move until they stop.



The New York Times

We're tracking the Russian invasion of Ukraine.

President Vladimir Putin, warning against interference, said that Russia is a "powerful nuclear state."

Ukraine's forces made "fierce resistance" as Russian troops pushed into the Chernobyl exclusion zone, Ukrainian officials said.



John Schindler 
@20committee

...

Dear Journalists: If you're in contact with Ukrainian security people at the front right now, understand that the Russians have excellent geolocational SIGINT linked with fires. You're getting them killed. Tell them to shut off the phone and focus on the invading Russians.

9:17 AM · Feb 24, 2022 · Twitter Web App

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US braces for Russian cyberattacks as Ukraine conflict escalates. Here's how that might play out



By [Rishi Iyengar](#), [CNN Business](#)

Updated 8:12 AM ET, Thu February 24, 2022

Iyengar, Rishi. "US braces for Russian cyberattacks as Ukraine conflict escalates. Here's how that might play out." CNN. February 24, 2022. © Cable News Network. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

Van Creveld and Cohen ask:

What changes and what remains the same?

Revolution or Evolution

- Psychology of war
- War with/without standard fronts
- Who fights?
- What is purpose of military?
- What is the theory of victory?

Recap

- Revolutions in military affairs
- Central Ideas
 - Four necessary, but not sufficient elements:
 - Technological change
 - Systems development
 - Operational innovation
 - Organizational adaptation
 - Invalidates older concepts (but !=\$\$)
- Challenges to RMA



Image courtesy of [Pete Sousa of the Executive Office of the President of the United States](#).
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Innovation as an IV

- Effects on conflict/crisis initiation
- Effects on organizations
- Effects on doctrine/tactics
- Effects on effectiveness and outcomes

Innovation: Increased Info + Precision

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IR 201

How do IR theorists think about technology?

Three Paradigms in IR Theory:

