



**From Competition to Advancement: The Geopolitical Aspects of Innovation in Space
Technology between The US and China**

UNDERGRADUATE BY-COURSE THESIS

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ABSTRACT

This research examines the impact of the United States and China geopolitical rivalry over space on humanity's progress arguing that conflict—rather than collaboration—fuels innovation. The study is based on Kenneth Waltz's Neorealist Theory and claims that in an international system lacking authority, great rival powers need to vie for superiority. It critiques historical and contemporary space races to illustrate how both nations pursuing technological arms competition has propelled progress in AI, quantum computing, aerospace engineering, and satellite defense systems. China counters US hegemony with a centralistic approach through CNSAs and programs like BeiDou. The United States counters by protecting its strategic advantage through collaboration with the private sector. The study proposes a Conflict-Progress Model to explain how destructive competition inadvertently enhances humanity's development. The study suggests fierce strategic competition fundamentally alters global power dynamics and aggressively propels innovation, restructuring hegemony, and turning outer space into the next contested zone of geostrategic rivalry.

Keywords: Geopolitical competition, space race, U.S.–China rivalry, neorealism, innovation, technological advancement, strategic conflict.

ABSTRAK

Penelitian ini mengkaji dampak persaingan geopolitik Amerika Serikat dan Cina atas ruang angkasa terhadap kemajuan umat manusia dengan menyatakan bahwa konflik, bukan kolaborasi, yang mendorong inovasi. Penelitian ini didasarkan pada Teori Neorealis Kenneth Waltz dan mengklaim bahwa dalam sistem internasional yang tidak memiliki otoritas, kekuatan-kekuatan besar yang saling bersaing harus bersaing untuk menjadi yang terbaik. Studi ini mengkritik perlombaan antariksa historis dan kontemporer untuk menggambarkan bagaimana kedua negara yang mengejar persaingan teknologi persenjataan telah mendorong kemajuan dalam bidang AI, komputasi kuantum, teknik kedirgantaraan, dan sistem pertahanan satelit. Tiongkok melawan hegemoni AS dengan pendekatan sentralistik melalui CNSA dan program-program seperti BeiDou. Amerika Serikat membalas dengan melindungi keunggulan strategisnya melalui kolaborasi dengan sektor swasta. Studi ini mengusulkan Model Kemajuan-Konflik untuk menjelaskan bagaimana persaingan yang merusak secara tidak sengaja meningkatkan perkembangan umat manusia. Studi ini menunjukkan bahwa persaingan strategis yang sengit secara fundamental mengubah dinamika kekuatan global dan secara agresif mendorong inovasi, merestrukturisasi hegemoni, dan mengubah ruang angkasa menjadi zona persaingan geostrategis yang diperebutkan.

Kata kunci: Persaingan geopolitik, perlombaan luar angkasa, persaingan AS-Tiongkok, neorealisme, inovasi, kemajuan teknologi, konflik strategis.

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Table of Contents

1. Abstract – 7
2. Abstrak – 8
3. Introduction – 9
4. Research Method – 10
5. Research Question – 11
6. Theoretical Framework – 11
7. The Historical Trajectory of U.S. and China Relations – 12
8. Geographic and Strategic Foundations of U.S. and China Space Race – 14
9. Cold War Parallels, the U.S. and Soviet Space Race – 15
10. The Militarization of Space and Strategic Deterrence – 16
11. Technological Breakthroughs – 19
12. Barriers and Opportunities in International Collaboration – 20
13. Conclusion – 22
14. References – 24

List of Pictures/Diagram

1. Figure 1 – Map of active and proposed U.S. spaceports – 14
2. Figure 2 – China’s network of space launch facilities – 15
3. Figure 3 – Successful international space launches from 2010 to 2020 – 17
4. Figure 4 – Number of active satellites in orbit by the U.S. and China (2006–2021) – 18