GEOPOLITICS OF INNOVATION:

U.S.-CHINA TECHNOLOGY COMPETITION AND IMPLICATIONS FOR TECHNOLOGY GOVERNANCE

INTRODUCTION Emerging technologies became a key point of contention in U.S.-China relations. China's innovation activities generated security and order externalities for the U.S. These externalities form the link between technology and strategic competition. In turn, technological rivalry can hinder cross-border cooperation in the area of technology governance.

OBJECTIVES Analyze how technology has become a locus of Great Power interaction in U.S.-China relations by analyzing how the U.S. responded to China's innovation activities. Explore the role of technology in state interactions, and in turn, the interplay of these interactions in global governance dynamics through the case study of Lethal Autonomous Weapon Systems.

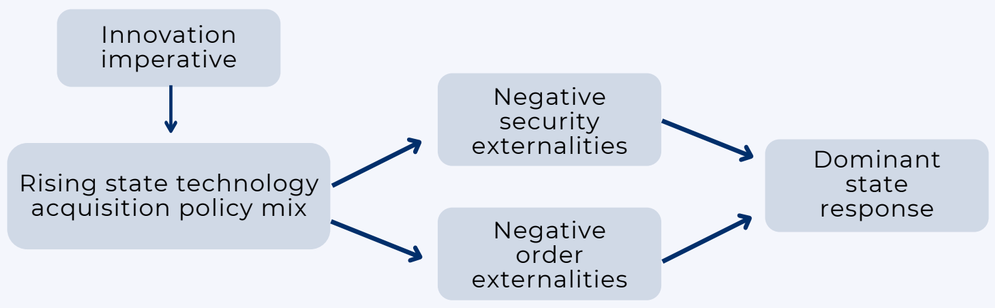
RESEARCH QUESTION & SUB-QUESTION

1. How has the United States responded to China's technological progress?

2. Can technological competition hinder cooperation in the governance of emerging technologies?

THEORETICAL FRAMEWORK

Theoretical model of Kennedy & Lim (2018)



HYPOTHESES

Hypothesis 1. *China's innovation imperative generated negative security externalities for the United States*

Hypothesis 2. *China's innovation imperative generated negative order externalities for the United States*

RESEARCH DESIGN

- Qualitative analysis of primary sources
  - U.S. government documents (2017-2022):
    - National Security Stretegy plans
    - Commercial practices
    - Domestic measures
    - Alliances and partnerships
- Case study: LAWS

RESULTS

Negative security externalities

- The U.S. increased or formed new alliances with a key focus on emerging technologies to contain Chinese influence in the Indo-Pacific (external balancing).
- The U.S. restricted investment in key technology sectors, imposed tariffs on Chinese technology products, and tightened export controls to block access to technologies, especially dual-use technologies.

Negative order externalities

- The U.S. accuses China of using measures that go against the rules-based order such as illegal trade practices, cyber theft, and coercive economic practices to acquire U.S. technology and intellectual property.
- The U.S. has mainly sought to contain China bilaterally through its different governmental agencies and the Special 301 review, and multilaterally, seeking to increase Chinese compliance through the WTO dispute settlement process.

Case study: Lethal Autonomous Weapon Systems

- LAWS first discussed at the Human Rights Council in 2013 and introduced for arms control talks in the CCW in 2014.
- No other measure taken aside from the 11 guiding principles adopted by the 2019 Meeting of the High Contracting Parties to the CCW.
- A 2021 report by the UN Panel of Experts on Lybia documented the use of a lethal autonomous weapon system, STM Kargu-2.
- Identified concerns on LAWS:
  - Lack of global consensus on the definition and regulation of autonomy in weapon systems.
  - Compliance with International Humanitarian Law.
  - Trigger low-barrier arms race.
  - Inadvertent conflict escalation.
  - Questions about their ethical and safe development and use.
- U.S. position on LAWS: considers proposals for negotiations of a new international treaty as premature.
- China's position on LAWS: called for a ban on fully autonomous weapons but limited to use only, not development.

CONCLUSIONS

1. China's pursuit of technological innovation has threatened the United States' strategic interests as its activities generated both negative security and order externalities.
   - These externalities form the link between technology and strategic competition.
   - The U.S. responded to China's innovation imperative by implementing a whole-of-government approach to slow down its progress in innovation.

2. While the CCW operates by consensus, leading countries in innovation and military capabilities are most likely going to influence the trajectory of international discussions on LAWS.
   - Competition for AI leadership can make states and their enterprises put aside safety and reliability measures.
   - If further negative security and order externalities arise, relations between the U.S. and China will increasingly exhibit characteristics of a classical security dilemma where each side's striving for greater security will ultimately generate more insecurity on both sides.
   - If emerging technologies are seen primarily as a source of military capabilities and central to national security, regulation of such technologies can be to a great extent hindered.

REFERENCES

- Kennedy, A. B., & Lim, D. J. (2018). The innovation imperative: technology and US–China rivalry in the twenty-first century. International Affairs, 94(3), 553–572.
- Sun, H. (2019). U.S.-China Tech War. China Quarterly of International Strategic Studies, 05(02), 197–212.
- Stiftung Wissenschaft und Politik. (2020, April). Strategic Rivalry between United States and China: Causes, Trajectories, and Implications for Europe (SWP Research Paper 4). German Institute for International and Security Affairs.
- Boulanin, V., & Verbruggen, M. (2017, November). Mapping the Development of Autonomy in Weapon Systems. Stockholm International Peace Research Institute.

Fernanda Sauca

Bachelor's Dissertation
Supervisor: John R. Etherington
Political Science and Public Administration
Term 2021/2022