Realism

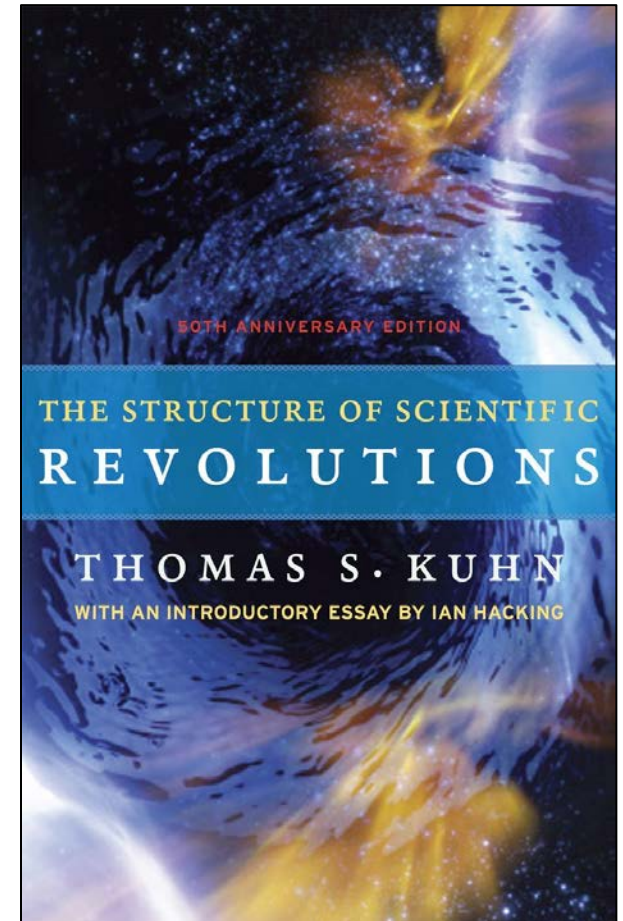
Liberalism

Constructivism

Paradigms

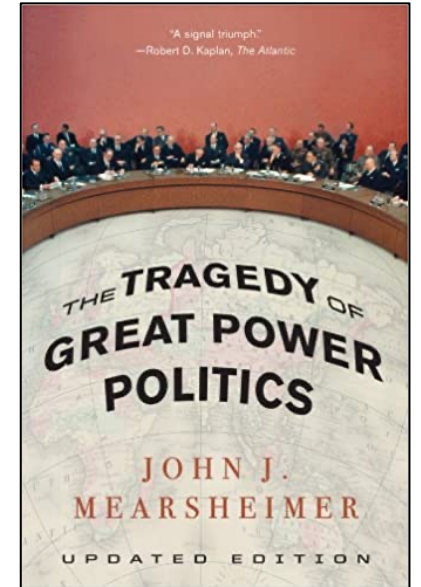
- Worldview
- Agreement on:
 - Key actors
 - Basic units
 - Key problems to be explained
- Central topic of debate in mid-1990s
- Modern debates focus on “mid-range theory”

Kuhn, Thomas S. *The Structure of Scientific Revolutions: 50th Anniversary Edition*. University of Chicago Press, 2012.
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Paradigms: Realism

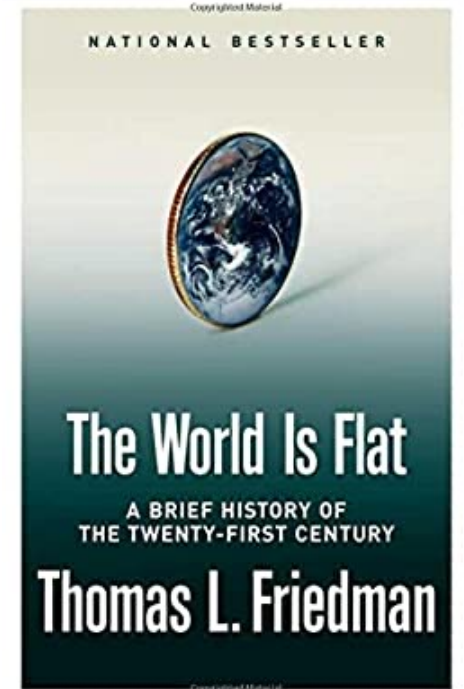
- States acting in an anarchic international systems
- Seek to preserve/maximize security
- Associated with questions of war/peace
- Critique: Treats states like “billiard balls”
- Technology matters to the extent it shifts power dynamics
 - “Pursuit of power”



Mearsheimer, John J. *The Tragedy of Great Power Politics*. W. W. Norton & Company, 2014. © W. W. Norton & Company. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

Paradigms: Liberalism

- Focuses on individuals, rights, and markets
 - Not “Liberal” political ideology
 - Liberalism focuses on individuals
 - Neoliberalism: Interdependence fosters peace
- Cooperation helps avoid conflict
 - International law, International organizations
- Critique: Int’l orgs are *epiphenomenal*
- Technology enhances cooperation (maybe?)



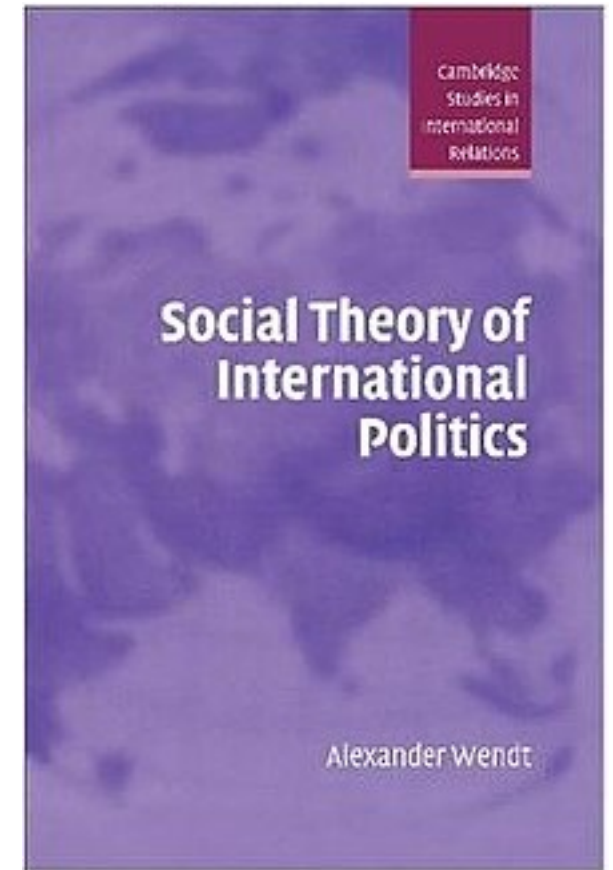
Friedman, Thomas L. *The World Is Flat: A Brief History of the Twenty-first Century*. Farrar, Straus and Giroux, 2005. © Farrar, Straus and Giroux. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.



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Paradigms: Constructivism

- Focuses on shared norms and ideals
- Everything is “socially constructed”
- “Anarchy is what you make of it”
- Critique: Who shapes definitions/norms?
- Technology is socially constructed



Wendt, Alexander. *Social Theory of International Politics*. Cambridge University Press, 1999. © Cambridge University Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

Paradigms: What are they good for?

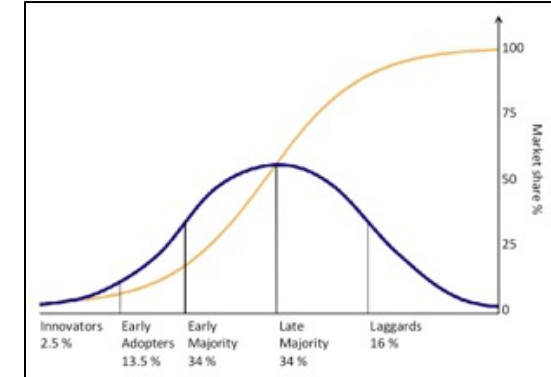
- Used to be center of most IR debates
- Scholars now typically focus on mid-range questions
- So why study paradigms?

Views on technology



Image courtesy of [Cover Images/The Ministry of Medium Machine Building of the USSR/Associated Press](#).
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Gray, Colin S. *Weapons Don't Make War: Policy, Strategy, & Military Technology*. University of Kansas Press, 1993. © University of Kansas Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.



Techno-determinism

Strict

Independent causal effect
Autonomous agent

Socially constructed

Strict

Social processes shape
innovation and use

Views on technology

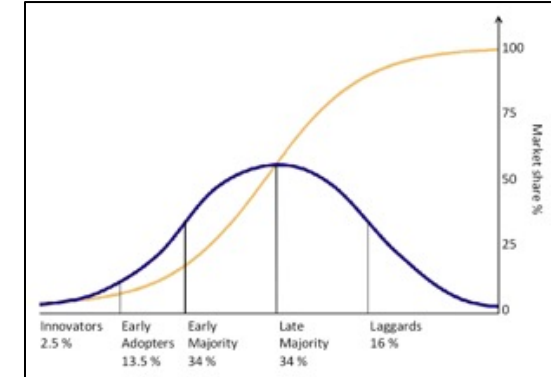
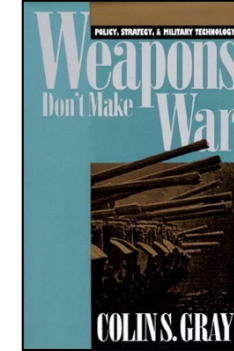
- Challenges to strict techno-determinism
 - Fails to explain mechanisms that lead to change
- Challenges to social constructivist explanations
 - How does technology differ from other social phenomenon?
- Connections to past reading?
 - Horowitz's "Adoption-Capacity Theory"
 - Biddle's "Modern System"

Views on technology

Image courtesy of [Cover Images/The Ministry of Medium Machine Building of the USSR/Associated Press](#).
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Gray, Colin S. *Weapons Don't Make War: Policy, Strategy, & Military Technology*. University of Kansas Press, 1993. © University of Kansas Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.



Techno-determinism

Strict

Independent causal effect
Autonomous agent

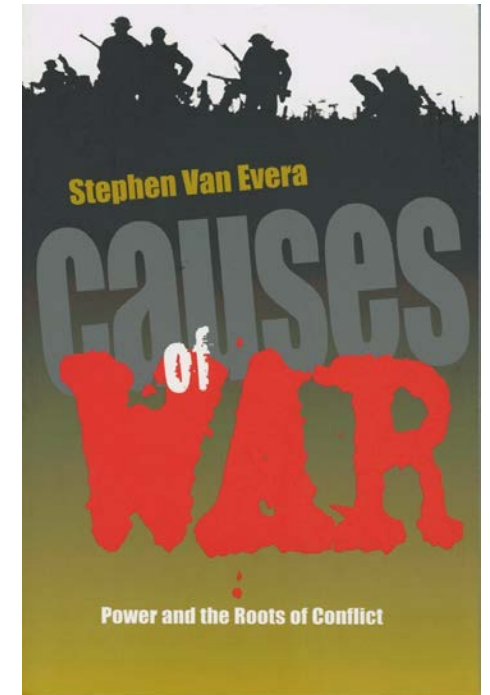
Socially constructed

Strict

Social processes shape
innovation and use

The Offense-Defense Balance

- O-D Balance is central to many IR theories
- The "balance" shapes:
 - Likelihood of war
 - Likelihood of empire
 - Conflict duration
 - Arms racing (internal balancing)
 - Alliance behavior (external balancing)



Van Evera, Stephen. *Causes of War: Power and the Roots of Conflict*. Cornell University Press, 2001. © Cornell University Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

The Offense-Defense Balance

- Offense
 - Enable maneuver
 - Striking power
 - Incentive to strike first
 - Cheaper to attack than defend
- Defense
 - Protection
 - Holding power
 - Cheaper to defend than attack



Image courtesy of [Spc. Kali Ecton / U.S. Army](#). Source: Wikimedia Commons. This image is in the public domain.



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The Offense-Defense Balance

- The Appeal of the Offense
 - Seize territory
 - Project power
 - Fight away from home
- The Appeal of the Defense
 - "Stronger form of warfare"
 - Homefront (Terrain + Emotions)
 - Sometimes "easier"
 - Politically palatable (?)
 - Under what conditions?
 - Adversary must act first



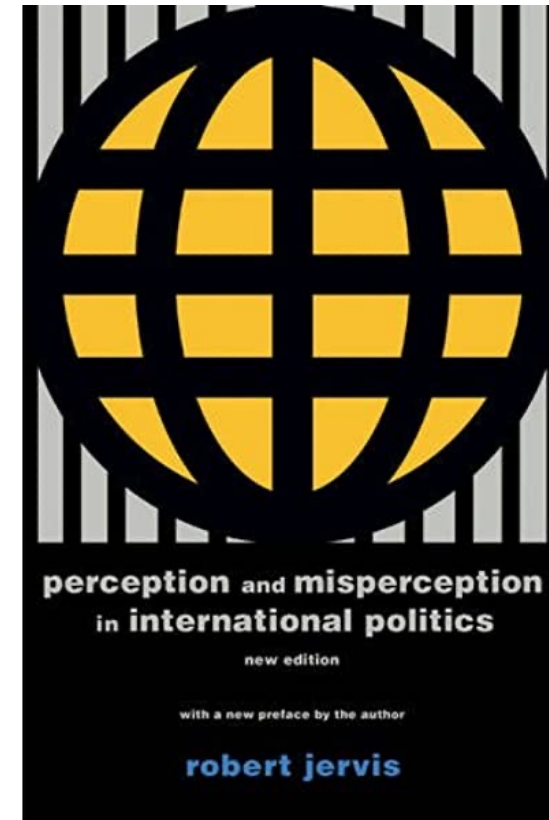
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Carl von Clausewitz by Wilhelm Wach. Source: [Wikimedia Commons](#). This image is in the public domain.

Offense-Defense Theory

- Offensive advantage increases the benefits from striking first
- Perceived offense dominance:
 - Increases likelihood of war
 - Increases incentive to seek alliances
 - Increases arms racing
 - More conclusive conflict resolution



Jervis, Robert. *Perception and Misperception in International Politics*. Princeton University Press, 2017. © Princeton University Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.

The Offense-Defense Balance

- Can we precisely identify the offense-defense balance?

“Useful distinctions can...be drawn between offensive and defensive policy goals, strategies, and capabilities.”

Samuel Huntington

The Offense-Defense Balance

- Can we precisely identify the offense-defense balance?
- It's really hard:
 - Maybe makes sense at Strategic level
 - Synergism: Strategic defense, tactic offensive
 - Offense-Defense Distinguishability
 - Domain specificity?
 - Land (defense)
 - Sea (offense)
 - Air (offense)
 - Based on perceptions
 - Heuristics



Image courtesy of [7th Army Training Command](#). Source: Wikimedia Commons. License CC BY.

The Offense-Defense Balance

- Systems level or dyadic balance
 - ODT is often thought of as systems level
 - Balance of a given era
 - But how? (Think back to Adoption-Capacity Theory)
- Issues of tautology (with definitions)
 - Weapon that enables striking=striking first?
- People misjudge the balance all the time
 - Who is “judging”? (Academics vs. Practitioners”
 - Pre-World I (Historians say defense, practitioners though offensive)
 - Interwar Years (Historians say offense, practitioners disputed)

The Offense-Defense Balance

"Logic and sentiment of...political affinities has more than offset any deterministic logic of 'dominant' weaponry."

-Colin Gray

The idea that offensive or defensive strategies can function as autonomous factors that make for war or for peace independent of policy choice is a plausible fallacy. Policy makes war, not types of weapons, character of strategy, or operational style.

The Offense-Defense Balance

- So why do we care about ODT?
- Costs/risks
- Perceptions
- Ties to rationalist explanations for war



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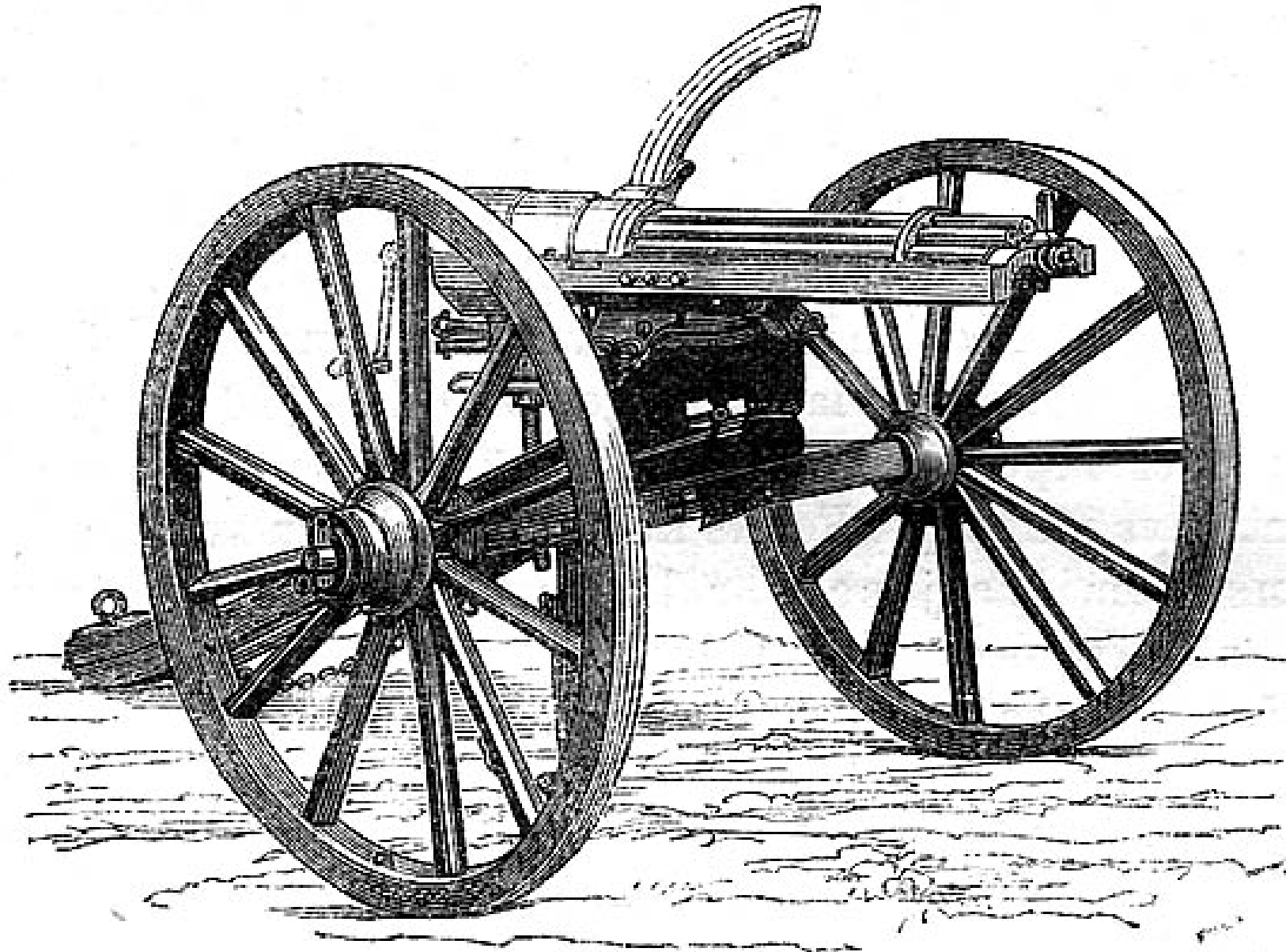
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The Machine Gun

A Case Study



Ellis, John. *The Social History of the Machine Gun*. Arno Press, 1981. © Arno Press. All rights reserved. This content is excluded from our Creative Commons license. For more information, see <https://ocw.mit.edu/help/faq-fair-use/>.



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The Machine Gun: Barriers

- Technical barriers
 - Materials/production unavailable
 - Requires high temps, narrow tolerances
- Cultural barriers
 - Threat to assumptions
 - Gentleman soldier concept
 - Theory of fighting
- Role of the industrial revolution in overcoming both barriers?

The Machine Gun: Experimentation

- Used initially in colonial wars
 - Perceptions of acceptability?
 - Perceived threat/dehumanization
- Technology advances
 - Light machine gun
 - Perception as “deterrent” weapon
- Resistance remains
 - Landowner/Elite influence



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The Machine Gun: Confirmation + Effects

- World War I
 - Saw musket as extension of pike
 - Slow acceptance of technology
 - Ellis: “unknowingly” accepts
 - Learn about effects
- Leads to more innovation
- Changes character of war



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**Have emerging technologies changed conceptions
of offense-defense balance?**

Discussed paradigms
(Realism, Liberalism, and Constructivism)

The Offense-Defense Balance

The Machine Gun

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